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Muhammad Usama and DUA sister

CS502 - Fundamentals of Algorithms Quiz No.1 12-11-2012

Question # 1 of 10 (Start time: 06:18:58 PM) Total Marks: 1
We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:

left-complete
right-complete
tree nodes
tree leaves

Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:

True
False

Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ___________
Select correct option:

increasing order only
decreasing order only
heap order
(log n) order

Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1

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A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1
Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

True
False

Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1
The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:

16
10
32
31

Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:

linear
arithmetic
geometric
exponent

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Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1
For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic

For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
Slow sorting algorithms run in,
Select correct option:
T(n^2)
T(n)
T(log n)
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
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linear
arithmetic
geometric
exponent

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:

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T(n)
T(n / 2)
log n
n / 2 + n / 4

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few

In which order we can sort?
Select correct option:
increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
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31

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

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Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:

n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Sieve Technique can be applied to selection problem?
Select correct option:

True
false

For the heap sort we store the tree nodes in
Select correct option:

level-order traversal
in-order traversal

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pre-order traversal
post-order traversal

One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Select correct option:
pointers
constants
variables
functions

A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
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binary tree
binary search tree
array

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mathematically
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Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Question # 1 of 10 (Start time: 08:17:23 AM) Total M a r k s: 1
The number of nodes in a complete binary tree of height h is
Select correct option:
2^(h+1) – 1
2 * (h+1) – 1

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2 * (h+1)
((h+1) ^ 2) – 1
Question # 2 of 10 (Start time: 08:18:46 AM) Total M a r k s: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Question # 3 of 10 (Start time: 08:19:38 AM) Total M a r k s: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False

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right-complete
tree nodes
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Question # 5 of 10 (Start time: 08:21:59 AM) Total M a r k s: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

Question # 6 of 10 (Start time: 08:23:01 AM) Total M a r k s: 1
For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
Theta asymptotic notation for T (n) :
Select correct option:
Set of functions described by: c1g(n)Set of functions described by c1g(n)>=f(n) for c1 s

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Theta for T(n)is actually upper and worst case comp
Set of functions described by:
c1g(n)

Question # 8 of 10 (Start time: 08:24:39 AM) Total M a r k s: 1
The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few
Question # 9 of 10 (Start time: 08:25:54 AM) Total M a r k s: 1
Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

Question # 10 of 10 (Start time: 08:26:44 AM) Total M a r k s: 1
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines

Memorization is?
To store previous results for future use
To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later
To make the process accurate
None of the above

Question # 2 of 10 Total M a r k s: 1
Which sorting algorithm is faster
O (n log n)
O n^2
O (n+k)
O n^3

Quick sort is
Stable & in place
Not stable but in place

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Stable but not in place
Some time stable & some times in place

One example of in place but not stable algorithm is
Merger Sort
Quick Sort
Continuation Sort
Bubble Sort

In Quick Sort Constants hidden in T(n log n) are
Large
Medium
Small
Not Known

Continuation sort is suitable to sort the elements in range 1 to k
K is Large
K is not known
K may be small or large
K is small

In stable sorting algorithm.
If duplicate elements remain in the same relative position after sorting
One array is used
More than one arrays are required
Duplicating elements not handled

Which may be a stable sort?
Merger
Insertion
Both above
None of the above

An in place sorting algorithm is one that uses ___ arrays for storage
Two dimensional arrays
More than one array
No Additional Array
None of the above

Continuing sort has time complexity of ?
O(n)
O(n+k)
O(nlogn)
O(k)

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We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

In Sieve Technique we donot know which item is of interest

True
False
A (an) _________ is a left-complete binary tree that conforms to the heap order
heap
binary tree
binary search tree
array
27. The sieve technique works in ___________ as follows
phases
numbers
integers
routines

For the sieve technique we solve the problem,
recursively
mathematically
precisely
accurately
29. For the heap sort, access to nodes involves simple _______________ operations.
arithmetic
binary
algebraic
logarithmic

The analysis of Selection algorithm shows the total running time is indeed ________in n,\
arithmetic
geometric
linear
orthogonal

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For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic

Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

Question # 9 of 10 (Start time: 07:45:36 AM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

For the heap sort we store the tree nodes in
Select correct option:
level-order traversal
in-order traversal
pre-order traversal
post-order traversal

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option:
upper
lower
average

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log n

single item from a larger set of _____________

Select correct option:

n items

phases

pointers

constant

A heap is a left-complete binary tree that conforms to the ___________

Select correct option:

increasing order only

decreasing order only

heap order

(log n) order

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

Select correct option:

T(n)

T(n / 2)

log n

n / 2 + n / 4

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

Select correct option:

divide-and-conquer

decrease and conquer

greedy nature

2-dimension Maxima

The sieve technique works in ___________ as follows

Select correct option:

phases

numbers

integers

routines

For the Sieve Technique we take time

Select correct option:

T(nk)

T(n / 3)

n^2

n/3

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In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
linear
arithmetic
geometric
exponent

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

Quiz Start Time: 07:23 PM
Time Left 90
sec(s)
Question # 1 of 10 (Start time: 07:24:03 PM) Total M a r k s: 1
In in-place sorting algorithm is one that uses arrays for storage :
Select correct option:
An additional array
No additioanal array
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

Time Left 89
sec(s)
Question # 2 of 10 (Start time: 07:25:20 PM) Total M a r k s: 1
Which sorting algorithn is faster :
Select correct option:
O(n^2)
O(nlogn)
O(n+k)
O(n^3)
In stable sorting algorithm:
Select correct option:
One array is used
In whcih duplicating elements are not handled.
More then one arrays are required.
Duplicating elements remain in same relative posistion after sorting.

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Counting sort has time complexity:
Select correct option:
O(n)
O(n+k)
O(k)
O(nlogn)

Counting sort is suitable to sort the elements in range 1 to k:
Select correct option:
K is large
K is small
K may be large or small
None

Memorization is :
Select correct option:
To store previous results for further use.
To avoid unnecessary repetitions by writing down the results of recursive calls and looking them again if needed later
To make the process accurate.
None of the above

The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Which may be stable sort:
Select correct option:
Bubble sort
Insertion sort
Both of above

In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:
Large
Medium

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Not known

small

Quick sort is
Select correct option:
Stable and In place
Not stable but in place
Stable and not in place
Some time in place and send some time stable

For the Sieve Technique we take time
T(nk)
T(n / 3)
n^2
n/3

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
Many
1
Few

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
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Which may be stable sort:
Select correct option:
Bubble sort
Insertion sort
Both of above
Selection sort

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic

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geometric
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Select correct option:

Large
Medium
Not known
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How much time merge sort takes for an array of numbers?
Select correct option:

T(n^2)
T(n)
T(log n)
T(n log n)

Counting sort has time complexity:
Select correct option:

O(n)
O(n+k)
O(k)
O(nlogn)

In which order we can sort?
Select correct option:

increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree

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binary search tree
array

The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
Select correct option:

There is explicit combine process as well to conquer the solution.
No work is needed to combine the sub-arrays, the array is already sorted
Merging the sub arrays
None of above.

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option:

upper
lower
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log n

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
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T(n / 2)
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n / 2 + n / 4

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None of above

The number of nodes in a complete binary tree of height h is
2^(h+1) – 1
2 * (h+1) – 1
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Slow sorting algorithms run in,
T(n^2)
T(n)
T(log n)
T(n log n)

One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Pointers
Constants
Variables
Functions

Counting sort is suitable to sort the elements in range 1 to k:
K is large
K is small

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K may be large or small
None

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right-complete
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tree leaves

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array

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Set of functions described by:
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5
many

Made by

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1

few

Question # 9 of 10 (Start time: 08:25:54 AM) Total M a r k s: 1

Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________

Select correct option:

n items

phases

pointers

constant

Question # 10 of 10 (Start time: 08:26:44 AM) Total M a r k s: 1

The sieve technique works in ___________ as follows

Select correct option:

phases

numbers

integers

routines

Memorization is?

To store previous results for future use

To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later

To make the process accurate

None of the above

Question # 2 of 10 Total M a r k s: 1

Which sorting algorithm is faster

O (n log n)

O n^2

O (n+k)

O n^3

Quick sort is

Stable & in place

Not stable but in place

Stable but not in place

Some time stable & some times in place

One example of in place but not stable algorithm is

Merger Sort

Quick Sort

Continuation Sort

Bubble Sort

Made by

Muhammad Usama and DUA sister

In Quick Sort Constants hidden in T(n log n) are
Large
Medium
Small
Not Known

Continuation sort is suitable to sort the elements in range 1 to k
K is Large
K is not known
K may be small or large
K is small

In stable sorting algorithm.
If duplicate elements remain in the same relative position after sorting
One array is used
More than one arrays are required
Duplicating elements not handled

Which may be a stable sort?
Merger
Insertion
Both above
None of the above

An in place sorting algorithm is one that uses ___ arrays for storage
Two dimensional arrays
More than one array
No Additional Array
None of the above

Continuing sort has time complexity of ?
O(n)
O(n+k)
O(nlogn)
O(k)

We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Made by

Muhammad Usama and DUA sister

In Sieve Technique we donot know which item is of interest

True
False
A (an) _________ is a left-complete binary tree that conforms to the heap order
heap
binary tree
binary search tree
array
27. The sieve technique works in ___________ as follows
phases
numbers
integers
routines

For the sieve technique we solve the problem,
recursively
mathematically
precisely
accurately
29. For the heap sort, access to nodes involves simple _______________ operations.
arithmetic
binary
algebraic
logarithmic

The analysis of Selection algorithm shows the total running time is indeed ________in n,\
arithmetic
geometric
linear
orthogonal

For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:
arithmetic
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Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

Question # 9 of 10 (Start time: 07:45:36 AM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

For the heap sort we store the tree nodes in
Select correct option:
level-order traversal
in-order traversal
pre-order traversal
post-order traversal

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option:
upper
lower
average
log n

single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

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A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
For the Sieve Technique we take time
Select correct option:
T(nk)
T(n / 3)
n^2
n/3

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
linear
arithmetic
geometric
exponent

Made by

Muhammad Usama and DUA sister

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

Quiz Start Time: 07:23 PM
Time Left 90
sec(s)
Question # 1 of 10 (Start time: 07:24:03 PM) Total M a r k s: 1
In in-place sorting algorithm is one that uses arrays for storage :
Select correct option:
An additional array
No additional array
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

Time Left 89
sec(s)
Question # 2 of 10 (Start time: 07:25:20 PM) Total M a r k s: 1
Which sorting algorithn is faster :
Select correct option:
O(n^2)
O(nlogn)
O(n+k)
O(n^3)
In stable sorting algorithm:
Select correct option:
One array is used
In which duplicating elements are not handled.
More then one arrays are required.
Duplicating elements remain in same relative posistion after sorting.

Counting sort has time complexity:
Select correct option:
O(n)
O(n+k)
O(k)
O(nlogn)

Made by

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Counting sort is suitable to sort the elements in range 1 to k:
Select correct option:
K is large
K is small
K may be large or small
None

Memorization is :
Select correct option:
To store previous results for further use.
To avoid unnecessary repetitions by writing down the results of recursive calls and looking them again if needed later
To make the process accurate.
None of the above

The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Which may be stable sort:
Select correct option:
Bubble sort
Insertion sort
Both of above

In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:
Large
Medium
Not known
small

Quick sort is
Select correct option:
Stable and In place
Not stable but in place

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Stable and not in place
Some time in place and send some time stable

For the Sieve Technique we take time
T(nk)
T(n / 3)
n^2
n/3

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
Many
1
Few

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Quick sort is
Select correct option:
Stable and In place
Not stable but in place
Stable and not in place
Some time in place and send some time stable

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Select correct option:
To store previous results for further use.
To avoid unnecessary repetitions by writing down the results of recursive calls and looking them again if needed later
To make the process accurate.
None of the above

Made by

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One Example of in place but not stable sort is
Quick
Heap
Merge
Bubble

The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Question # 9 of 10 (Start time: 07:39:07 PM) Total M a r k s: 1
In Quick sort algorithm,constants hidden in T(n lg n) are
Select correct option:
Large
Medium
Not known
Small

CS502 - Fundamentals of Algorithms
Quiz No.2 DEC 03, 2012

Which may be stable sort:
Select correct option:
Bubble sort
Insertion sort
Both of above
Selection sort

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic
geometric
exponent

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In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:

Large
Medium
Not known
small

How much time merge sort takes for an array of numbers?
Select correct option:

T(n^2)
T(n)
T(log n)
T(n log n)

Counting sort has time complexity:
Select correct option:

O(n)
O(n+k)
O(k)
O(nlogn)

In which order we can sort?
Select correct option:

increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

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The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
Select correct option:

There is explicit combine process as well to conquer the solution.
No work is needed to combine the sub-arrays, the array is already sorted
Merging the sub arrays
None of above.

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option:

upper
lower
average
log n

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
T(n)
T(n / 2)
log n
n / 2 + n / 4

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
There is explicit combine process as w ell to conquer
No w ork is needed to combine the sub-arrays, the a
Merging the subarrays
None of above

The number of nodes in a complete binary tree of height h is

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2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Which sorting algorithn is faster :
O(n^2)
O(nlogn)
O(n+k)
O(n^3)

We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Slow sorting algorithms run in,
T(n^2)
T(n)
T(log n)
T(n log n)

One of the clever aspects of heaps is that they can be stored in arrays without using any ________________.
Pointers
Constants
Variables
Functions

Counting sort is suitable to sort the elements in range 1 to k:
K is large
K is small
K may be large or small
None

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We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:

left-complete
right-complete
tree nodes
tree leaves

Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:

True
False

Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ___________
Select correct option:

increasing order only
decreasing order only
heap order
(log n) order

Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1

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Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

True
False

Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1
The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:

16
10
32
31

Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:

linear
arithmetic
geometric
exponent

Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1
For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic

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For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
Slow sorting algorithms run in,
Select correct option:
T(n^2)
T(n)
T(log n)
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic
geometric
exponent

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many

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Muhammad Usama and DUA sister

1

few

In which order we can sort?
Select correct option:
increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:
16
10
32
31

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

The analysis of Selection algorithm shows the total running time is indeed ________in n,

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Select correct option:

arithmetic
geometric
linear
orthogonal

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:

n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Sieve Technique can be applied to selection problem?
Select correct option:

True
false

For the heap sort we store the tree nodes in
Select correct option:

level-order traversal
in-order traversal
pre-order traversal
post-order traversal

One of the clever aspects of heaps is that they can be stored in arrays without using any ________________.
Select correct option:
pointers
constants
variables
functions

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A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Divide-and-conquer as breaking the problem into a small number of
Select correct option:
pivot
Sieve
smaller sub problems
Selection

Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves

For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately

A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
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How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Question # 1 of 10 (Start time: 08:17:23 AM) Total M a r k s: 1
The number of nodes in a complete binary tree of height h is
Select correct option:
2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1
Question # 2 of 10 (Start time: 08:18:46 AM) Total M a r k s: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Question # 3 of 10 (Start time: 08:19:38 AM) Total M a r k s: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

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True
False

Question # 4 of 10 (Start time: 08:20:33 AM) Total M a r k s: 1
Heaps can be stored in arrays without using any pointers; this is due to the
____________ nature of the binary tree,
Select correct option:
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right-complete
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Question # 5 of 10 (Start time: 08:21:59 AM) Total M a r k s: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

Question # 6 of 10 (Start time: 08:23:01 AM) Total M a r k s: 1
For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
Theta asymptotic notation for T (n) :
Select correct option:
Set of functions described by: c1g(n)Set of functions described by c1g(n)>=f(n) for c1 s
Theta for T(n)is actually upper and worst case comp
Set of functions described by:
c1g(n)

Question # 8 of 10 (Start time: 08:24:39 AM) Total M a r k s: 1
The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few
Question # 9 of 10 (Start time: 08:25:54 AM) Total M a r k s: 1
Sieve Technique applies to problems where we are interested in finding a single item from a

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larger set of _____________

Select correct option:

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phases

pointers

constant

Question # 10 of 10 (Start time: 08:26:44 AM) Total M a r k s: 1

The sieve technique works in ___________ as follows

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integers

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Memorization is?

To store previous results for future use

To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later

To make the process accurate

None of the above

Question # 2 of 10 Total M a r k s: 1

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Medium

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Not Known

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linear

orthogonal

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pointers
constant

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increasing order only

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(log n) order

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Analysis of Selection algorithm ends up with,
Select correct option:
T(n)

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Quiz Start Time: 07:23 PM
Time Left 90
sec(s)
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Time Left 89
sec(s)
Question # 2 of 10 (Start time: 07:25:20 PM) Total M a r k s: 1
Which sorting algorithn is faster :
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O(nlogn)
O(n+k)
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Arrangement of elements in array
Size o elements
Pivot elements

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Large
Medium
Not known
small

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Select correct option:
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Not stable but in place
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T(nk)

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n^2
n/3

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5
Many
1
Few

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The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Question # 9 of 10 (Start time: 07:39:07 PM) Total M a r k s: 1
In Quick sort algorithm,constants hidden in T(n lg n) are
Select correct option:
Large
Medium
Not known
Small

CS502 - Fundamentals of Algorithms
Quiz No.3 Dated 28-01-2013

In in-place sorting algorithm is one that uses arrays for storage :
An additional array
No additional array (Right Answer)
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

The running time of quick sort depends heavily on the selection of

No of inputs
Arrangement of elements in array
Size o elements
Pivot element (Right Answer)

In stable sorting algorithm
One array is used
In which duplicating elements are not handled.
More then one arrays are required.
Duplicating elements remain in same relative position after sorting. (Right Answer)

Which sorting algorithn is faster :
O(n^2)
O(nlogn)
O(n+k) (Right Answer)
O(n^3)

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In Quick sort algorithm,constants hidden in T(n lg n) are

Large
Medium
Not known
Small (Right Answer)

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:

There is explicit combine process as well to conquer the solutin. (Right Answer)
No work is needed to combine the sub-arrays, the array is already sorted
Merging the subarrays
None of above.

There is relationship between number of back edges and number of cycles in DFS
Select correct option:
Both are equal.
Cycles are half of back edges.
Cycles are one fourth of back edges.
There is no relationship between back edges and number of cycle (Right Answer)

You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T ?
Select correct option:
(V+E) (Right Answer)
V.E
V
E

Question # 3 of 10 (Start time: 06:54:27 PM) Total Marks: 1
You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T.?
?(V + E) Right Answer)
?(V E)
?(V)
?(V^2)

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?

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Select correct option:
log (V) (Right Answer)
V.V
E.E
log (E)

Dijkstra's algorithm :
Select correct option:
Has greedy approach to find all shortest paths
Has both greedy and Dynamic approach to find all shortest paths
Has greedy approach to compute single source shortest paths to all other vertices (Right Answer)
Has both greedy and dynamic approach to compute single source shortest paths to all other vertices.

What algorithm technique is used in the implementation of Kruskal solution for the MST?
Greedy Technique (Right Answer)
Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:
(log E)
? (V)
? (V+E)
(log V) (Right Answer)

Which is true statement in the following.
Kruskal algorithm is multiple source technique for finding MST.
Kruskal's algorithm is used to find minimum spanning tree of a graph, time complexity of this algorithm is O(EV)
Both of above
Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best Tree edge) when the graph has relatively few edges) (Right Answer)

The relationship between number of back edges and number of cycles in DFS is,
Both are equal
Back edges are half of cycles
Back edges are one quarter of cycles

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There is no relationship between no. of edges and cycles (Right Answer)

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.

True (Right Answer)

False

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?

Select correct option:

log (V)

V.V

E.E

log (E)

Suppose that a graph G = (V,E) is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G?

Select correct option:

O(|V |^2)

O(|V | |E|) (Right Answer)

O(|V |^2|E|)

O(|V | + |E|)

What is generally true of Adjacency List and Adjacency Matrix representations of graphs?

Select correct option:

Lists require less space than matrices but take longer to find the weight of an edge (v1,v2)

Lists require less space than matrices and they are faster to find the weight of an edge (v1, v2) Right Answer)

Lists require more space than matrices and they take longer to find the weight of an edge (v1, v2)

Lists require more space than matrices but are faster to find the weight of an edge (v1, v2)

What general property of the list indicates that the graph has an isolated vertex?

Select correct option:

There is Null pointer at the end of list.

The Isolated vertex is not handled in list. (not Sure)

Only one value is entered in the list.

There is at least one null list.

A dense undirected graph is:

Select correct option:

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A graph in which E = O(V^2) (Right Answer)
A graph in which E = O(V)
A graph in which E = O(log V)
All items above may be used to characterize a dense undirected graph

In digraph G=(V,E) ;G has cycle if and only if

Select correct option:
The DFS forest has forward edge.
The DFS forest has back edge (Right Answer)
The DFS forest has both back and forward edge
BFS forest has forward edge

Back edge is:
Select correct option:
(u, v) where v is an ancestor of u in the tree. (Right Answer)
(u,v) where u is an ancesstor of v in the tree.
(u, v) where v is an predcessor of u in the tree.
None of above

Using ASCII standard the string “abacdaacacwe” will be encoded with __________ bits
Select correct option:
64
128 (Right Answer)
96
120

Cross edge is :
Select correct option:
(u, v) where u and v are not ancestor of one another
(u, v) where u is ancesstor of v and v is not descendent of u.
(u, v) where u and v are not ancestor or descendent of one another (Right Answer)
(u, v) where u and v are either ancestor or descendent of one another.

Which statement is true?
Select correct option:
If a dynamic-programming problem satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
If a greedy choice property satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
Both of above Right Answer)
None of above

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10 If you find yourself in maze the better traversel approach will bE

A dense undirected graph is:
Select correct option:
A graph in which E = O(V^2) (Right Answer)
A graph in which E = O(V)
A graph in which E = O(log V)
All items above may be used to characterize a dense undirected graph

Which is true statement.
Select correct option:
Breadth first search is shortest path algorithm that works on un-weighted graphs (Right Answer)
Depth first search is shortest path algorithm that works on un-weighted graphs.
Both of above are true.
None of above are true.

Forward edge is:
Select correct option:
(u, v) where u is a proper descendent of v in the tree.
(u, v) where v is a proper descendent of u in the tree. (Right Answer)
(u, v) where v is a proper ancesstor of u in the tree.
(u, v) where u is a proper ancesstor of v in the tree.

Back edge is:
Select correct option:
(u, v) where v is an ancestor of u in the tree. (Right Answer)
(u,v) where u is an ancesstor of v in the tree.
(u, v) where v is an predcessor of u in the tree.
None of above

Suppose that a graph G = (V,E) is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G?
Select correct option:
O(|V |^2)
O(|V | |E|) (Right Answer)
O(|V |^2|E|)
O(|V | + |E|)

In digraph G=(V,E) ;G has cycle if and only if
Select correct option:
The DFS forest has forward edge.
The DFS forest has back edge (Right Answer)

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The DFS forest has both back and forward edge
BFS forest has forward edge

What general property of the list indicates that the graph has an isolated vertex?
Select correct option:
There is Null pointer at the end of list.
The Isolated vertex is not handled in list. (not Sure)
Only one value is entered in the list.
There is at least one null list.

If you find yourself in maze the better traversel approach will be :
BFS
BFS and DFS both are valid (Right Answer)
Level order
DFS

Cross edge is :
(u, v) where u and v are not ancestor of one another
(u, v) where u is ancesstor of v and v is not descendent of u.
(u, v) where u and v are not ancestor or descendent of one another (Right Answer)
(u, v) where u and v are either ancestor or descendent of one another.

What algorithm technique is used in the implementation of Kruskal solution for the MST?
Greedy Technique (Right Answer)
Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few
True (Right Answer)
False

You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T.?
?(V + E) Right Answer)
? (V E)
? (V)
? (V^2)

A digraph is strongly connected under what condition?
A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v .
A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v and vice versa. (Right Answer)

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A digraph is strongly connected if for at least one pair of vertex u, v e V, u can reach v and vice versa.
A digraph is strongly connected if at least one third pair of vertices u, v e V, u can reach v and vice versa.

The relationship between number of back edges and number of cycles in DFS is,
Both are equal
Back edges are half of cycles
Back edges are one quarter of cycles
There is no relationship between no. of edges and cycles (Right Answer)

What algorithm technique is used in the implementation of Kruskal solution for the MST?
Greedy Technique (Right Answer)
Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

CS502 - Fundamentals of Algorithms
Quiz No.4 Dated FEB 05, 2013

In in-place sorting algorithm is one that uses arrays for storage :
An additional array
No additional array (Right Answer)
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

The running time of quick sort depends heavily on the selection of:
No of inputs
Arrangement of elements in array
Size o elements
Pivot element (Right Answer)

In stable sorting algorithm
One array is used
In which duplicating elements are not handled.
More then one arrays are required.
Duplicating elements remain in same relative position after sorting. (Right Answer)

Which sorting algorithm is faster :
O(n^2)

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O(nlogn)
O(n+k) (Right Answer)
O(n^3)

In Quick sort algorithm, constants hidden in T(n lg n) are
Large
Medium
Not known
Small (Right Answer)

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
There is explicit combine process as well to conquer the solutin. (Right Answer)
No work is needed to combine the sub-arrays, the array is already sorted
Merging the subarrays
None of above.

There is relationship between number of back edges and number of cycles in DFS
Select correct option:
Both are equal.
Cycles are half of back edges.
Cycles are one fourth of back edges.
There is no relationship between back edges and number of cycle (Right Answer)

You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T
Select correct option:
(V+E) (Right Answer)
V.E
V
E

Dijkstra's algorithm :
Select correct option:
Has greedy approach to find all shortest paths
Has both greedy and Dynamic approach to find all shortest paths
Has greedy approach to compute single source shortest paths to all other vertices (page 154)
Has both greedy and dynamic approach to compute single source shortest paths to all other vertices.

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What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:
O (log E)
? (V)
? (V+E)
O (log V) (page #152)

Which is true statement in the following.
Kruskal algorithm is multiple source technique for finding MST.
Kruskal's algorithm is used to find minimum spanning tree of a graph, time complexity of this algorithm is O(EV)
Both of above
=>Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.
True (Right Answer)
False

What general property of the list indicates that the graph has an isolated vertex?
Select correct option:
There is Null pointer at the end of list.
The Isolated vertex is not handled in list. (not Sure)
Only one value is entered in the list.
There is at least one null list.

Which statement is true?
Select correct option:
If a dynamic-programming problem satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
If a greedy choice property satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
Both of above Right Answer)
None of above

A dense undirected graph is:
Select correct option:
A graph in which E = O(V^2) (Right Answer)
A graph in which E = O(V)

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A graph in which E = O(log V)
All items above may be used to characterize a dense undirected graph

Which is true statement.
Select correct option:
Breadth first search is shortest path algorithm that works on un-weighted graphs (Right Answer)
Depth first search is shortest path algorithm that works on un-weighted graphs.
Both of above are true.
None of above are true.

What algorithm technique is used in the implementation of Kruskal solution for the MST?
Greedy Technique (page #142)
Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

A digraph is strongly connected under what condition?
A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v .
A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v and vice versa. (Page #135)
A digraph is strongly connected if for at least one pair of vertex u, v e V, u can reach v and vice versa.
A digraph is strongly connected if at least one third pair of vertices u, v e V, u can reach v and vice versa.

The relationship between number of back edges and number of cycles in DFS is,
Both are equal
Back edges are half of cycles
Back edges are one quarter of cycles
There is no relationship between no. of edges and cycles (p131)

Question # 2 of 10 (Start time: 10:35:36 PM) Total Marks: 1
Suppose that a graph G = (V,E) is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G?
Select correct option:

O(|V |^2)

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O(|V | |E|)
O(|V |^2|E|)
O(|V | + |E|) pg 116

Question # 4 of 10 (Start time: 10:37:30 PM) Total Marks: 1
Forward edge is:
Select correct option:
(u, v) where u is a proper descendent of v in the tree.
(u, v) where v is a proper descendent of u in the tree. Pg 129
(u, v) where v is a proper ancesstor of u in the tree.
(u, v) where u is a proper ancesstor of v in the tree.

Question # 5 of 10 (Start time: 10:37:58 PM) Total Marks: 1
Using ASCII standard the string "abacdaacacwe" will be encoded with __________ bits
Select correct option:
64
128
96 pg 101 12*8=96
120

Question # 7 of 10 (Start time: 10:38:40 PM) Total Marks: 1
If you find yourself in maze the better traversel approach will be :
Select correct option:
BFS
BFS and DFS both are valid (pg 119)
Level order
DFS

Question # 8
In digraph G=(V,E) ;G has cycle if and only if
Select correct option:
The DFS forest has forward edge.
The DFS forest has back edge (pg 131)
The DFS forest has both back and forward edge
BFS forest has forward edge

Question # 9

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What is generally true of Adjacency List and Adjacency Matrix representations of graphs?
Select correct option:
Lists require less space than matrices but take longer to find the weight of an edge (v1,v2)
Lists require less space than matrices and they are faster to find the weight of an edge (v1, v2) (pg 116)
Lists require more space than matrices and they take longer to find the weight of an edge (v1, v2)
Lists require more space than matrices but are faster to find the weight of an edge (v1, v2)

Question # 10
Back edge is:
Select correct option:
(u, v) where v is an ancestor of u in the tree. (Pg 128)
(u,v) where u is an ancesstor of v in the tree.
(u, v) where v is an predcessor of u in the tree.
None of above

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My 3rd Quiz

http://cs-mcqs.blogspot.com/2012/06/data-structures-algorithms-multiple.html

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FINALTERM EXAMINATION

Question No: 2
Although it requires more complicated data structures, Prim's algorithm for a minimum spanning tree is better than Kruskal's when the graph has a large number of vertices.
► **True** ► False

Question No: 3
If a problem is in NP, it must also be in P.
► **True** ► False ► unknown

Question No: 5
If a graph has v vertices and e edges then to obtain a spanning tree we have to delete
► v edges. ► v – e + 5 edges ► v + e edges. ► **None of these**

Question No: 6
Maximum number of vertices in a Directed Graph may be $|V^2|$

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► **True** ► False

Question No: 7

The Huffman algorithm finds a (n) _____________ solution.

► **Optimal** ► Non-optimal ► Exponential ► Polynomial

Question No: 8

The Huffman algorithm finds an exponential solution ► True ► **False**

Question No: 9

The Huffman algorithm finds a polynomial solution ► True ► **False**

Question No: 10

The greedy part of the Huffman encoding algorithm is to first find two nodes with **larger** frequency. ► True ► **False**

Question No: 11

The codeword assigned to characters by the Huffman algorithm have the property that no codeword is the postfix of any other. ► True ► **False**

Question No: 12

Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string. ► True ► **False**

Question No: 13

Shortest path problems can be solved efficiently by modeling the road map as a graph.

► **True** ► False

Question No: 14

Dijkestra's single source shortest path algorithm works if all edges weights are non-negative and there are negative cost cycles. ► True ► **False**

Question No: 15

Bellman-Ford allows negative weights edges and negative cost cycles ► True ► **False**

Question No: 16

The term "coloring" came form the original application which was in architectural design.

► **True** ► False

Question No: 17

In the clique cover problem, for two vertices to be in the same group, they must be adjacent to each other. ► **True** ► False

Question No: 18

Dijkstra's algorithm is operates by maintaining a subset of vertices ► **True** ► False

Question No: 19

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The difference between Prim's algorithm and Dijkstra's algorithm is that Dijkstra's algorithm uses a different key. ► **True** ► False

Question No: 21

We do sorting to,

► keep elements in random positions ► keep the algorithm run in linear order

► keep the algorithm run in (log n) order

► **keep elements in increasing or decreasing order**

Question No: 22

After partitioning array in Quick sort, pivot is placed in a position such that

► **Values smaller than pivot are on left and larger than pivot are on right**

► Values larger than pivot are on left and smaller than pivot are on right

► **Pivot is the first element of array** Pivot is the last element of array

Question No: 23

Merge sort is stable sort, but not an in-place algorithm **► True (p#54)** ► False

Question No: 24

In counting sort, once we know the ranks, we simply _________ numbers to their final positions in an output array.

► Delete **► copy (p#57)** ► Mark ► arrange

Question No: 25

Dynamic programming algorithms need to store the results of intermediate sub-problems. **► True p#75)** ► False

Question No: 26

A p × q matrix A can be multiplied with a q × r matrix B. The result will be a p × r matrix C. There are (p **.** r) total entries in C and each takes _________ to compute.

► O (q) (p= 84) ► O (1) ► O (n^2) ► O (n^3)

FINALTERM EXAMINATION

Question No: 2

Which of the following is calculated with **bigo notation**?

Lower bounds Upper bounds

Both upper and lower bound Medium bounds

Question No: 3

Merge sort makes two recursive calls. Which statement is true after these recursive calls finish, but before the merge step?

The array elements form a heap

Elements in each half of the array are sorted amongst themselves

Elements in the first half of the array are less than or equal to elements in the second half of the array

None of the above

Question No: 4
Who invented Quick sort procedure?
Hoare Sedgewick Mellroy Coreman

Question No: 6
Consider the following Huffman Tree
The binary code for the string **TEA** is
10 00 010
011 00 010
10 00 110
11 10 110

Question No: 7
If a graph has v vertices and e edges then to obtain a spanning tree we have to delete v edges.
v e + 5 edges v + e edges. None of these

Question No: 8
Can an adjacency matrix for a directed graph ever not be square in shape?
Yes No

Question No: 9
One of the clever aspects of heaps is that they can be stored in arrays without using any ______**Pointers (p #40)** constants variables functions

Question No: 10
Merge sort requires extra array storage, **True p #54)** False
Mergesort is a stable algorithm but not an in-place algorithm. It requires extra array storage.

Question No: 11
Non-optimal or greedy algorithm for money change takes_____________
O(k) (p#99) O(kN) O(2k) O(N)

Question No: 12
The Huffman codes provide a method of encoding data **inefficiently** when coded using ASCII standard. True **Falase (p# 99**
*The Huffman codes provide a method of encoding data **efficiently**.*

Question No: 13
Using ASCII standard the string abacdaacac will be encoded with __________ bits.
80 (p# 99 160 320 100
*Consider the string " abacdaacac". if the string is coded with ASCII codes, the message length would **be10 × 8 = 80 bits.***

Question No: 14

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Using ASCII standard the string abacdaacac will be encoded with 160 bits.
True **False (p# 99)**

Question No: 15
Using ASCII standard the string abacdaacac will be encoded with 320 bits.
True **False (p# 99)**

Question No: 16
Using ASCII standard the string abacdaacac will be encoded with 100 bits.
True **False (p# 99)**

Question No: 17
Using ASCII standard the string abacdaacac will be encoded with 32 bytes
True **False (p# 99)**

Question No: 18
The greedy part of the Huffman encoding algorithm is to first find two nodes with **smallest** frequency.
True (p# 100) False

Question No: 19
The greedy part of the Huffman encoding algorithm is to first find two nodes with **character** frequency
True **False (p# 100)**

Question No: 20
Huffman algorithm uses a greedy approach to generate an antefix code T that minimizes the expected length B (T) of the encoded string.
True (p# 102) False

Question No: 21
Depth first search is shortest path algorithm that works on un-weighted graphs.
True **False (p# 153)**
*The **breadth-first**-search algorithm we discussed earlier is a shortest-path algorithm that works on un-weighted graphs*

Question No: 22
Dijkestra s single source shortest path algorithm works if all edges weights are nonnegative and there are no negative cost cycles.
True (p# 159) False

Question No: 23
Dijkestra s single source shortest path algorithm works if all edges weights are negative and there are no negative cost cycles.
True (p# 159) False

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Question No: 24
Floyd-Warshall algorithm is a dynamic programming algorithm; the genius of the algorithm is in the clever recursive formulation of the shortest path problem.
True (p# 162) Flase

Question No: 25
Floyd-Warshall algorithm, as in the case with DP algorithms, we avoid recursive evaluation by generating a table for
k
ij d
True
Flase
the case with DP algorithms, we will avoid recursive evaluation by generating a table **for d(k)ij**

Question No: 26
The term coloring came from the original application which was in map drawing.
True (p# 173) False

Question No: 27
In the clique cover problem, for two vertices to be in the same group, they must be_________each other.
Apart from Far from Near to **Adjacent to (P# 176)**

Question No: 28
In the clique cover problem, for two vertices to be in the same group, they must be apart from each other.
True **False (P# 176)**

Question No: 29
The difference between Prims algorithm and Dijkstra s algorithm is that Dijkstra s algorithm uses a different key.
True (P # 156) not sure False

Question No: 30
The difference between Prim s algorithm and Dijkstra s algorithm is that Dijkstra s algorithm uses a same key.
True **False (P # 156) not sure**

Quiz no# 4 06-07-2012 solved by umair sid 100%

What algorithm technique is used in the implementation of kruskal solution for the MST?
Greedy Technique **page #142**

in drsigne G=(V,E) ;G has cycle if and only if

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The DFS forest has back edge **page # 131**

Question # 9 of 10
Cross edge is :
(u, v) where u and v are not ancestor of one another
(u, v) where u is ancesstor of v and v is not descendent of u.
(u, v) where u and v are not ancestor or descendent of one another pg 129
(u, v) where u and v are either ancestor or descendent of one another.

Forword edge is :
(u,v) where v ia a proper decendent of u in the tree. **Page # 129**

You have an adjective list for G, what is the time complexity to computer graph transpose G^T.?
(V + E) **PAGE # 138**
Given an adjacency list for G, it is possible to compute G^T in $\Theta(V + E)$ time.

It takes O(log V) to extract a vertex from the priority queue.
There is relationship between number of back edges and number of cycles in DFS
There is no relationship between back edges and number of cycles

Which is true statement:
Breadth first search is shortest path algorithm that works on un-weighted graphs
Depth first search is shortest path algorithm that works on un-weighted graphs.
Both of above are true.

Overall time for Kruskal is
$\Theta(E \log E) = \Theta(E \log V)$ if the graph is sparse. **P-149**
True

Question No: 1
An optimization problem is one in which you want to find,
- ► Not a solution
- ► An algorithm
- ► Good solution
- **► The best solution**

Question No: 2
Although it requires more complicated data structures, Prim's algorithm for a minimum spanning tree is better than Kruskal's when the graph has a large number of vertices.
- **► True**
- ► False

Question No: 3
If a problem is in NP, it must also be in P.

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- ► **True**
- ► False
- ► unknown

Question No: 5

If a graph has v vertices and e edges then to obtain a spanning tree we have to delete

- ► v edges.
- ► v – e + 5 edges
- ► v + e edges.
- ► **None of these**

Question No: 6

Maximum number of vertices in a Directed Graph may be |V2|

- ► **True**
- ► False

Question No: 7

The Huffman algorithm finds a (n) _____________ solution.

- ► **Optimal**
- ► Non-optimal
- ► Exponential
- ► Polynomial

Question No: 8

The Huffman algorithm finds an exponential solution ► True ► **False**

Question No: 9

The Huffman algorithm finds a polynomial solution ► **True** ► False

Question No: 10

The greedy part of the Huffman encoding algorithm is to first find two nodes with larger frequency. ► True ► **False**

Question No: 11

The codeword assigned to characters by the Huffman algorithm have the property that no codeword is the postfix of any other. ► **True** ► False

Question No: 12

Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string. ► True ► **False**

Question No: 13

Shortest path problems can be solved efficiently by modeling the road map as a graph.

► **True** ► False

Question No: 14

Dijkestra's single source shortest path algorithm works if all edges weights are non-negative and there are negative cost cycles. ► **True** ► False

Question No: 15

Bellman-Ford allows negative weights edges and negative cost cycles.

► True ► **False**

Question No: 16

The term "coloring" came form the original application which was in architectural design. ► True ► **False**

Question No: 17

In the clique cover problem, for two vertices to be in the same group, they must be adjacent to each other. ► **True** ► False

Question No: 18

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Dijkstra's algorithm is operates by maintaining a subset of vertices ► **True** ► False

Question No: 19

The difference between Prim's algorithm and Dijkstra's algorithm is that Dijkstra's algorithm uses a different key. ► **True** ► False

Question No: 21

We do sorting to,

► keep elements in random positions

► keep the algorithm run in linear order

► keep the algorithm run in (log n) order

► **keep elements in increasing or decreasing order**

►Question No: 22

After partitioning array in Quick sort, pivot is placed in a position such that

► **Values smaller than pivot are on left and larger than pivot are on right**

► Values larger than pivot are on left and smaller than pivot are on right

► Pivot is the first element of array

► Pivot is the last element of array

Question No: 23

Merge sort is stable sort, but not an in-place algorithm ► **True** ► False

Question No: 24

In counting sort, once we know the ranks, we simply _________ numbers to their final positions in an output array.

► Delete ► **copy** ► Mark ► arrange

Question No: 25

Dynamic programming algorithms need to store the results of intermediate sub-problems. ► **True** ► False

Using ASCII standard the string abacdaacac will be encoded with __________ bits.

80 160 320 100

Using ASCII standard the string abacdaacac will be encoded with 160 bits.

True **False**

Using ASCII standard the string abacdaacac will be encoded with 320 bits.

True **False**

Using ASCII standard the string abacdaacac will be encoded with 100 bits.

True **False**

The Huffman algorithm finds a (n) _____________ solution.

► **Optimal** ► Non-optimal ► Exponential ► Polynomial

Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string.

► True

► **False**

2: Which statement is true?

• If a dynamic-programming problem satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.

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- **If a greedy choice property satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.**
- both of above
- none of above

5: What general property of the list indicates that the graph has an isolated vertex?

- There is Null pointer at the end of list.
- **The Isolated vertex is not handled in list.**
- Only one value is entered in the list.
- There is at least one null list.

6: Which is true statement.

- Breadth first search is shortest path algorithm that works on un-weighted graphs.
- Depth first search is shortest path algorithm that works on un-weighted graphs.
- **Both of above are true.**
- None of above are true.

11: Using ASCII standard the string "abacdaacacwe" will be encoded with __________ bits

- 64
- 128
- **96**
- 120

13: the analysis of selection algorithm shows the total running time is indeed------------in n.

- arithmetic
- geometric
- **linear**
- orthogonal

14: back edge is

(1) In Prim's algorithm, the additional information maintained by the algorithm is the length of the shortest edge from vertex v to points already in the tree.

A) TRUE

B) FALSE

C) UNKNOWN

(2) Although it requires more complicated data structures, Prim's algorithm for a minimum spanning tree is better than Kruskal's when the graph has a large number of vertices.

A) TRUE. B) FALSE C: UNKNOWN

(3) If a problem is NP-complete, it must also be in NP.

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A) TRUE. B) FALSE C) UNKNOWN

(4) Which statement is true

(I) The running time of Bellman-Ford algorithm is T (VE)

(II) Both Dijkstra's algorithm and Bellman-Ford are based on performing repeated relaxations

(III) The 0-1 knapsack problem is hard to solve

• Only I • Only III • Both I and III **• All of these**

5) Which of the following arrays represent descending (max) heaps?

I. [10,7,7,2,4,6] II. [10,7,6,2,4,7]

III. [10,6,7,2,4,6] IV. [6,6,7,2,4,10]

• Only II • Only IV • Both II and IV • Both I and III

6. Which of the following statement(s) is/are correct?

(a) O(n log n + n2) = O(n2). (b) O(n log n + n2) = O(n2 log 2n)

(c) O(c n2) = O(n2) where c is a constant. (d) O(c n2) = O(c) where c is a constant.

(e) O(c) = O(1) where c is a constant.

- **Only (a) & (e)**
- Both (c) and (e)

7. Which of the shortest path algorithms would be most appropriate for finding paths in the graph with negative edge weights and cycles?

I.Dijkstra's Algorithm

II. Bellman-Ford Algorithm

III. Floyd Warshall Algorithm

- Only II
- Only III
- **Both II & III**

9. Suppose we have two problems A and B .Problem A is polynomial-time reducible and problem B is NP-complete. If we reduce problem A into B then problem A becomes NP-complete **• Yes** • No

11. The recurrence relation of Tower of Hanoi is given below

? 1 if n =1

T n =?

-133( )

2 (T n- +1) 1if n>1

In order to move a tower of 6 rings from one peg to another, how many moves are required?

- 15
- 7
- 63
- **32**

12. Edge (u, v) is a forward edge if

- u is a proper descendant of v in the tree
- **v is a proper descendant of u in the tree**
- None of these

13. Is 22n= O?

2n -26? ?

14. If, in a DFS forest of digraph G = (V, E), f[u] = f[v] for an edge (u, v) ? E then the edge is called

- **Back edge**
- Forward edge
- Cross Edge
- Tree Edge
- None of these

16. Best and worst case times of an algorithm may be same.

• True • False

17. Can an adjacency matrix for a directed graph ever not be square in shape?

• Yes • No

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1. In which order we can sort?
• increasing order only • decreasing order only
• **increasing order or decreasing order** • both at the same time

2. heap is a left-complete binary tree that conforms to the ___________
• increasing order only • decreasing order only • **heap order** • (log n) order

3. In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
• T(n) • **T(n / 2)** • log n • n / 2 + n / 4

4. How much time merge sort takes for an array of numbers?
• T(n^2) • T(n) • T(log n) • **T(n log n)**

5. One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
• **pointers** • constants • variables • functions

6. the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis
• linear • arithmetic • **geometric** • exponent

7:. Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
• n items • phases • pointers • constant

8. The sieve technique works in ___________ as follows
• **phases** • numbers • integers • routines

9. For the heap sort, access to nodes involves simple _______________ operations.
• **arithmetic** • binary • algebraic • logarithmic

10. The analysis of Selection algorithm shows the total running time is indeed ________in n,
• arithmetic • geometric • **linear** • orthogonal

11. Divide-and-conquer as breaking the problem into a small number of
• pivot • Sieve • **smaller sub problems** • Selection

12. Slow sorting algorithms run in,
• **T(n^2)** • T(n) • T(log n) • T(n log n)

13. A heap is a left-complete binary tree that conforms to the
• increasing order only • decreasing order only • **heap order** • (log n) order

14. For the heap sort we store the tree nodes in
• **level-order traversal** • in-order traversal • pre-order traversal • post-order traversal

15. The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
• **divide-and-conquer,** • decrease and conquer • greedy nature • 2-dimension Maxima

16. We do sorting to, Select correct option:
• keep elements in random positions • keep the algorithm run in linear order
• keep the algorithm run in (log n) order • **keep elements in increasing or decreasing order**

17. Sorting is one of the few problems where provable ________ bonds exits on how fa we can sort, Select correct option:
• upper • **lower** • average • log n

For the heap sort we store the tree nodes in Select correct option:
• **level-order traversal** • in-order traversal • pre-order traversal • post-order traversal

20: In Sieve Technique we do not know which item is of interest Select correct option:
• **True** • False

21: Slow sorting algorithms run in,
• T(n^2) • T(n) • T(log n) • **T(n log n)**

22: Divide-and-conquer as breaking the problem into a small number of

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• pivot • Sieve **• smaller sub problems** • Selection

23: For the sieve technique we solve the problem,

• recursively • mathematically • precisely • accurately

24: we do sorting to,

• keep elements in random positions • keep the algorithm run in linear order

• keep the algorithm run in (log n) order **• keep elements in increasing or decreasing order**

25: The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

• divide-and-conquer • decrease and conquer • greedy nature • 2-dimension Maxima

26: In Sieve Technique we do not know which item is of interest

• true • false

27: In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

• T(n) • T(n / 2) **• log n** • n / 2 + n / 4

28: Divide-and-conquer as breaking the problem into a small number of

• pivot • Sieve **• smaller sub problems** • Selection

29: A heap is a left-complete binary tree that conforms to the ___________

• increasing order only • decreasing order only **• heap order** • (log n) order

30: Slow sorting algorithms run in,

• T(n^2) • T(n) • T(log n) **• T(n log n)**

31: One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.

• pointers • constants • variables • functions

32: Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort, • upper **• lower** • average • log n

33: For the sieve technique we solve the problem,

• mathematically • precisely • accurately **• recursively**

34: Sieve Technique can be applied to selection problem?

• True • False

37: Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,

• left-complete • right-complete • tree nodes • tree leaves

38: How many elements do we eliminate in each time for the Analysis of Selection algorithm?

• n / 2 elements **• (n / 2) + n elements** • n / 4 elements • 2 n elements

39: We do sorting to,

• keep elements in random positions • keep the algorithm run in linear order

• keep the algorithm run in (log n) order **• keep elements in increasing or decreasing order**

40: In which order we can sort?

• increasing order only • decreasing order only

• increasing order or decreasing order • both at the same time

41: : In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as, • T(n) • T(n / 2) **• log n** • n / 2 + n / 4

42: The sieve technique is a special case, where the number of sub problems is just

• 5 • Many **• 1** • few

Question No: 1 no need

Random access machine or RAM is a/an

► Machine build by Al-Khwarizmi

► Mechanical machine

► Electronics machine

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- **Mathematical model**

Question No: 2

________________ is a graphical representation of an algorithm

- Σ notation
- Θnotation
- **Flowchart**
- Asymptotic notation

Question No: 3

A RAM is an idealized machine with _______________ random-access memory.

- 256MB
- 512MB
- **an infinitely large**
- 100GB

Question No: 4

What type of instructions Random Access Machine (RAM) can execute? Choose best answer

- Algebraic and logic
- Geometric and arithmetic
- **Arithmetic and logic**
- Parallel and recursive

Question No: 5 -

What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements?

- **n^2**
- 2n/n
- n
- 8n

Question No: 6

What is the solution to the recurrence T(n) = T(n/2)+n .

- O(logn)
- **O(n)**
- O(nlogn)
- O(n2)

Question No: 7

Consider the following code:

```
For(j=1; j<n;j++)
 For(k=1; k<15;k++)
  For(l=5; l<n; l++)
  {
   Do_something_constant();
  }
```

What is the order of execution for this code.

- **O(n)**
- O(n3)
- O(n2 log n)

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- ► O(n2)

Question No: 8

Consider the following Algorithm:

```
Factorial (n){
  if (n=1)
    return 1
  else
     return (n * Factorial(n-1))

{
```

Recurrence for the following algorithm is:

- ► T(n) = T(n-1) +1
- ► T(n) = nT(n-1) +1
- ► T(n)= T(n-1) +n
- ► **T(n)=T(n(n-1)) +1**

Question No: 9 -

What is the total time to heapify?

- ► **O(log n)**
- ► O(n log n)
- ► O(n2 log n)
- ► O(log2 n)

Question No: 10

When we call heapify then at each level the comparison performed takes time

- ► **It will take Θ (1)**
- ► Time will vary according to the nature of input data
- ► It can not be predicted
- ► It will take Θ (log n)

CS502 - Fundamentals of Algorithms
Quiz No.5 Dated FEB 15TH 2013

In in-place sorting algorithm is one that uses arrays for storage :

An additional array

No additional array (Right Answer)

Both of above may be true according to algorithm

More than 3 arrays of one dimension.

The running time of quick sort depends heavily on the selection of

No of inputs

Arrangement of elements in array

Size o elements

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Pivot element (Right Answer)

In stable sorting algorithm
One array is used
In which duplicating elements are not handled.
More then one arrays are required.
Duplicating elements remain in same relative position after sorting. (Right Answer)

Which sorting algorithn is faster :
O(n^2)
O(nlogn)
O(n+k) (Right Answer)
O(n^3)

In Quick sort algorithm,constants hidden in T(n lg n) are

Large
Medium
Not known
Small (Right Answer)

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:

There is explicit combine process as well to conquer the solutin. (Right Answer)
No work is needed to combine the sub-arrays, the array is already sorted
Merging the subarrays
None of above.

There is relationship between number of back edges and number of cycles in DFS
Select correct option:
Both are equal.
Cycles are half of back edges.
Cycles are one fourth of back edges.
There is no relationship between back edges and number of cycle (Right Answer)

You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T ?
Select correct option:
(V+E) (Right Answer)
V.E
V

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E

Question # 3 of 10 (Start time: 06:54:27 PM) Total Marks: 1

You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T.?

?(V + E) Right Answer)

?(V E)

?(V)

?(V^2)

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?

Select correct option:

log (V) (Right Answer)

V.V

E.E

log (E)

Dijkstra's algorithm :

Select correct option:

Has greedy approach to find all shortest paths

Has both greedy and Dynamic approach to find all shortest paths

Has greedy approach to compute single source shortest paths to all other vertices (Right Answer)

Has both greedy and dynamic approach to compute single source shortest paths to all other vertices.

What algorithm technique is used in the implementation of Kruskal solution for the MST?

Greedy Technique (Right Answer)

Divide-and-Conquer Technique

Dynamic Programming Technique

The algorithm combines more than one of the above techniques

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?

Select correct option:

O (log E)

? (V)

? (V+E)

O (log V) (Right Answer)

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Which is true statement in the following.
Kruskal algorithm is multiple source technique for finding MST.
Kruskal’s algorithm is used to find minimum spanning tree of a graph, time complexity of this algorithm is O(EV)
Both of above
Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best Tree edge) when the graph has relatively few edges) (Right Answer)

The relationship between number of back edges and number of cycles in DFS is,
Both are equal
Back edges are half of cycles
Back edges are one quarter of cycles
There is no relationship between no. of edges and cycles (Right Answer)

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.
True (Right Answer)
False

What is the time complexity to extract a vertex from the priority queue in Prim’s algorithm?
Select correct option:
log (V)
V.V
E.E
log (E)

Suppose that a graph G = (V,E) is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G?
Select correct option:
O(|V |^2)
O(|V | |E|) (Right Answer)
O(|V |^2|E|)
O(|V | + |E|)

What is generally true of Adjacency List and Adjacency Matrix representations of graphs?
Select correct option:
Lists require less space than matrices but take longer to find the weight of an edge (v1,v2)
Lists require less space than matrices and they are faster to find the weight of an edge (v1, v2) Right Answer)

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Lists require more space than matrices and they take longer to find the weight of an edge (v1, v2)

Lists require more space than matrices but are faster to find the weight of an edge (v1, v2)

What general property of the list indicates that the graph has an isolated vertex?

Select correct option:

There is Null pointer at the end of list.

The Isolated vertex is not handled in list. (not Sure)

Only one value is entered in the list.

There is at least one null list.

A dense undirected graph is:

Select correct option:

A graph in which E = O(V^2) (Right Answer)

A graph in which E = O(V)

A graph in which E = O(log V)

All items above may be used to characterize a dense undirected graph

In digraph G=(V,E) ;G has cycle if and only if

Select correct option:

The DFS forest has forward edge.

The DFS forest has back edge (Right Answer)

The DFS forest has both back and forward edge

BFS forest has forward edge

Back edge is:

Select correct option:

(u, v) where v is an ancestor of u in the tree. (Right Answer)

(u,v) where u is an ancesstor of v in the tree.

(u, v) where v is an predcessor of u in the tree.

None of above

Using ASCII standard the string “abacdaacacwe” will be encoded with __________ bits

Select correct option:

64

128 (Right Answer)

96

120

Cross edge is :

Select correct option:

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(u, v) where u and v are not ancestor of one another
(u, v) where u is ancesstor of v and v is not descendent of u.
(u, v) where u and v are not ancestor or descendent of one another (Right Answer)
(u, v) where u and v are either ancestor or descendent of one another.

Which statement is true?
Select correct option:
If a dynamic-programming problem satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
If a greedy choice property satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
Both of above Right Answer)
None of above
10 If you find yourself in maze the better traversel approach will bE

A dense undirected graph is:
Select correct option:
A graph in which E = O(V^2) (Right Answer)
A graph in which E = O(V)
A graph in which E = O(log V)
All items above may be used to characterize a dense undirected graph

Which is true statement.
Select correct option:
Breadth first search is shortest path algorithm that works on un-weighted graphs (Right Answer)
Depth first search is shortest path algorithm that works on un-weighted graphs.
Both of above are true.
None of above are true.

Forward edge is:
Select correct option:
(u, v) where u is a proper descendent of v in the tree.
(u, v) where v is a proper descendent of u in the tree. (Right Answer)
(u, v) where v is a proper ancesstor of u in the tree.
(u, v) where u is a proper ancesstor of v in the tree.

Back edge is:
Select correct option:
(u, v) where v is an ancestor of u in the tree. (Right Answer)
(u,v) where u is an ancesstor of v in the tree.
(u, v) where v is an predcessor of u in the tree.
None of above

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O(|V |^2)
O(|V | |E|) (Right Answer)
O(|V |^2|E|)
O(|V | + |E|)

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Select correct option:
The DFS forest has forward edge.
The DFS forest has back edge (Right Answer)
The DFS forest has both back and forward edge
BFS forest has forward edge

What general property of the list indicates that the graph has an isolated vertex?
Select correct option:
There is Null pointer at the end of list.
The Isolated vertex is not handled in list. (not Sure)
Only one value is entered in the list.
There is at least one null list.

If you find yourself in maze the better traversel approach will be :
BFS
BFS and DFS both are valid (Right Answer)
Level order
DFS

Cross edge is :
(u, v) where u and v are not ancestor of one another
(u, v) where u is ancesstor of v and v is not descendent of u.
(u, v) where u and v are not ancestor or descendent of one another (Right Answer)
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The algorithm combines more than one of the above techniques

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True (Right Answer)

False

You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T.?

?(V + E) Right Answer)

? (V E)

? (V)

? (V^2)

A digraph is strongly connected under what condition?

A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v .

A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v and vice versa. (Right Answer)

A digraph is strongly connected if for at least one pair of vertex u, v e V, u can reach v and vice versa.

A digraph is strongly connected if at least one third pair of vertices u, v e V, u can reach v and vice versa.

The relationship between number of back edges and number of cycles in DFS is,

Both are equal

Back edges are half of cycles

Back edges are one quarter of cycles

There is no relationship between no. of edges and cycles (Right Answer)

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No additional array (Right Answer)

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No of inputs

Arrangement of elements in array

Size o elements

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Select correct option:
(V+E) (Right Answer)
V.E
V
E

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Question # 3 of 10 (Start time: 06:54:27 PM) Total Marks: 1
You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T.?
?(V + E) Right Answer)
?(V E)
?(V)
?(V^2)

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:
log (V) (Right Answer)
V.V
E.E
log (E)

Dijkstra's algorithm :
Select correct option:
Has greedy approach to find all shortest paths
Has both greedy and Dynamic approach to find all shortest paths
Has greedy approach to compute single source shortest paths to all other vertices (Right Answer)
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Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:
O (log E)
? (V)
? (V+E)
O (log V) (Right Answer)

Which is true statement in the following.

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Kruskal algorithm is multiple source technique for finding MST.
Kruskal's algorithm is used to find minimum spanning tree of a graph, time complexity of this algorithm is O(EV)
Both of above
Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best Tree edge) when the graph has relatively few edges) (Right Answer)

The relationship between number of back edges and number of cycles in DFS is,
Both are equal
Back edges are half of cycles
Back edges are one quarter of cycles
There is no relationship between no. of edges and cycles (Right Answer)

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.
True (Right Answer)
False

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:
log (V)
V.V
E.E
log (E)

Suppose that a graph G = (V,E) is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G?
Select correct option:
O(|V |^2)
O(|V | |E|) (Right Answer)
O(|V |^2|E|)
O(|V | + |E|)

What is generally true of Adjacency List and Adjacency Matrix representations of graphs?
Select correct option:
Lists require less space than matrices but take longer to find the weight of an edge (v1,v2)
Lists require less space than matrices and they are faster to find the weight of an edge (v1, v2) Right Answer)
Lists require more space than matrices and they take longer to find the weight of an edge (v1, v2)
Lists require more space than matrices but are faster to find the weight of an edge (v1, v2)

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What general property of the list indicates that the graph has an isolated vertex?
Select correct option:
There is Null pointer at the end of list.
The Isolated vertex is not handled in list. (not Sure)
Only one value is entered in the list.
There is at least one null list.

A dense undirected graph is:
Select correct option:
A graph in which E = O(V^2) (Right Answer)
A graph in which E = O(V)
A graph in which E = O(log V)
All items above may be used to characterize a dense undirected graph

In digraph G=(V,E) ;G has cycle if and only if
Select correct option:
The DFS forest has forward edge.
The DFS forest has back edge (Right Answer)
The DFS forest has both back and forward edge
BFS forest has forward edge

Back edge is:
Select correct option:
(u, v) where v is an ancestor of u in the tree. (Right Answer)
(u,v) where u is an ancesstor of v in the tree.
(u, v) where v is an predcessor of u in the tree.
None of above

Using ASCII standard the string “abacdaacacwe” will be encoded with __________ bits
Select correct option:
64
128 (Right Answer)
96
120

Cross edge is :
Select correct option:
(u, v) where u and v are not ancestor of one another
(u, v) where u is ancesstor of v and v is not descendent of u.
(u, v) where u and v are not ancestor or descendent of one another (Right Answer)
(u, v) where u and v are either ancestor or descendent of one another.

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Which statement is true?
Select correct option:
If a dynamic-programming problem satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
If a greedy choice property satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
Both of above Right Answer)
None of above
10 If you find yourself in maze the better traversel approach will bE

A dense undirected graph is:
Select correct option:
A graph in which E = O(V^2) (Right Answer)
A graph in which E = O(V)
A graph in which E = O(log V)
All items above may be used to characterize a dense undirected graph

Which is true statement.
Select correct option:
Breadth first search is shortest path algorithm that works on un-weighted graphs (Right Answer)
Depth first search is shortest path algorithm that works on un-weighted graphs.
Both of above are true.
None of above are true.

Forward edge is:
Select correct option:
(u, v) where u is a proper descendent of v in the tree.
(u, v) where v is a proper descendent of u in the tree. (Right Answer)
(u, v) where v is a proper ancesstor of u in the tree.
(u, v) where u is a proper ancesstor of v in the tree.

Back edge is:
Select correct option:
(u, v) where v is an ancestor of u in the tree. (Right Answer)
(u,v) where u is an ancesstor of v in the tree.
(u, v) where v is an predcessor of u in the tree.
None of above

Suppose that a graph G = (V,E) is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G?

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Select correct option:
O(|V |^2)
O(|V | |E|) (Right Answer)
O(|V |^2|E|)
O(|V | + |E|)

In digraph G=(V,E) ;G has cycle if and only if
Select correct option:
The DFS forest has forward edge.
The DFS forest has back edge (Right Answer)
The DFS forest has both back and forward edge
BFS forest has forward edge

What general property of the list indicates that the graph has an isolated vertex?
Select correct option:
There is Null pointer at the end of list.
The Isolated vertex is not handled in list. (not Sure)
Only one value is entered in the list.
There is at least one null list.

If you find yourself in maze the better traversel approach will be :
BFS
BFS and DFS both are valid (Right Answer)
Level order
DFS

Cross edge is :
(u, v) where u and v are not ancestor of one another
(u, v) where u is ancesstor of v and v is not descendent of u.
(u, v) where u and v are not ancestor or descendent of one another (Right Answer)
(u, v) where u and v are either ancestor or descendent of one another.

What algorithm technique is used in the implementation of Kruskal solution for the MST?
Greedy Technique (Right Answer)
Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few
True (Right Answer)
False

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You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T.?

?(V + E) Right Answer)

? (V E)

? (V)

? (V^2)

A digraph is strongly connected under what condition?

A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v .

A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v and vice versa. (Right Answer)

A digraph is strongly connected if for at least one pair of vertex u, v e V, u can reach v and vice versa.

A digraph is strongly connected if at least one third pair of vertices u, v e V, u can reach v and vice versa.

The relationship between number of back edges and number of cycles in DFS is,

Both are equal

Back edges are half of cycles

Back edges are one quarter of cycles

There is no relationship between no. of edges and cycles (Right Answer)

What algorithm technique is used in the implementation of Kruskal solution for the MST?

Greedy Technique (Right Answer)

Divide-and-Conquer Technique

Dynamic Programming Technique

The algorithm combines more than one of the above techniques

Which may be stable sort:

Select correct option:

Bubble sort

Insertion sort

Both of above

Selection sort

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,

Select correct option:

linear

arithmetic

geometric

exponent

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In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:

Large
Medium
Not known
small

How much time merge sort takes for an array of numbers?
Select correct option:

T(n^2)
T(n)
T(log n)
T(n log n)

Counting sort has time complexity:
Select correct option:

O(n)
O(n+k)
O(k)
O(nlogn)

In which order we can sort?
Select correct option:

increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

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The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
Select correct option:

There is explicit combine process as well to conquer the solution.
No work is needed to combine the sub-arrays, the array is already sorted
Merging the sub arrays
None of above.

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option:

upper
lower
average
log n

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
T(n)
T(n / 2)
log n
n / 2 + n / 4

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
There is explicit combine process as w ell to conquer
No w ork is needed to combine the sub-arrays, the a
Merging the subarrays
None of above

The number of nodes in a complete binary tree of height h is

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2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Which sorting algorithn is faster :
O(n^2)
O(nlogn)
O(n+k)
O(n^3)

We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Slow sorting algorithms run in,
T(n^2)
T(n)
T(log n)
T(n log n)

One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Pointers
Constants
Variables
Functions

Counting sort is suitable to sort the elements in range 1 to k:
K is large
K is small
K may be large or small
None

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We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:

left-complete
right-complete
tree nodes
tree leaves

Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:

True
False

Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ___________
Select correct option:

increasing order only
decreasing order only
heap order
(log n) order

Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1

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Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

True
False

Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1
The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:

16
10
32
31

Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:

linear
arithmetic
geometric
exponent

Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1
For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic

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For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
Slow sorting algorithms run in,
Select correct option:
T(n^2)
T(n)
T(log n)
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic
geometric
exponent

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many

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1

few

In which order we can sort?
Select correct option:
increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:
16
10
32
31

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

The analysis of Selection algorithm shows the total running time is indeed ________in n,

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Select correct option:

arithmetic
geometric
linear
orthogonal

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:

n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Sieve Technique can be applied to selection problem?
Select correct option:

True
false

For the heap sort we store the tree nodes in
Select correct option:

level-order traversal
in-order traversal
pre-order traversal
post-order traversal

One of the clever aspects of heaps is that they can be stored in arrays without using any
_______________.
Select correct option:
pointers
constants
variables
functions

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A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Divide-and-conquer as breaking the problem into a small number of
Select correct option:
pivot
Sieve
smaller sub problems
Selection

Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves

For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately

A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

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How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Question # 1 of 10 (Start time: 08:17:23 AM) Total M a r k s: 1
The number of nodes in a complete binary tree of height h is
Select correct option:
2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1
Question # 2 of 10 (Start time: 08:18:46 AM) Total M a r k s: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Question # 3 of 10 (Start time: 08:19:38 AM) Total M a r k s: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

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True
False

Question # 4 of 10 (Start time: 08:20:33 AM) Total M a r k s: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves

Question # 5 of 10 (Start time: 08:21:59 AM) Total M a r k s: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

Question # 6 of 10 (Start time: 08:23:01 AM) Total M a r k s: 1
For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
Theta asymptotic notation for T (n) :
Select correct option:
Set of functions described by: c1g(n)Set of functions described by c1g(n)>=f(n) for c1 s
Theta for T(n)is actually upper and worst case comp
Set of functions described by:
c1g(n)

Question # 8 of 10 (Start time: 08:24:39 AM) Total M a r k s: 1
The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few
Question # 9 of 10 (Start time: 08:25:54 AM) Total M a r k s: 1
Sieve Technique applies to problems where we are interested in finding a single item from a

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larger set of _____________
Select correct option:
n items
phases
pointers
constant

Question # 10 of 10 (Start time: 08:26:44 AM) Total M a r k s: 1
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines

Memorization is?
To store previous results for future use
To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later
To make the process accurate
None of the above

Question # 2 of 10 Total M a r k s: 1
Which sorting algorithm is faster
O (n log n)
O n^2
O (n+k)
O n^3

Quick sort is
Stable & in place
Not stable but in place
Stable but not in place
Some time stable & some times in place

One example of in place but not stable algorithm is
Merger Sort
Quick Sort
Continuation Sort
Bubble Sort

In Quick Sort Constants hidden in T(n log n) are
Large
Medium

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Small
Not Known

Continuation sort is suitable to sort the elements in range 1 to k
K is Large
K is not known
K may be small or large
K is small

In stable sorting algorithm.
One array is used
More than one arrays are required
Duplicating elements not handled
duplicate elements remain in the same relative position after sorting

Which may be a stable sort?
Merger
Insertion
Both above
None of the above

An in place sorting algorithm is one that uses ___ arrays for storage
Two dimensional arrays
More than one array
No Additional Array
None of the above

Continuing sort has time complexity of ?
O(n)
O(n+k)
O(nlogn)
O(k)

We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

In Sieve Technique we donot know which item is of interest

True

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False

A (an) _________ is a left-complete binary tree that conforms to the heap order

heap

binary tree

binary search tree

array

27. The sieve technique works in ___________ as follows

phases

numbers

integers

routines

For the sieve technique we solve the problem,

recursively

mathematically

precisely

accurately

29. For the heap sort, access to nodes involves simple _______________ operations.

arithmetic

binary

algebraic

logarithmic

The analysis of Selection algorithm shows the total running time is indeed ________in n,\

arithmetic

geometric

linear

orthogonal

For the heap sort, access to nodes involves simple _______________ operations.

Select correct option:

arithmetic

binary

algebraic

logarithmic

Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________

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Select correct option:

n items

phases

pointers

constant

Question # 9 of 10 (Start time: 07:45:36 AM) Total Marks: 1

In Sieve Technique we do not know which item is of interest

Select correct option:

True

False

How much time merge sort takes for an array of numbers?

Select correct option:

T(n^2)

T(n)

T(log n)

T(n log n)

For the heap sort we store the tree nodes in

Select correct option:

level-order traversal

in-order traversal

pre-order traversal

post-order traversal

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,

Select correct option:

upper

lower

average

log n

single item from a larger set of _____________

Select correct option:

n items

phases

pointers

constant

A heap is a left-complete binary tree that conforms to the ___________

Select correct option:

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increasing order only
decreasing order only
heap order
(log n) order

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
For the Sieve Technique we take time
Select correct option:
T(nk)
T(n / 3)
n^2
n/3

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
linear
arithmetic
geometric
exponent

Analysis of Selection algorithm ends up with,
Select correct option:

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T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

Quiz Start Time: 07:23 PM
Time Left 90
sec(s)
Question # 1 of 10 (Start time: 07:24:03 PM) Total M a r k s: 1
In in-place sorting algorithm is one that uses arrays for storage :
Select correct option:
An additional array
No additional array
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

Time Left 89
sec(s)
Question # 2 of 10 (Start time: 07:25:20 PM) Total M a r k s: 1
Which sorting algorithn is faster :
Select correct option:
O(n^2)
O(nlogn)
O(n+k)
O(n^3)
In stable sorting algorithm:
Select correct option:
One array is used
In which duplicating elements are not handled.
More then one arrays are required.
Duplicating elements remain in same relative posistion after sorting.

Counting sort has time complexity:
Select correct option:
O(n)
O(n+k)
O(k)
O(nlogn)

Counting sort is suitable to sort the elements in range 1 to k:
Select correct option:
K is large

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K is small
K may be large or small
None

Memorization is :
Select correct option:
To store previous results for further use.
To avoid unnecessary repetitions by writing down the results of recursive calls and looking them again if needed later
To make the process accurate.
None of the above

The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Which may be stable sort:
Select correct option:
Bubble sort
Insertion sort
Both of above

In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:
Large
Medium
Not known
small

Quick sort is
Select correct option:
Stable and In place
Not stable but in place
Stable and not in place
Some time in place and send some time stable

For the Sieve Technique we take time

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T(nk)
T(n / 3)
n^2
n/3

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
Many
1
Few

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Quick sort is
Select correct option:
Stable and In place
Not stable but in place
Stable and not in place
Some time in place and send some time stable

Memoization is :
Select correct option:
To store previous results for further use.
To avoid unnecessary repetitions by writing down the results of
recursive calls and looking them again if needed later
To make the process accurate.
None of the above

One Example of in place but not stable sort is
Quick
Heap
Merge
Bubble

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The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Question # 9 of 10 (Start time: 07:39:07 PM) Total M a r k s: 1
In Quick sort algorithm,constants hidden in T(n lg n) are
Select correct option:
Large
Medium
Not known
Small

Theta asymptotic notation for T (n) :
Select correct option:
Set of functions described by: c1g(n)<=f(n) for c1 some constant and n=n0
Set of functions described by c1g(n)>=f(n) for c1 some constant and n=n0
Theta for T(n)is actually upper and worst case complexity of the code
Set of functions described by: c1g(n)<=f(n)<=c2g(n) for c1 and c2 some constants and n=n0

CS502 - Fundamentals of Algorithms
Quiz No.4 Dated FEB 05, 2013

In in-place sorting algorithm is one that uses arrays for storage :
An additional array
No additional array (Right Answer)
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

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The running time of quick sort depends heavily on the selection of:
No of inputs
Arrangement of elements in array
Size o elements
Pivot element **(Right Answer)**

In stable sorting algorithm
One array is used
In which duplicating elements are not handled.
More then one arrays are required.
Duplicating elements remain in same relative position after sorting. (Right Answer)

Which sorting algorithm is faster :
O(n^2)
O(nlogn)
O(n+k) (Right Answer)
O(n^3)

In Quick sort algorithm, constants hidden in T(n lg n) are
Large
Medium
Not known
Small (Right Answer)

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
There is explicit combine process as well to conquer the solutin. (Right Answer)
No work is needed to combine the sub-arrays, the array is already sorted
Merging the subarrays
None of above.

There is relationship between number of back edges and number of cycles in DFS
Select correct option:
Both are equal.
Cycles are half of back edges.
Cycles are one fourth of back edges.
There is no relationship between back edges and number of cycle (Right Answer)

You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T
Select correct option:

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(V+E) (Right Answer)
V.E
V
E

Dijkstra's algorithm :
Select correct option:
Has greedy approach to find all shortest paths
Has both greedy and Dynamic approach to find all shortest paths
Has greedy approach to compute single source shortest paths to all other vertices (page 154)
Has both greedy and dynamic approach to compute single source shortest paths to all other vertices.

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:
O (log E)
? (V)
? (V+E)
O (log V) (page #152)

Which is true statement in the following.
Kruskal algorithm is multiple source technique for finding MST.
Kruskal's algorithm is used to find minimum spanning tree of a graph, time complexity of this algorithm is O(EV)
Both of above
=>Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.
True (Right Answer)
False

What general property of the list indicates that the graph has an isolated vertex?
Select correct option:
There is Null pointer at the end of list.
The Isolated vertex is not handled in list. (not Sure)
Only one value is entered in the list.
There is at least one null list.

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Which statement is true?
Select correct option:
If a dynamic-programming problem satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
If a greedy choice property satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
Both of above Right Answer)
None of above

A dense undirected graph is:
Select correct option:
A graph in which E = O(V^2) (Right Answer)
A graph in which E = O(V)
A graph in which E = O(log V)
All items above may be used to characterize a dense undirected graph

Which is true statement.
Select correct option:
Breadth first search is shortest path algorithm that works on un-weighted graphs (Right Answer)
Depth first search is shortest path algorithm that works on un-weighted graphs.
Both of above are true.
None of above are true.

What algorithm technique is used in the implementation of Kruskal solution for the MST?
Greedy Technique (page #142)
Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

A digraph is strongly connected under what condition?
A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v .
A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v and vice versa. (Page #135)
A digraph is strongly connected if for at least one pair of vertex u, v e V, u can reach v and vice versa.
A digraph is strongly connected if at least one third pair of vertices u, v e V, u can reach v and vice versa.

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The relationship between number of back edges and number of cycles in DFS is,
Both are equal
Back edges are half of cycles
Back edges are one quarter of cycles
There is no relationship between no. of edges and cycles (p131)

Question # 2 of 10 (Start time: 10:35:36 PM) Total Marks: 1
Suppose that a graph G = (V,E) is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G?
Select correct option:

O(|V |^2)
O(|V | |E|)
O(|V |^2|E|)
O(|V | + |E|) pg 116

Question # 4 of 10 (Start time: 10:37:30 PM) Total Marks: 1
Forward edge is:
Select correct option:
(u, v) where u is a proper descendent of v in the tree.
(u, v) where v is a proper descendent of u in the tree. Pg 129
(u, v) where v is a proper ancesstor of u in the tree.
(u, v) where u is a proper ancesstor of v in the tree.

Question # 5 of 10 (Start time: 10:37:58 PM) Total Marks: 1
Using ASCII standard the string "abacdaacacwe" will be encoded with __________ bits
Select correct option:
64
128
96 pg 101 12*8=96
120

Question # 7 of 10 (Start time: 10:38:40 PM) Total Marks: 1
If you find yourself in maze the better traversel approach will be :
Select correct option:
BFS
BFS and DFS both are valid (pg 119)
Level order

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DFS

Question # 8
In digraph G=(V,E) ;G has cycle if and only if
Select correct option:
The DFS forest has forward edge.
The DFS forest has back edge (pg 131)
The DFS forest has both back and forward edge
BFS forest has forward edge

Question # 9
What is generally true of Adjacency List and Adjacency Matrix representations of graphs?
Select correct option:
Lists require less space than matrices but take longer to find the weight of an edge (v1,v2)
Lists require less space than matrices and they are faster to find the weight of an edge (v1, v2) (pg 116)
Lists require more space than matrices and they take longer to find the weight of an edge (v1, v2)
Lists require more space than matrices but are faster to find the weight of an edge (v1, v2)

Question # 10
Back edge is:
Select correct option:
(u, v) where v is an ancestor of u in the tree. (Pg 128)
(u,v) where u is an ancesstor of v in the tree.
(u, v) where v is an predcessor of u in the tree.
None of above

=================

My 3rd Quiz

http://cs-mcqs.blogspot.com/2012/06/data-structures-algorithms-multiple.html

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FINALTERM EXAMINATION

Question No: 2

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Although it requires more complicated data structures, Prim's algorithm for a minimum spanning tree is better than Kruskal's when the graph has a large number of vertices.

► **True** ► False

Question No: 3

If a problem is in NP, it must also be in P.

► **True** ► False ► unknown

Question No: 5

If a graph has v vertices and e edges then to obtain a spanning tree we have to delete

► v edges. ► v – e + 5 edges ► v + e edges. ► **None of these**

Question No: 6

Maximum number of vertices in a Directed Graph may be $|V^2|$

► **True** ► False

Question No: 7

The Huffman algorithm finds a (n) _____________ solution.

► **Optimal** ► Non-optimal ► Exponential ► Polynomial

Question No: 8

The Huffman algorithm finds an exponential solution ► True ► **False**

Question No: 9

The Huffman algorithm finds a polynomial solution ► True ► **False**

Question No: 10

The greedy part of the Huffman encoding algorithm is to first find two nodes with **larger** frequency. ► True ► **False**

Question No: 11

The codeword assigned to characters by the Huffman algorithm have the property that no codeword is the postfix of any other. ► True ► **False**

Question No: 12

Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string. ► True ► **False**

Question No: 13

Shortest path problems can be solved efficiently by modeling the road map as a graph.

► **True** ► False

Question No: 14

Dijkestra's single source shortest path algorithm works if all edges weights are non-negative and there are negative cost cycles. ► True ► **False**

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Question No: 15

Bellman-Ford allows negative weights edges and negative cost cycles ► True ► **False**

Question No: 16

The term "coloring" came form the original application which was in architectural design.

► **True** ► False

Question No: 17

In the clique cover problem, for two vertices to be in the same group, they must be adjacent to each other. ► **True** ► False

Question No: 18

Dijkstra's algorithm is operates by maintaining a subset of vertices ► **True** ► False

Question No: 19

The difference between Prim's algorithm and Dijkstra's algorithm is that Dijkstra's algorithm uses a different key. ► **True** ► False

Question No: 21

We do sorting to,

► keep elements in random positions ► keep the algorithm run in linear order

► keep the algorithm run in (log n) order

► **keep elements in increasing or decreasing order**

Question No: 22

After partitioning array in Quick sort, pivot is placed in a position such that

► **Values smaller than pivot are on left and larger than pivot are on right**

► Values larger than pivot are on left and smaller than pivot are on right

► **Pivot is the first element of array** Pivot is the last element of array

Question No: 23

Merge sort is stable sort, but not an in-place algorithm **► True (p#54)** ► False

Question No: 24

In counting sort, once we know the ranks, we simply _________ numbers to their final positions in an output array.

► Delete **► copy (p#57)** ► Mark ► arrange

Question No: 25

Dynamic programming algorithms need to store the results of intermediate sub-problems. **► True p#75)** ► False

Question No: 26

A p × q matrix A can be multiplied with a q × r matrix B. The result will be a p × r matrix C. There are (p . r) total entries in C and each takes _________ to compute.

► O (q) (p= 84) ► O (1) ► O (n^2) ► O (n^3)

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FINALTERM EXAMINATION

Question No: 2
Which of the following is calculated with **big o notation**?
Lower **bounds** **Upper bounds**
Both upper and lower bound Medium bounds

Question No: 3
Merge sort makes two recursive calls. Which statement is true after these recursive calls finish, but before the merge step?
The array elements form a heap
Elements in each half of the array are sorted amongst themselves
Elements in the first half of the array are less than or equal to elements in the second half of the array
None of the above

Question No: 4
Who invented Quick sort procedure?
Hoare Sedgewick Mellroy Coreman

Question No: 6
Consider the following Huffman Tree
The binary code for the string **TEA** is
10 00 010
011 00 010
10 00 110
11 10 110

Question No: 7
If a graph has v vertices and e edges then to obtain a spanning tree we have to delete v edges.
v e + 5 edges v + e edges. **None of these**

Question No: 8
Can an adjacency matrix for a directed graph ever not be square in shape?
Yes No

Question No: 9
One of the clever aspects of heaps is that they can be stored in arrays without using any
______**Pointers (p #40)** constants variables functions

Question No: 10
Merge sort requires extra array storage, **True p #54)** False
Mergesort is a stable algorithm but not an in-place algorithm. It requires extra array storage.

Question No: 11
Non-optimal or greedy algorithm for money change takes____________

O(k) (p#99) O(kN) O(2k) O(N)

Question No: 12
The Huffman codes provide a method of encoding data **inefficiently** when coded using ASCII standard. True **Falase (p# 99**
*The Huffman codes provide a method of encoding data **efficiently**.*

Question No: 13
Using ASCII standard the string abacdaacac will be encoded with **__________** bits.
80 (p# 99 160 320 100
*Consider the string " abacdaacac". if the string is coded with ASCII codes, the message length would **be10 × 8 = 80 bits.***

Question No: 14
Using ASCII standard the string abacdaacac will be encoded with 160 bits.
True **False (p# 99)**

Question No: 15
Using ASCII standard the string abacdaacac will be encoded with 320 bits.
True **False (p# 99)**

Question No: 16
Using ASCII standard the string abacdaacac will be encoded with 100 bits.
True **False (p# 99)**

Question No: 17
Using ASCII standard the string abacdaacac will be encoded with 32 bytes
True **False (p# 99)**

Question No: 18
The greedy part of the Huffman encoding algorithm is to first find two nodes with **smallest** frequency.
True (p# 100) False

Question No: 19
The greedy part of the Huffman encoding algorithm is to first find two nodes with **character** frequency
True **False (p# 100)**

Question No: 20
Huffman algorithm uses a greedy approach to generate an antefix code T that minimizes the expected length B (T) of the encoded string.
False **(p# 102)**

Question No: 21
Depth first search is shortest path algorithm that works on un-weighted graphs.
True **False (p# 153)**

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*The **breadth-first**-search algorithm we discussed earlier is a shortest-path algorithm that works on un-weighted graphs*

Question No: 22

Dijkestra s single source shortest path algorithm works if all edges weights are nonnegative and there are no negative cost cycles.

True (p# 159) False

Question No: 23

Dijkestra s single source shortest path algorithm works if all edges weights are negative and there are no negative cost cycles.

False

Question No: 24

Floyd-Warshall algorithm is a dynamic programming algorithm; the genius of the algorithm is in the clever recursive formulation of the shortest path problem.

True (p# 162) Flase

Question No: 25

Floyd-Warshall algorithm, as in the case with DP algorithms, we avoid recursive evaluation by generating a table for

k

ij d

True

Flase

the case with DP algorithms, we will avoid recursive evaluation by generating a table **for d(k)ij**

Question No: 26

The term coloring came from the original application which was in map drawing.

True (p# 173) False

Question No: 27

In the clique cover problem, for two vertices to be in the same group, they must be_________each other.

Apart from Far from Near to **Adjacent to (P# 176)**

Question No: 28

In the clique cover problem, for two vertices to be in the same group, they must be apart from each other.

True **False (P# 176)**

Question No: 29

The difference between Prims algorithm and Dijkstra s algorithm is that Dijkstra s algorithm uses a different key.

True (P # 156) not sure False

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Question No: 30

The difference between Prim s algorithm and Dijkstra s algorithm is that Dijkstra s algorithm uses a same key.

True **False (P # 156) not sure**

Quiz no# 4 06-07-2012 solved by umair sid 100%

What algorithm technique is used in the implementation of kruskal solution for the MST?

Greedy Technique **page #142**

in drsigne G=(V,E) ;G has cycle if and only if

The DFS forest has back edge **page # 131**

Question # 9 of 10

Cross edge is :

(u, v) where u and v are not ancestor of one another

(u, v) where u is ancesstor of v and v is not descendent of u.

(u, v) where u and v are not ancestor or descendent of one another pg 129

(u, v) where u and v are either ancestor or descendent of one another.

Forword edge is :

(u,v) where v ia a proper decendent of u in the tree. **Page # 129**

You have an adjective list for G, what is the time complexity to computer graph transpose G^T.?

(V + E) **PAGE # 138**

Given an adjacency list for G, it is possible to compute G^T in $\Theta(V + E)$ time.

It takes O(log V) to extract a vertex from the priority queue.

There is relationship between number of back edges and number of cycles in DFS

There is no relationship between back edges and number of cycles

Which is true statement:

Breadth first search is shortest path algorithm that works on un-weighted graphs

Depth first search is shortest path algorithm that works on un-weighted graphs.

Both of above are true.

Overall time for Kruskal is

$\Theta(E \log E) = \Theta(E \log V)$ if the graph is sparse. **P-149**

True

Question No: 1

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An optimization problem is one in which you want to find,

► Not a solution
► An algorithm
► Good solution
► **The best solution**

Question No: 2
Although it requires more complicated data structures, Prim's algorithm for a minimum spanning tree is better than Kruskal's when the graph has a large number of vertices.

► **True**
► False

Question No: 3
If a problem is in NP, it must also be in P.

► **True**
► False
► unknown

Question No: 5
If a graph has v vertices and e edges then to obtain a spanning tree we have to delete

► v edges.
► v – e + 5 edges
► v + e edges.
► **None of these**

Question No: 6
Maximum number of vertices in a Directed Graph may be |V2|

► **True**
► False

Question No: 7
The Huffman algorithm finds a (n) _____________ solution.

► **Optimal**
► Non-optimal
► Exponential
► Polynomial

Question No: 8
The Huffman algorithm finds an exponential solution ► True ► **False**

Question No: 9
The Huffman algorithm finds a polynomial solution ► **True** ► False

Question No: 10
The greedy part of the Huffman encoding algorithm is to first find two nodes with larger frequency. ► True ► **False**

Question No: 11
The codeword assigned to characters by the Huffman algorithm have the property that no codeword is the postfix of any other. ► **True** ► False

Question No: 12
Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string. ► True ► **False**

Question No: 13

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Shortest path problems can be solved efficiently by modeling the road map as a graph.

► **True** ► False

Question No: 14

Dijkestra's single source shortest path algorithm works if all edges weights are non-negative and there are negative cost cycles. ► True ► False

Question No: 15

Bellman-Ford allows negative weights edges and negative cost cycles.

► True ► **False**

Bellman-Ford allows negative weights edges and no negative cost cycles.

Question No: 16

The term "coloring" came form the original application which was in architectural design. ► True ► **False**

The term "coloring" comes from the original application which was in map drawing.

Question No: 17

In the clique cover problem, for two vertices to be in the same group, they must be adjacent to each other. ► **True** ► False

Question No: 18

Dijkstra's algorithm is operates by maintaining a subset of vertices ► **True** ► False

Question No: 19

The difference between Prim's algorithm and Dijkstra's algorithm is that Dijkstra's algorithm uses a different key. ► **True** ► False

Question No: 21

We do sorting to,

► keep elements in random positions

► keep the algorithm run in linear order

► keep the algorithm run in (log n) order

► **keep elements in increasing or decreasing order**

►Question No: 22

After partitioning array in Quick sort, pivot is placed in a position such that

► **Values smaller than pivot are on left and larger than pivot are on right**

► Values larger than pivot are on left and smaller than pivot are on right

► Pivot is the first element of array

► Pivot is the last element of array

Question No: 23

Merge sort is stable sort, but not an in-place algorithm ► **True** ► False

Question No: 24

In counting sort, once we know the ranks, we simply _________ numbers to their final positions in an output array.

► Delete ► **copy** ► Mark ► arrange

Question No: 25

Dynamic programming algorithms need to store the results of intermediate sub-problems. ► **True** ► False

Using ASCII standard the string abacdaacac will be encoded with __________ bits.

80 160 320 100

Using ASCII standard the string abacdaacac will be encoded with 160 bits.

True **False**

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Using ASCII standard the string abacdaacac will be encoded with 320 bits.
True **False**

Using ASCII standard the string abacdaacac will be encoded with 100 bits.
True **False**

The Huffman algorithm finds a (n) _____________ solution.

► **Optimal** ► Non-optimal ► Exponential ► Polynomial

Huffman algorithm uses a greedy approach to generate a postfix code T that minimizes the expected length B (T) of the encoded string.

► True

► **False**

2: Which statement is true?

- If a dynamic-programming problem satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
- **If a greedy choice property satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.**
- both of above
- none of above

5: What general property of the list indicates that the graph has an isolated vertex?

- There is Null pointer at the end of list.
- **The Isolated vertex is not handled in list.**
- Only one value is entered in the list.
- There is at least one null list.

6: Which is true statement.

- Breadth first search is shortest path algorithm that works on un-weighted graphs.
- Depth first search is shortest path algorithm that works on un-weighted graphs.
- **Both of above are true.**
- None of above are true.

11: Using ASCII standard the string “abacdaacacwe” will be encoded with __________ bits

- 64
- 128
- **96 12*8=96**
- 120

13: the analysis of selection algorithm shows the total running time is indeed------------in n.

- arithmetic

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- geometric
- **linear**
- orthogonal

14: back edge is

(1) In Prim's algorithm, the additional information maintained by the algorithm is the length of the shortest edge from vertex v to points already in the tree.

A) TRUE

B) FALSE

C) UNKNOWN

(2) Although it requires more complicated data structures, Prim's algorithm for a minimum spanning tree is better than Kruskal's when the graph has a large number of vertices.

A) TRUE. B) FALSE C: UNKNOWN

(3) If a problem is NP-complete, it must also be in NP.

A) TRUE. B) FALSE C) UNKNOWN

(4) Which statement is true

(I) The running time of Bellman-Ford algorithm is T (VE)

(II) Both Dijkstra's algorithm and Bellman-Ford are based on performing repeated relaxations

(III) The 0-1 knapsack problem is hard to solve

• Only I • Only III • Both I and III **• All of these**

5) Which of the following arrays represent descending (max) heaps?

I. [10,7,7,2,4,6] II. [10,7,6,2,4,7]

III. [10,6,7,2,4,6] IV. [6,6,7,2,4,10]

• Only II • Only IV • Both II and IV • Both I and III

6. Which of the following statement(s) is/are correct?

(a) O(n log n + n2) = O(n2). (b) O(n log n + n2) = O(n2 log 2n)

(c) O(c n2) = O(n2) where c is a constant. (d) O(c n2) = O(c) where c is a constant.

(e) O(c) = O(1) where c is a constant.

- **Only (a) & (e)**
- Both (c) and (e)

7. Which of the shortest path algorithms would be most appropriate for finding paths in the graph with negative edge weights and cycles?

I.Dijkstra's Algorithm

II. Bellman-Ford Algorithm

III. Floyd Warshall Algorithm

- Only II
- Only III
- **Both II & III**

9. Suppose we have two problems A and B .Problem A is polynomial-time reducible and problem B is NP-complete. If we reduce problem A into B then problem A becomes NP-complete **• Yes** • No

11. The recurrence relation of Tower of Hanoi is given below

? 1 if n =1

T n =?

-133( )

2 (T n- +1) 1if n>1

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In order to move a tower of 6 rings from one peg to another, how many moves are required?

- 15 • 7 • 63 • **32**

12. Edge (u, v) is a forward edge if
- u is a proper descendant of v in the tree
- **v is a proper descendant of u in the tree**
- None of these

13. Is 22n= O?
2n -26? ?

14. If, in a DFS forest of digraph G = (V, E), f[u] = f[v] for an edge (u, v) ? E then the edge is called
- **Back edge** • Forward edge • Cross Edge • Tree Edge • None of these

16. Best and worst case times of an algorithm may be same.
- **True** • False

17. Can an adjacency matrix for a directed graph ever not be square in shape?
- **Yes** • No

1. In which order we can sort?
- increasing order only • decreasing order only
- **increasing order or decreasing order** • both at the same time

2. heap is a left-complete binary tree that conforms to the ___________
- increasing order only • decreasing order only • **heap order** • (log n) order

3. In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
- T(n) • **T(n / 2)** • log n • n / 2 + n / 4

4. How much time merge sort takes for an array of numbers?
- T(n^2) • T(n) • T(log n) • **T(n log n)**

5. One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
- **pointers** • constants • variables • functions

6. the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis
- linear • arithmetic • **geometric** • exponent

7:. Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
- **n items** • phases • pointers • constant

8. The sieve technique works in ___________ as follows
- **phases** • numbers • integers • routines

9. For the heap sort, access to nodes involves simple _______________ operations.
- **arithmetic** • binary • algebraic • logarithmic

10. The analysis of Selection algorithm shows the total running time is indeed ________in n,
- arithmetic • geometric • **linear** • orthogonal

11. Divide-and-conquer as breaking the problem into a small number of
- pivot • Sieve • **smaller sub problems** • Selection

12. Slow sorting algorithms run in,
- **T(n^2)** • T(n) • T(log n) • T(n log n)

13. A heap is a left-complete binary tree that conforms to the
- increasing order only • decreasing order only • **heap order** • (log n) order

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14. For the heap sort we store the tree nodes in

- **level-order traversal** • in-order traversal • pre-order traversal • post-order traversal

15. The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

- **divide-and-conquer,** • decrease and conquer • greedy nature • 2-dimension Maxima

16. We do sorting to, Select correct option:

- keep elements in random positions • keep the algorithm run in linear order
- keep the algorithm run in (log n) order • **keep elements in increasing or decreasing order**

17. Sorting is one of the few problems where provable ________ bonds exits on how fa we can sort, Select correct option:

- upper • **lower** • average • log n

For the heap sort we store the tree nodes in Select correct option:

- **level-order traversal** • in-order traversal • pre-order traversal • post-order traversal

20: In Sieve Technique we do not know which item is of interest Select correct option:

- **True** • False

21: Slow sorting algorithms run in,

- T(n^2) • T(n) • T(log n) • **T(n log n)**

22: Divide-and-conquer as breaking the problem into a small number of

- pivot • Sieve • **smaller sub problems** • Selection

23: For the sieve technique we solve the problem,

- **recursively** • mathematically • precisely • accurately

24: we do sorting to,

- keep elements in random positions • keep the algorithm run in linear order
- keep the algorithm run in (log n) order • **keep elements in increasing or decreasing order**

25: The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

- **divide-and-conquer** • decrease and conquer • greedy nature • 2-dimension Maxima

26: In Sieve Technique we do not know which item is of interest

- **true** • false

27: In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

- T(n) • T(n / 2) • **log n** • n / 2 + n / 4

28: Divide-and-conquer as breaking the problem into a small number of

- pivot • Sieve • **smaller sub problems** • Selection

29: A heap is a left-complete binary tree that conforms to the ___________

- increasing order only • decreasing order only • **heap order** • (log n) order

30: Slow sorting algorithms run in,

- **T(n^2)** • T(n) • T(log n)

31: One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.

- **pointers** • constants • variables • functions

32: Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort, • upper • **lower** • average • log n

33: For the sieve technique we solve the problem,

- mathematically • precisely • accurately • **recursively**

34: Sieve Technique can be applied to selection problem?

- **True** • False

37: Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,

- **left-complete** • right-complete • tree nodes • tree leaves

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38: How many elements do we eliminate in each time for the Analysis of Selection algorithm?

- n / 2 elements • **(n / 2) + n elements** • n / 4 elements • 2 n elements

39: We do sorting to,

- keep elements in random positions • keep the algorithm run in linear order
- keep the algorithm run in (log n) order • **keep elements in increasing or decreasing order**

40: In which order we can sort?

- increasing order only • decreasing order only
- **increasing order or decreasing order** • both at the same time

41: : In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as, • T(n) • T(n / 2) • **log n** • n / 2 + n / 4

42: The sieve technique is a special case, where the number of sub problems is just

- 5 • Many • **1** • few

Question No: 1 no need

Random access machine or RAM is a/an

- ► Machine build by Al-Khwarizmi
- ► Mechanical machine
- ► Electronics machine
- ► **Mathematical model**

Question No: 2

_______________ is a graphical representation of an algorithm

- ► Σ notation
- ► Θnotation
- ► **Flowchart**
- ► Asymptotic notation

Question No: 3

A RAM is an idealized machine with ______________ random-access memory.

- ► 256MB
- ► 512MB
- ► **an infinitely large**
- ► 100GB

Question No: 4

What type of instructions Random Access Machine (RAM) can execute? Choose best answer

- ► Algebraic and logic
- ► Geometric and arithmetic
- ► **Arithmetic and logic**
- ► Parallel and recursive

Question No: 5 -

What will be the total number of max comparisons if we run brute-force maxima algorithm with n elements?

- ► **n^2**
- ► 2n/n
- ► n
- ► 8n

Question No: 6

What is the solution to the recurrence T(n) = T(n/2)+n .

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- ► O(logn)
- ► **O(n)**
- ► O(nlogn)
- ► O(n2)

Question No: 7

Consider the following code:

```
For(j=1; j<n;j++)
 For(k=1; k<15;k++)
  For(l=5; l<n; l++)
  {
   Do_something_constant();
  }
```

What is the order of execution for this code.

- ► **O(n)**
- ► O(n3)
- ► O(n2 log n)
- ► O(n2)

Question No: 8

Consider the following Algorithm:

```
Factorial (n){
   if (n=1)
      return 1
   else
       return (n * Factorial(n-1))

{
```

Recurrence for the following algorithm is:

- ► T(n) = T(n-1) +1
- ► T(n) = nT(n-1) +1
- ► T(n)= T(n-1) +n
- ► **T(n)=T(n(n-1)) +1**

Question No: 9 -

What is the total time to heapify?

- ► **O(log n)**
- ► O(n log n)
- ► O(n2 log n)
- ► O(log2 n)

Question No: 10

When we call heapify then at each level the comparison performed takes time

- ► **It will take Θ (1)**
- ► Time will vary according to the nature of input data
- ► It can not be predicted
- ► It will take Θ (log n)

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CS502 - Fundamentals of Algorithms
Quiz No.5 Dated FEB 15TH 2013

In in-place sorting algorithm is one that uses arrays for storage :
An additional array
No additional array (Right Answer)
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

The running time of quick sort depends heavily on the selection of

No of inputs
Arrangement of elements in array
Size o elements
Pivot element (Right Answer)

In stable sorting algorithm
One array is used
In which duplicating elements are not handled.
More then one arrays are required.
Duplicating elements remain in same relative position after sorting. (Right Answer)

Which sorting algorithn is faster :
O(n^2)
O(nlogn)
O(n+k) (Right Answer)
O(n^3)

In Quick sort algorithm,constants hidden in T(n lg n) are

Large
Medium
Not known
Small (Right Answer)

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:

There is explicit combine process as well to conquer the solutin. (Right Answer)
No work is needed to combine the sub-arrays, the array is already sorted
Merging the subarrays

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None of above.

There is relationship between number of back edges and number of cycles in DFS
Select correct option:
Both are equal.
Cycles are half of back edges.
Cycles are one fourth of back edges.
There is no relationship between back edges and number of cycle (Right Answer)

You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T ?
Select correct option:
(V+E) (Right Answer)
V.E
V
E

Question # 3 of 10 (Start time: 06:54:27 PM) Total Marks: 1
You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T.?
?(V + E) Right Answer)
?(V E)
?(V)
?(V^2)

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:
log (V) (Right Answer)
V.V
E.E
log (E)

Dijkstra's algorithm :
Select correct option:
Has greedy approach to find all shortest paths
Has both greedy and Dynamic approach to find all shortest paths
Has greedy approach to compute single source shortest paths to all other vertices (Right Answer)
Has both greedy and dynamic approach to compute single source shortest paths to all other vertices.

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What algorithm technique is used in the implementation of Kruskal solution for the MST?
Greedy Technique (Right Answer)
Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:
O (log E)
? (V)
? (V+E)
O (log V) (Right Answer)

Which is true statement in the following.
Kruskal algorithm is multiple source technique for finding MST.
Kruskal's algorithm is used to find minimum spanning tree of a graph, time complexity of this algorithm is O(EV)
Both of above
Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best Tree edge) when the graph has relatively few edges) (Right Answer)

The relationship between number of back edges and number of cycles in DFS is,
Both are equal
Back edges are half of cycles
Back edges are one quarter of cycles
There is no relationship between no. of edges and cycles (Right Answer)

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.
True (Right Answer)
False

What is the time complexity to extract a vertex from the priority queue in Prim's algorithm?
Select correct option:
log (V)
V.V
E.E

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log (E)

Suppose that a graph G = (V,E) is implemented using adjacency lists. What is the complexity of a breadth-first traversal of G?

Select correct option:

O(|V |^2)

O(|V | |E|) (Right Answer)

O(|V |^2|E|)

O(|V | + |E|)

What is generally true of Adjacency List and Adjacency Matrix representations of graphs?

Select correct option:

Lists require less space than matrices but take longer to find the weight of an edge (v1,v2)

Lists require less space than matrices and they are faster to find the weight of an edge (v1, v2) Right Answer)

Lists require more space than matrices and they take longer to find the weight of an edge (v1, v2)

Lists require more space than matrices but are faster to find the weight of an edge (v1, v2)

What general property of the list indicates that the graph has an isolated vertex?

Select correct option:

There is Null pointer at the end of list.

The Isolated vertex is not handled in list. (not Sure)

Only one value is entered in the list.

There is at least one null list.

A dense undirected graph is:

Select correct option:

A graph in which E = O(V^2) (Right Answer)

A graph in which E = O(V)

A graph in which E = O(log V)

All items above may be used to characterize a dense undirected graph

In digraph G=(V,E) ;G has cycle if and only if

Select correct option:

The DFS forest has forward edge.

The DFS forest has back edge (Right Answer)

The DFS forest has both back and forward edge

BFS forest has forward edge

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Back edge is:
Select correct option:
(u, v) where v is an ancestor of u in the tree. (Right Answer)
(u,v) where u is an ancesstor of v in the tree.
(u, v) where v is an predcessor of u in the tree.
None of above

Using ASCII standard the string “abacdaacacwe” will be encoded with __________ bits
Select correct option:
64
128 (Right Answer)
96
120

Cross edge is :
Select correct option:
(u, v) where u and v are not ancestor of one another
(u, v) where u is ancesstor of v and v is not descendent of u.
(u, v) where u and v are not ancestor or descendent of one another (Right Answer)
(u, v) where u and v are either ancestor or descendent of one another.

Which statement is true?
Select correct option:
If a dynamic-programming problem satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
If a greedy choice property satisfies the optimal-substructure property, then a locally optimal solution is globally optimal.
Both of above Right Answer)
None of above
10 If you find yourself in maze the better traversel approach will bE

A dense undirected graph is:
Select correct option:
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A graph in which E = O(V)
A graph in which E = O(log V)
All items above may be used to characterize a dense undirected graph

Which is true statement.
Select correct option:
Breadth first search is shortest path algorithm that works on un-weighted graphs (Right Answer)
Depth first search is shortest path algorithm that works on un-weighted graphs.

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Both of above are true.
None of above are true.

Forward edge is:
Select correct option:
(u, v) where u is a proper descendent of v in the tree.
(u, v) where v is a proper descendent of u in the tree. (Right Answer)
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Select correct option:
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The Isolated vertex is not handled in list. (not Sure)
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BFS
BFS and DFS both are valid (Right Answer)
Level order

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DFS

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Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few
True (Right Answer)
False

You have an adjacency list for G, what is the time complexity to compute Graph transpose G^T.?
?(V + E) Right Answer)
? (V E)
? (V)
? (V^2)

A digraph is strongly connected under what condition?
A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v .
A digraph is strongly connected if for every pair of vertices u, v e V, u can reach v and vice versa. (Right Answer)
A digraph is strongly connected if for at least one pair of vertex u, v e V, u can reach v and vice versa.
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Level order
DFS

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True (Right Answer)
False

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?(V + E) Right Answer)
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? (V)
? (V^2)

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Greedy Technique (Right Answer)
Divide-and-Conquer Technique
Dynamic Programming Technique
The algorithm combines more than one of the above techniques

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Which may be stable sort:
Select correct option:
Bubble sort
Insertion sort
Both of above
Selection sort

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic
geometric
exponent

In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:

Large
Medium
Not known
small

How much time merge sort takes for an array of numbers?
Select correct option:

T(n^2)
T(n)
T(log n)
T(n log n)

Counting sort has time complexity:
Select correct option:

O(n)
O(n+k)
O(k)
O(nlogn)

In which order we can sort?
Select correct option:

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increasing order only
decreasing order only
increasing order or decreasing order
both at the same time

A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
Select correct option:

There is explicit combine process as well to conquer the solution.
No work is needed to combine the sub-arrays, the array is already sorted
Merging the sub arrays
None of above.

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option:

upper
lower
average
log n

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In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
T(n)
T(n / 2)
log n
n / 2 + n / 4

Quick sort is based on divide and conquer paradigm; we divide the problem on base of pivot element and:
There is explicit combine process as w ell to conquer
No w ork is needed to combine the sub-arrays, the a
Merging the subarrays
None of above

The number of nodes in a complete binary tree of height h is
2^(h+1) – 1
2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Which sorting algorithn is faster :
O(n^2)
O(nlogn)
O(n+k)
O(n^3)

We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Slow sorting algorithms run in,
T(n^2)
T(n)
T(log n)

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T(n log n)

One of the clever aspects of heaps is that they can be stored in arrays without using any ________________.

Pointers
Constants
Variables
Functions

Counting sort is suitable to sort the elements in range 1 to k:
K is large
K is small
K may be large or small
None

We do sorting to,
Select correct option:

keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Question # 2 of 10 (Start time: 06:19:38 PM) Total Marks: 1
Heaps can be stored in arrays without using any pointers; this is due to the _____________ nature of the binary tree,
Select correct option:

left-complete
right-complete
tree nodes
tree leaves

Question # 3 of 10 (Start time: 06:20:18 PM) Total Marks: 1
Sieve Technique can be applied to selection problem?
Select correct option:

True
False

Question # 4 of 10 (Start time: 06:21:10 PM) Total Marks: 1
A heap is a left-complete binary tree that conforms to the ____________
Select correct option:

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increasing order only
decreasing order only
heap order
(log n) order

Question # 5 of 10 (Start time: 06:21:39 PM) Total Marks: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:

heap
binary tree
binary search tree
array

Question # 6 of 10 (Start time: 06:22:04 PM) Total Marks: 1
Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

Question # 7 of 10 (Start time: 06:22:40 PM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:

True
False

Question # 8 of 10 (Start time: 06:23:26 PM) Total Marks: 1
The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?
Select correct option:

16
10
32
31

Question # 9 of 10 (Start time: 06:24:44 PM) Total Marks: 1
In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:

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linear
arithmetic
geometric
exponent

Question # 10 of 10 (Start time: 06:25:43 PM) Total Marks: 1
For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic

For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
Slow sorting algorithms run in,
Select correct option:
T(n^2)
T(n)
T(log n)
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
Select correct option:
linear
arithmetic

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geometric

exponent

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,

Select correct option:

T(n)

T(n / 2)

log n

n / 2 + n / 4

The sieve technique is a special case, where the number of sub problems is just

Select correct option:

5

many

1

few

In which order we can sort?

Select correct option:

increasing order only

decreasing order only

increasing order or decreasing order

both at the same time

The recurrence relation of Tower of Hanoi is given below T(n)={1 if n=1 and 2T(n-1) if n >1 In order to move a tower of 5 rings from one peg to another, how many ring moves are required?

Select correct option:

16

10

32

31

Analysis of Selection algorithm ends up with,

Select correct option:

T(n)

T(1 / 1 + n)

T(n / 2)

T((n / 2) + n)

We do sorting to,

Select correct option:

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keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

Divide-and-conquer as breaking the problem into a small number of
Select correct option:

pivot
Sieve
smaller sub problems
Selection

The analysis of Selection algorithm shows the total running time is indeed ________in n,
Select correct option:

arithmetic
geometric
linear
orthogonal

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:

n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

Sieve Technique can be applied to selection problem?
Select correct option:

True
false

For the heap sort we store the tree nodes in
Select correct option:

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level-order traversal
in-order traversal
pre-order traversal
post-order traversal

One of the clever aspects of heaps is that they can be stored in arrays without using any _______________.
Select correct option:
pointers
constants
variables
functions

A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Divide-and-conquer as breaking the problem into a small number of
Select correct option:
pivot
Sieve
smaller sub problems
Selection

Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves

For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately

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A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

We do sorting to,
Select correct option:
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

How many elements do we eliminate in each time for the Analysis of Selection algorithm?
Select correct option:
n / 2 elements
(n / 2) + n elements
n / 4 elements
2 n elements

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Question # 1 of 10 (Start time: 08:17:23 AM) Total M a r k s: 1
The number of nodes in a complete binary tree of height h is
Select correct option:
2^(h+1) – 1

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2 * (h+1) – 1
2 * (h+1)
((h+1) ^ 2) – 1
Question # 2 of 10 (Start time: 08:18:46 AM) Total M a r k s: 1
A (an) _________ is a left-complete binary tree that conforms to the heap order
Select correct option:
heap
binary tree
binary search tree
array

Question # 3 of 10 (Start time: 08:19:38 AM) Total M a r k s: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False

Question # 4 of 10 (Start time: 08:20:33 AM) Total M a r k s: 1
Heaps can be stored in arrays without using any pointers; this is due to the ____________ nature of the binary tree,
Select correct option:
left-complete
right-complete
tree nodes
tree leaves

Question # 5 of 10 (Start time: 08:21:59 AM) Total M a r k s: 1
In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

Question # 6 of 10 (Start time: 08:23:01 AM) Total M a r k s: 1
For the sieve technique we solve the problem,
Select correct option:
recursively
mathematically
precisely
accurately
Theta asymptotic notation for T (n) :
Select correct option:

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Set of functions described by: c1g(n)Set of functions described by c1g(n)>=f(n) for c1 s
Theta for T(n)is actually upper and worst case comp
Set of functions described by:
c1g(n)

Question # 8 of 10 (Start time: 08:24:39 AM) Total M a r k s: 1
The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
many
1
few
Question # 9 of 10 (Start time: 08:25:54 AM) Total M a r k s: 1
Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

Question # 10 of 10 (Start time: 08:26:44 AM) Total M a r k s: 1
The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines

Memorization is?
To store previous results for future use
To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later
To make the process accurate
None of the above

Question # 2 of 10 Total M a r k s: 1
Which sorting algorithm is faster
O (n log n)
O n^2
O (n+k)
O n^3

Quick sort is

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Stable & in place
Not stable but in place
Stable but not in place
Some time stable & some times in place

One example of in place but not stable algorithm is
Merger Sort
Quick Sort
Continuation Sort
Bubble Sort

In Quick Sort Constants hidden in T(n log n) are
Large
Medium
Small
Not Known

Continuation sort is suitable to sort the elements in range 1 to k
K is Large
K is not known
K may be small or large
K is small

In stable sorting algorithm.
One array is used
More than one arrays are required
Duplicating elements not handled
duplicate elements remain in the same relative position after sorting

Which may be a stable sort?
Merger
Insertion
Both above
None of the above

An in place sorting algorithm is one that uses ___ arrays for storage
Two dimensional arrays
More than one array
No Additional Array
None of the above

Continuing sort has time complexity of ?
O(n)

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O(n+k)
O(nlogn)
O(k)

We do sorting to,
keep elements in random positions
keep the algorithm run in linear order
keep the algorithm run in (log n) order
keep elements in increasing or decreasing order

In Sieve Technique we donot know which item is of interest

True
False
A (an) _________ is a left-complete binary tree that conforms to the heap order
heap
binary tree
binary search tree
array
27. The sieve technique works in ___________ as follows
phases
numbers
integers
routines

For the sieve technique we solve the problem,
recursively
mathematically
precisely
accurately
29. For the heap sort, access to nodes involves simple _______________ operations.
arithmetic
binary
algebraic
logarithmic

The analysis of Selection algorithm shows the total running time is indeed ________in n,\
arithmetic

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geometric
linear
orthogonal

For the heap sort, access to nodes involves simple _______________ operations.
Select correct option:
arithmetic
binary
algebraic
logarithmic

Sieve Technique applies to problems where we are interested in finding a single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

Question # 9 of 10 (Start time: 07:45:36 AM) Total Marks: 1
In Sieve Technique we do not know which item is of interest
Select correct option:
True
False

How much time merge sort takes for an array of numbers?
Select correct option:
T(n^2)
T(n)
T(log n)
T(n log n)

For the heap sort we store the tree nodes in
Select correct option:
level-order traversal
in-order traversal
pre-order traversal
post-order traversal

Sorting is one of the few problems where provable ________ bonds exits on how fast we can sort,
Select correct option:

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upper
lower
average
log n

single item from a larger set of _____________
Select correct option:
n items
phases
pointers
constant

A heap is a left-complete binary tree that conforms to the ___________
Select correct option:
increasing order only
decreasing order only
heap order
(log n) order

In the analysis of Selection algorithm, we make a number of passes, in fact it could be as many as,
Select correct option:
T(n)
T(n / 2)
log n
n / 2 + n / 4

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

The sieve technique works in ___________ as follows
Select correct option:
phases
numbers
integers
routines
For the Sieve Technique we take time
Select correct option:
T(nk)

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T(n / 3)
n^2
n/3

In the analysis of Selection algorithm, we eliminate a constant fraction of the array with each phase; we get the convergent _______________ series in the analysis,
linear
arithmetic
geometric
exponent

Analysis of Selection algorithm ends up with,
Select correct option:
T(n)
T(1 / 1 + n)
T(n / 2)
T((n / 2) + n)

Quiz Start Time: 07:23 PM
Time Left 90
sec(s)
Question # 1 of 10 (Start time: 07:24:03 PM) Total M a r k s: 1
In in-place sorting algorithm is one that uses arrays for storage :
Select correct option:
An additional array
No additional array
Both of above may be true according to algorithm
More than 3 arrays of one dimension.

Time Left 89
sec(s)
Question # 2 of 10 (Start time: 07:25:20 PM) Total M a r k s: 1
Which sorting algorithn is faster :
Select correct option:
O(n^2)
O(nlogn)
O(n+k)
O(n^3)
In stable sorting algorithm:
Select correct option:
One array is used
In which duplicating elements are not handled.

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More then one arrays are required.

Duplicating elements remain in same relative posistion after sorting.

Counting sort has time complexity:
Select correct option:
O(n)
O(n+k)
O(k)
O(nlogn)

Counting sort is suitable to sort the elements in range 1 to k:
Select correct option:
K is large
K is small
K may be large or small
None

Memorization is :
Select correct option:
To store previous results for further use.
To avoid unnecessary repetitions by writing down the results of recursive calls and looking them again if needed later
To make the process accurate.
None of the above

The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Which may be stable sort:
Select correct option:
Bubble sort
Insertion sort
Both of above

In Quick sort algorithm, constants hidden in T(n lg n) are
Select correct option:

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Large
Medium
Not known
small

Quick sort is
Select correct option:
Stable and In place
Not stable but in place
Stable and not in place
Some time in place and send some time stable

For the Sieve Technique we take time
T(nk)
T(n / 3)
n^2
n/3

The sieve technique is a special case, where the number of sub problems is just
Select correct option:
5
Many
1
Few

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,
Select correct option:
divide-and-conquer
decrease and conquer
greedy nature
2-dimension Maxima

Quick sort is
Select correct option:
Stable and In place
Not stable but in place
Stable and not in place
Some time in place and send some time stable

Made by

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Memoization is :
Select correct option:
To store previous results for further use.
To avoid unnecessary repetitions by writing down the results of
recursive calls and looking them again if needed later
To make the process accurate.
None of the above

One Example of in place but not stable sort is
Quick
Heap
Merge
Bubble

The running time of quick sort depends heavily on the selection of
Select correct option:
No of inputs
Arrangement of elements in array
Size o elements
Pivot elements

Question # 9 of 10 (Start time: 07:39:07 PM) Total M a r k s: 1
In Quick sort algorithm,constants hidden in T(n lg n) are
Select correct option:
Large
Medium
Not known
Small

Theta asymptotic notation for T (n) :
Select correct option:
Set of functions described by: c1g(n)<=f(n) for c1 some constant and n=n0
Set of functions described by c1g(n)>=f(n) for c1 some constant and n=n0
Theta for T(n)is actually upper and worst case complexity of the code
Set of functions described by: c1g(n)<=f(n)<=c2g(n) for c1 and c2 some constants and n=n0