National Testing Agency

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Data Structures

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Data Structures

Section Id :	7077563
Section Number :	1
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Mandatory or Optional:	Mandatory
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Section Marks:	100
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	7077563
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 707756131 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____ is used to describe the algorithm, in less formal language

A) None

B) Cannot be defined

C) Natural language

D) Pseudocode

Question Number : 2 Question Id : 707756132 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____ is the step-by-step recipe for solving an instance problem

A) Analysis

B) Pseudocode

C) Complexity

D) Algorithm

Question Number : 3 Question Id : 707756133 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following shortest path algorithm cannot detect presence of negative weight cycle graph?

A) Bellman ford algorithm

B) Floyd –Warshall algorithm

C) Dijikstra algorithm

D) None of the options

Question Number : 4 Question Id : 707756134 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Dijikstra algorithm is for finding

A) Shortest path from single source to several sinks

B) Minimum spanning tree for graph

C) Shortest list of nodes in a undirected graph with negative edge weights

D) All the options

Question Number : 5 Question Id : 707756135 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____ of a program is the amount of memory used at once by the algorithm until it completes its execution.

A) Space Complexity

B) Time Complexity

C) Divide and Conquer

D) Dynamic Programing

Question Number : 6 Question Id : 707756136 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The property of binary tree is

A) The first subset is called left subtree

B) The second subtree is called right subtree

C) The root cannot contain NULL

D) The right subtree can be empty

Question Number : 7 Question Id : 707756137 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A linear collection of data elements where the linear node is given by means of pointer is called

A) Linked list

B) Node list

C) Primitive list

D) None of the options

Question Number : 8 Question Id : 707756138 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

..... is not the component of data structure.

A) Operations

B) Storage Structures

C) Algorithms

D) None of the options

Question Number : 9 Question Id : 707756139 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the address of A[1][1] and A[2][1] are 1000 and 1010 respectively and each element occupies 2 bytes then the array has been stored in _____ order

A) Row major

B) Column major

C) All the options

D) None of the options

Question Number : 10 Question Id : 707756140 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Any node is the path from the root to the node is called

A) Successor node

B) Ancestor node

C) Internal node

D) None of the options

Question Number : 11 Question Id : 707756141 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

…… is very useful in situation when data have to stored and then retrieved in reverse order.

A) Stack

B) Queue

C) List

D) Link list

Question Number : 12 Question Id : 707756142 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

…….. level is where the model becomes compatible executable code

A) Abstract level

B) Application level

C) Implementation level

D) All the options

Question Number : 13 Question Id : 707756143 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

…… is not an operation performed on linear list

A) Insertion

B) Insertion & Deletion

C) Deletion & Traversal

D) None of the options

Question Number : 14 Question Id : 707756144 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An adjacency matrix representation of a graph cannot contain information of

A) Nodes

B) Edges

C) Direction of Edges

D) Parallel Edges

Question Number : 15 Question Id : 707756145 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is/are the levels of implementation of data structure

A) Abstract level

B) Application level

C) Implementation level

D) All the options

Question Number : 16 Question Id : 707756146 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

..... is a directed tree in which out degree of each node is less than or equal to two

A) Unary tree

B) Ternary tree

C) Binary tree

D) Both B and C

Question Number : 17 Question Id : 707756147 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Representation of data structure in memory is known as

A) Recursive

B) Abstract Data Type

C) Storage Structure

D) File Structure

Question Number : 18 Question Id : 707756148 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An adjacency matrix representation of a graph cannot contain information of

A) Nodes

B) Edges

C) Direction of Edges

D) Parallel Edges

Question Number : 19 Question Id : 707756149 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An ADT is defined to be a mathematical model of a user-defined type along with the collection of all _____ operations on that model.

A) Cardinality

B) Assignment

C) Primitive

D) Structured

Question Number : 20 Question Id : 707756150 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The memory address of fifth element of an array can be calculated by the formula

A) LOC(Array[5]=Base(Array)+w(5-lower bound), where w is the number of words per memory cell for the array

`B) LOC(Array[5])=Base(Array[5])+(5-lower bound), where w is the number of words per memory cell for the array

C) LOC(Array[5])=Base(Array[4])+(5-Upper bound), where w is the number of words per memory cell for the array

D) None of the options

Question Number : 21 Question Id : 707756151 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following data structures are indexed structures?

A) Linear Arrays

B) Linked Lists

C) Both The Options

D) None Of The Options

Question Number : 22 Question Id : 707756152 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A characteristic of the data that binary search uses, but the linear search ignores is the_____.

A) Order of the elements of the list

B) Length of the list

C) Maximum value in list

D) Type of elements of the list

Question Number : 23 Question Id : 707756153 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which data structure is needed to convert infix notation to postfix notation?

A) Branch

B) Queue

C) Tree

D) Stack

Question Number : 24 Question Id : 707756154 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following operations is performed more efficiently by doubly linked list than by singly linked list?

A) Deleting a node whose location in given

B) Searching of an unsorted list for a given item

C) Inverting a node after the node with given location

D) Traversing a list to process each node

Question Number : 25 Question Id : 707756155 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the postfix form of the following prefix *+ab–cd

A) ab+cd–*

B) abc+*–

C) ab+*cd–

D) ab+*cd–

Question Number : 26 Question Id : 707756156 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The largest element of an array index is called its

A) Lower bound

B) Range

C) Upper bound

D) All the options

Question Number : 27 Question Id : 707756157 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An algorithm is made up of two independent time complexities f (n) and g (n). Then the complexities of the algorithm is in the order of

A) Product(f(n),g(n))

B) Max (f(n),g(n))

C) Min (f(n),g(n))

D) Sum(f(n),g(n))

Question Number : 28 Question Id : 707756158 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a limitation of binary search algorithm?

A) Must use a sorted array

B) Requirement of sorted array is expensive when a lot of insertion and deletions are needed

C) There must be a mechanism to access middle element directly

D) Binary search algorithm is not efficient when the data elements are more than 1000

Question Number : 29 Question Id : 707756159 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The extra key inserted at the end of the array is called as,

A) End key

B) Stop key

C) Sentinel

D) Transposition

Question Number : 30 Question Id : 707756160 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the result of the following operation Top (Push (S, X))

A) X

B) Null

C) S

D) None of the options

Question Number : 31 Question Id : 707756161 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The best average behaviour is shown by

A) Quick Sort

B) Merge Sort

C) Insertion Sort

D) Heap Sort

Question Number : 32 Question Id : 707756162 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider an implementation of unsorted singly linked list. Suppose it has its representation with a head pointer only. Which of the following operation can be implemented in O(1) time?

i) Insertion at the front of the linked list

ii) Insertion at the end of the linked list

iii) Deletion of the front node of the linked list

iv) Deletion of the last node of the linked list

A) I and II

B) I and III

C) I, II and III

D) I, II and IV

Question Number : 33 Question Id : 707756163 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the following pairs

I. O(log n)	(M) Heap sort
II. O(n)	(N) DFS
III. (nlogn)	(O) Binary search
IV. $O(n^2)$	(P) Selecting K^{th} smallest elements

A) I –O, II-N, III-M, IV-P

B) I –O, II-P, III-M, IV-N

C) I –P, II-M, III-N, IV-O

D) I –O, II-N, III-P, IV-M

Question Number : 34 Question Id : 707756164 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Solve the following recurrence relation?

T (n) = 7T (n/2) + 3n^2 + 2

A) O(n^2.8)

B) O(n^3)

C) θ(n^2.8)

D) All the options

Question Number : 35 Question Id : 707756165 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The time factor when determining the efficiency of algorithms is measured by

A) Counting microseconds

B) Counting the number of key operations

C) Counting the number of operations

D) Counting the kilobytes of an operation

Question Number : 36 Question Id : 707756166 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The difference between linear array and a record is

A) An array is suitable for homogeneous data but the data items in a record may have different data type

B) In a record, there may not be a natural ordering in opposed to linear array

C) A record form a hierarchical structure but a linear array does not

D) All the options

Question Number : 37 Question Id : 707756167 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statement is false?

A) Arrays are dense lists and static data structure

B) Data elements in linked list need not be stored in adjacent space in memory

C) Pointers store the next data element of a list

D) Linked lists are collection of the nodes that contain information part and next pointer

Question Number : 38 Question Id : 707756168 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider the tree. If the post order traversal gives ab –cd * + then the label of the nodes 1, 2, 3, ….. will be

A) +, -, *, a, b, c, d

B) a, -, b, +, c, *, d

C) a, b, c, d, -, *, +

D) -, a, b, +, *, c, d

Question Number : 39 Question Id : 707756169 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two main measures of the efficiency of an algorithm are

A) Processor and memory

B) Complexity and capacity

C) Time and memory

D) Data and space

Question Number : 40 Question Id : 707756170 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The term "push" and "pop" is related to the

A) Array

B) Lists

C) Stacks

D) All the options

Question Number : 41 Question Id : 707756171 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a two way list?

A) Grounded header list

B) Circular header list

C) Linked list with header and trailer nodes

D) None of the options

Question Number : 42 Question Id : 707756172 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A binary tree in which every non-leaf node has non-empty left and right subtrees is

called a strictly binary tree. Such a tree with 10 leaves

A) Cannot have more than 19 nodes

B) Has exactly 19 nodes

C) Has exactly 17 nodes

D) Cannot have more than 17 nodes

Question Number : 43 Question Id : 707756173 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal

would return

A) FAEKCDBHG

B) FAEKCDHGB

C) EAFKHDCBG

D) FEAKDCHBG

Question Number : 44 Question Id : 707756174 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following data structure can't store the non-homogeneous data elements?

A) Arrays

B) Records

C) Pointers

D) None of the options

Question Number : 45 Question Id : 707756175 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A data structure where elements can be added or removed at either end but not in the middle

A) Linked lists

B) Stacks

C) Queues

D) Deque

Question Number : 46 Question Id : 707756176 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The situation when in a linked list START=NULL is

A) Underflow

B) Overflow

C) Houseful

D) Saturated

Question Number : 47 Question Id : 707756177 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Each data item in a record may be a group item composed of sub-items; those items which are indecomposable are called

A) Elementary items

B) Atoms

C) Scalars

D) All the options

Question Number : 48 Question Id : 707756178 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following abstract data types can be used to represent a many to many relation?

A) Tree

B) Plex

C) Graph

D) Queue

Question Number : 49 Question Id : 707756179 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Merge sort uses

A) Divide and conquer strategy

B) Backtracking approach

C) Heuristic search

D) Greedy approach

Question Number : 50 Question Id : 707756180 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The way a card game player arranges his cards as he picks them up one by one, is an example of

A) Bubble sort

B) Selection sort

C) Insertion sort

D) Merge sort

Question Number : 51 Question Id : 707756181 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following traversal techniques lists the nodes of a binary search tree in ascending order?

A) Post-order

B) In-order

C) Pre-order

D) None of the options

Question Number : 52 Question Id : 707756182 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a circularly linked list organization, insertion of a record involves the modification of

A) no pointer

B) 1 pointer

C) 2 pointers

D) 3 pointers

Question Number : 53 Question Id : 707756183 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

You want to check whether a given set of items is sorted or not. Which of the following sorting methods will be the most efficient if it is already in sorted order?

A) Bubble sort

B) Selection sort

C) Insertion sort

D) Merge sort

Question Number : 54 Question Id : 707756184 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Stacks can't be used to

A) Evaluate an arithmetic expression in postfix form

B) Implement recursion

C) Convert a given arithmetic expression in infix form to its equivalent postfix form D) Allocate resources by the operating system

Question Number : 55 Question Id : 707756185 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Sorting is useful for

A) Report generation

B) Minimizing the storage needed

C) Making searching easier and efficient

D) Responding to queries easily

Question Number : 56 Question Id : 707756186 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Sorting is useful for

A) Report generation

B) Minimizing the storage needed

C) Making searching easier and efficient

D) Responding to queries easily

Question Number : 57 Question Id : 707756187 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Preorder is nothing but

A) Depth-first order

B) Breadth- first order

C) Topological order

D) Linear order

Question Number : 58 Question Id : 707756188 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The number of possible binary trees with 3 nodes is

A) 12

B) 13

C) 5

D) 15

Question Number : 59 Question Id : 707756189 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

There are 4 different algorithms A1, A2, A3, A4 to solve a given problem with the order log (n), loglog (n), nlog (n), n/log (n) respectively. Which is the best algorithm?

A) A1

B) A2

C) A3

D) A4

Question Number : 60 Question Id : 707756190 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The postfix expression for the infix expression: A + B* (C+D) /F + D*E is

A) AB+CD+*F/D+E*

B) ABCD+*F/+DE*+

C) A*B+CD/F*DE++

D) A+*BCD/F*DE++

Question Number : 61 Question Id : 707756191 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the advantage of using a dynamic set in direct addressing?

A) It saves time

B) It saves space

C) It saves both time and space

D) None of the options

Question Number : 62 Question Id : 707756192 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is a bit array?

A) Data structure for representing arrays of records

B) Data structure that compactly stores bits

C) An array in which most of the elements have the same value

D) None of the options

Question Number : 63 Question Id : 707756193 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The complexity of multiplying two matrices of order m*n and n*p is

A) mnp

B) mp

C) mn

D) np

Question Number : 64 Question Id : 707756194 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A full binary tree with 2n+1 nodes contain

A) n leaf nodes

B) n non-leaf nodes

C) n-1 leaf nodes

D) n-1 non-leaf nodes

Question Number : 65 Question Id : 707756195 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Given an empty AVL tree, how would you construct AVL tree when a set of numbers are given without performing any rotations?

A) just build the tree with the given input

B) find the median of the set of elements given, make it as root and construct the tree

C) use trial and error

D) use dynamic programming to build the tree

Question Number : 66 Question Id : 707756196 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A mathematical-model with a collection of operations defined on that model is called

A) Data Structure

B) Abstract Data Type

C) Primitive Data Type

D) Algorithm

Question Number : 67 Question Id : 707756197 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A technique for direct search is

A) Binary Search

B) Linear Search

C) Tree Search

D) Hashing

Question Number : 68 Question Id : 707756198 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The number of leaf nodes in a complete binary tree of depth d is

A) 2d

B) 2d−1+1

C) 2d+1+1

D) 2d+1

Question Number : 69 Question Id : 707756199 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Merging 4 sorted files containing 50, 10, 25 and 15 records will take____time

A) O (100)

B) O (200)

C) O (175)

D) O (125)

Question Number : 70 Question Id : 707756200 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For an undirected graph with n vertices and e edges, the sum of the degree of each

vertex is equal to

A) 2n

B) (2n-1)/2

C) 2e

D) e2/2

Question Number : 71 Question Id : 707756201 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The number of interchanges required to sort 5, 1, 6, 2 4 in ascending order using

Bubble Sort is

A) 6

B) 5

C) 7

D) 8

Question Number : 72 Question Id : 707756202 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a node in a Binary Search Tree has two children, then its inorder predecessor has

A) No right child

B) No left child

C) Two children

D) One child

Question Number : 73 Question Id : 707756203 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider a B+-tree in which the maximum number of keys in a node is 5. What is the

minimum number of keys in any non-root node?

A) 1

B) 2

C) 3

D) 4

Question Number : 74 Question Id : 707756204 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following is a key factor for preferring B-trees to binary search trees

for indexing database relations?

A) Database relations have a large number of records

B) Database relations are sorted on the primary key

C) B-trees require less memory than binary search trees

D) Data transfer form disks is in blocks

Question Number : 75 Question Id : 707756205 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

B+ trees are preferred to binary trees in databases because

A) Disk capacities are greater than memory capacities

B) Disk access is much slower than memory access

C) Disk data transfer rates are much less than memory data transfer rates

D) Disks are more reliable than memory

Question Number : 76 Question Id : 707756206 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A B-tree of order 4 is built from scratch by 10 successive insertions. What is the maximum number of node splitting operations that may take place?

A) 3

B) 4

C) 5

D) 6

Question Number : 77 Question Id : 707756207 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The order of a leaf node in a tree B+ ? is the maximum number of (value, data record pointer) pairs it can hold. Given that the block size is 1K bytes, data record pointer is 7 bytes long, the value field is 9 bytes long and a block pointer is 6 bytes long, what is the order of the leaf node?

A) 63

B) 64

C) 67

D) 68

Question Number : 78 Question Id : 707756208 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The order of an internal node in a B+ tree index is the maximum number of children it can have. Suppose that a child pointer takes 6 bytes, the search field value takes 14 bytes, and the block size is 512 bytes. What is the order of the internal node?

A) 24

B) 25

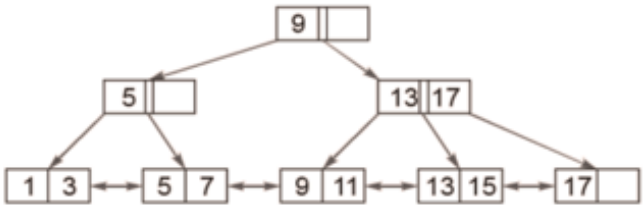
C) 26

D) 27

Question Number : 79 Question Id : 707756209 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

With reference to the B+ tree index of order 1 shown below, the minimum number of nodes (including the root node) that must be fetched in order to satisfy the following query: "Get all records with a search key greater than or equal to 7 and less than 15" is _____



A) 4

B) 5

C) 6

D) 7

Question Number : 80 Question Id : 707756210 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which data structure is most efficient to find the top 10 largest items out of 1 million items stored in file?

A) Min heap

B) Max heap

C) BST

D) Sorted array

Question Number : 81 Question Id : 707756211 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider a situation where a client receives packets from a server. There may be differences in speed of the client and the server. Which data structure is best suited for synchronization?

A) Circular Linked List

B) Queue

C) Stack

D) Priority Queue

Question Number : 82 Question Id : 707756212 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is correct recurrence for worst case of Binary Search?

A) $T(n) = 2T(n/2) + O(1)$ and $T(1) = T(0) = O(1)$

B) $T(n) = T(n-1) + O(1)$ and $T(1) = T(0) = O(1)$

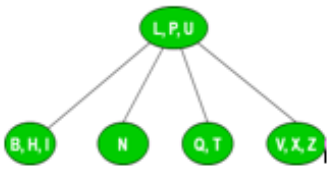
C) $T(n) = T(n/2) + O(1)$ and $T(1) = T(0) = O(1)$

D) $T(n) = T(n-2) + O(1)$ and $T(1) = T(0) = O(1)$

Question Number : 83 Question Id : 707756213 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

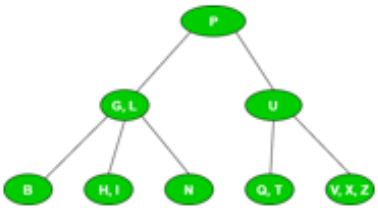
Correct Marks : 1 Wrong Marks : 0

Consider the following 2-3-4 tree (i.e., B-tree with a minimum degree of two) in which each data item is a letter. The usual alphabetical ordering of letters is used in constructing the tree.

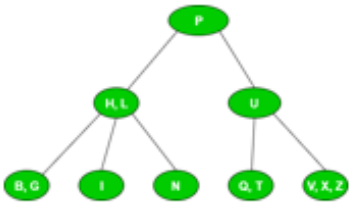


What is the result of inserting G in the above tree?

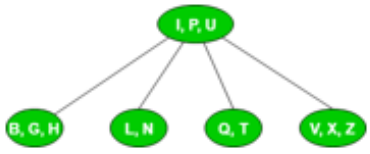
A)



B)



C)

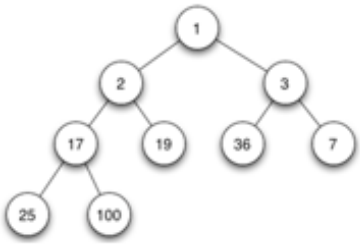


D) None of the options

Question Number : 84 Question Id : 707756214 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If we implement heap as min-heap , deleting root node (value 1)from the heap. What would be the value of root node after second iteration if leaf node (value 100) is chosen to replace the root at start.



A) 2

B) 100

C) 17

D) 3

A hash table of length 10 uses open addressing with hash function h(k)=k mod 10, and linear probing. After inserting 6 values into an empty hash table, the table is as shown below.

0	
1	
2	42
3	23
4	34
5	52
6	46
7	33
8	
9	

Question Number : 85 Question Id : 707756215 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following choices gives a possible order in which the key values could have been inserted in the table?

A) 46, 42, 34, 52, 23, 33

B) 34, 42, 23, 52, 33, 46

C) 46, 34, 42, 23, 52, 33

D) 42, 46, 33, 23, 34, 52

Question Number : 86 Question Id : 707756216 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

How many different insertion sequences of the key values using the hash function h(k) = k mod 10 and linear probing will result in the hash table shown above?

A) 10
B) 20
C) 30
D) 40

Question Number : 87 Question Id : 707756217 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Consider a hash table of size seven, with starting index zero, and a hash function (3x + 4) mod7. Assuming the hash table is initially empty, which of the following is the contents of the table when the sequence 1, 3, 8, 10 is inserted into the table using closed hashing? Note that '_' denotes an empty location in the table.

A) 8, _, _, _, _, _, 10
B) 1, 8, 10, _, _, _, 3
C) 1, _, _, _, _, _,3
D) 1, 10, 8, _, _, _, 3

Question Number : 88 Question Id : 707756218 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Given the following input (4322, 1334, 1471, 9679, 1989, 6171, 6173, 4199) and the hash function x mod 10, which of the following statements are true?

i. 9679, 1989, 4199 hash to the same value
ii. 1471, 6171 hash to the same value
iii. All elements hash to the same value
iv. Each element hashes to a different value (GATE CS 2004)

A) i only
B) ii only
C) i and ii
D) iii or iv

Question Number : 89 Question Id : 707756219 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which one of the following hash functions on integers will distribute keys most uniformly over 10 buckets numbered 0 to 9 for i ranging from 0 to 2020?

A) h(i) =i2 mod 10

B) h(i) =i3 mod 10

C) h(i) = (11 * i2) mod 10

D) h(i) = (12 * i) mod 10

Question Number : 90 Question Id : 707756220 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Given a hash table T with 25 slots that stores 2000 elements, the load factor α for T is

_____

A) 80

B) 0.0125

C) 8000

D) 1.25

Question Number : 91 Question Id : 707756221 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statement(s) is TRUE?

I. A hash function takes a message of arbitrary length and generates a fixed length code.

II. A hash function takes a message of fixed length and generates a code of variable length.

III. A hash function may give the same hash value for distinct messages.

A) I only

B) II and III

C) I and III

D) II only

Question Number : 92 Question Id : 707756222 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Suppose we are sorting an array of eight integers using quicksort, and we have just finished the first partitioning with the array looking like this:

2 5 1 7 9 12 11 10

Which statement is correct?

A) The pivot could be either the 7 or the 9.

B) The pivot could be the 7, but it is not the 9

C) The pivot is not the 7, but it could be the 9

D) Neither the 7 nor the 9 is the pivot

Question Number : 93 Question Id : 707756223 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Suppose we are sorting an array of eight integers using heapsort, and we have just finished some heapify (either maxheapify or minheapify) operations. The array now looks like this: 16 14 15 10 12 27 28 How many heapify operations have been performed on root of heap?

A) 1

B) 2

C) 3 or 4

D) 5 or 6

Question Number : 94 Question Id : 707756224 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The worst case occur in linear search algorithm when …….

A) Item is somewhere in the middle of the array

B) Item is not in the array at all

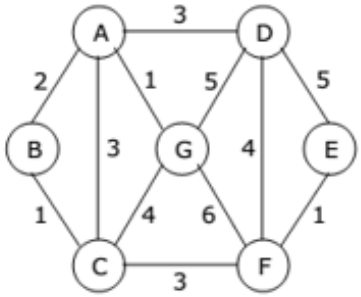
C) Item is the last element in the array

D) Item is the last element in the array or item is not there at all

Question Number : 95 Question Id : 707756225 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the figure below, starting at vertex A, which is a correct order for Prim's minimum spanning tree algorithm to add edges to the minimum spanning tree?



A) (A,G) then (A,B) then (B,C) then (A, D) then (C, F) then (F,E)

B) (A,G) then (B,C) then (E,F) then (A, B) then (C, F) then (D,E)

C) (A,G) then (A,B) then (A,C) then (A, D) then (A, D) then (C,F)

D) (A,G) then (G,C) then (C,B) then (C, F) then (F, E) then (E,D)

Question Number : 96 Question Id : 707756226 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Binary search algorithm cannot be applied to …

A) sorted linked list

B) sorted binary trees

C) sorted linear array

D) pointer array

Question Number : 97 Question Id : 707756227 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Sorting algorithm can be characterized as ……

A) Simple algorithm which require the order of n2 comparisons to sort n items.

B) Sophisticated algorithms that require the O(nlog2n) comparisons to sort items.

C) Both the options

D) None of the options

Question Number : 98 Question Id : 707756228 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

State True or False for internal sorting algorithms.

i) Internal sorting are applied when the entire collection if data to be sorted is small enough that the sorting can take place within main memory.

ii) The time required to read or write is considered to be significant in evaluating the performance of internal sorting.

A) i-True, ii-True

B) i-True, ii-False

C) i-False, ii-True

D) i-False, ii-False

Question Number : 99 Question Id : 707756229 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following algorithm(s) can be used to sort n integers in range [1…..n^3] in O(n) time?

A) Heap sort

B) Quick sort

C) Merge sort

D) Radix sort

Question Number : 100 Question Id : 707756230 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Partition and exchange sort is ……..

A) Quick sort

B) Tree sort

C) Heap sort

D) Bubble sort