Q1. What is the worst case run-time complexity of binary search algorithm?

A. O(n2)
B. O(nlog n)
C. O(n3)
D. O(n)

Answer D

Q2. If there's no base criteria in a recursive program, the program will

A. not be executed.
B. execute until all conditions match.
C. execute infinitely.
D. obtain progressive approach.

Answer C

Q3. The depth of complete binary tree is given by

A. Dn = n log2n
B. Dn = n log2n +1
C. Dn = log2n
D. Dn = log2n + 1

Answer D

Q4. The postfix form of the expression (A+ B)*(C*D- E)*F / G is?

A. AB+ CD*E – FG /**
B. AB + CD* E – F **G /
C. AB + CD* E – *F *G /
D. AB + CDE * – * F *G /

Answer C

Q5. Which data structure is needed to convert infix notation to postfix notation?

A. Branch
B. Tree
C. Queue
D. Stack

Answer D

Q6. One can convert a binary tree to its mirror image by traversing it in

A. Inorder
B. Preorder
C. Postorder
D. None of the above

Answer C

Q7. A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is?le is?

A. Queue
B. Circular queue
C. Dequeue
D. Priority queue

Answer C

Q8. What would be the asymptotic time complexity to add a node at the end of singly linked list, if the pointer is initially pointing to the head of the list?

A. O(1)
B. O(n)
C. θ(n)
D. θ(1)

Answer C

Q9. Which of the following points is/are not true about Linked List data structure when it is compared with array?

A. Arrays have better cache locality that can make them better in terms of performance
B. It is easy to insert and delete elements in Linked List
C. Random access is not allowed in a typical implementation of Linked Lists
D. Access of elements in linked list takes less time than compared to arrays

Answer D

Q10. You are given pointers to first and last nodes of a singly linked list, which of the following operations are dependent on the length of the linked list?

A. Delete the first element

B. Insert a new element as a first element

C. Delete the last element of the list

D. Add a new element at the end of the list

Answer C

Q11. What is a memory efficient double linked list?

A. Each node has only one pointer to traverse the list back and forth
B. The list has breakpoints for faster traversal
C. An auxiliary singly linked list acts as a helper list to traverse through the doubly linked list
D. A doubly linked list that uses bitwise AND operator for storing addresses

Answer A

Q12. How do you calculate the pointer difference in a memory efficient double linked list?

A. head xor tail
B. pointer to previous node xor pointer to next node
C. pointer to previous node – pointer to next node
D. pointer to next node – pointer to previous node

Answer B

Q13. Which of the following application makes use of a circular linked list?

A. Undo operation in a text editor
B. Recursive function calls
C. Allocating CPU to resources
D. Implement Hash Tables

Answer C

Q14. Array implementation of Stack is not dynamic, which of the following statements supports this argument?

A. space allocation for array is fixed and cannot be changed during run-time
B. user unable to give the input for stack operations
C. a runtime exception halts execution
D. improper program compilation

Answer A

Q15. Which of the following data structures can be used for parentheses matching?

A. n-ary tree

B. queue

C. priority queue

D. stack

Answer D

Q16. What is the time complexity of enqueue operation?

A. O(logn)
B. O(nlogn)
C. O(n)
D. O(1)

Answer D

Q17. In case of insertion into a linked queue, a node borrowed from the _____ list is inserted in the queue.

A. AVAIL
B. FRONT
C. REAR
D. NULL

Answer A

Q18. Which of the following is true about linked list implementation of queue?

A. In push operation, if new nodes are inserted at the beginning of linked list, then in pop operation, nodes must be removed from end

B. In push operation, if new nodes are inserted at the beginning, then in pop operation, nodes must be removed from the beginning

C. In push operation, if new nodes are inserted at the end, then in pop operation, nodes must be removed from end

D. In push operation, if new nodes are inserted at the end, then in pop operation, nodes must be removed from beginning.

Answer a

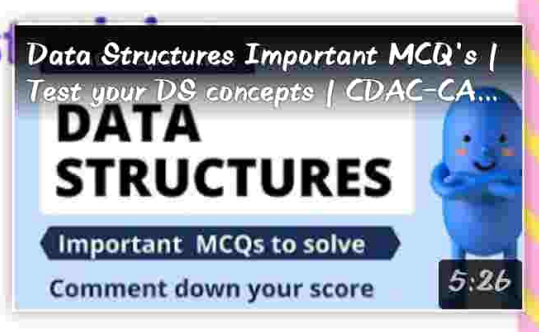
19. The search algorithm that requires data collection to be in sorted and equally distributed form is known to be.

A. Linear search
B. Bubble search
C. Binary search
D. Interpolation search

Answer D

Q20. A data structure named st

A. Formal Data Type
B. Abstract Data Type
C. Absolute Data Type
D. Computational Data Type



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Answer B

Q1. In the arrays, the smallest element of its index also known as?

A. Lower bound
B. Upper bound
C. Range
D. All of the above

Answer A

Q2. In binary search algorithm, which of the following is not required condition?

A. The data items must be sorted
B. We can access to the middle element in any sub list
C. There should be a function to delete and/or insert elements in the list.
D. Number values should only be present in the list

Answer C

Q3. Which of following is contained by the header of the linked list?

A. The address of the first node
B. The address of the last node
C. Pointer to the last record of the actual data
D.Middle record of the actual data

Answer A

Q4. Which of following is the advantage of using linked list?

A. For relatively permanent collections of data
B. Linked list is more flexible it can grow and shrink easily
C. Less time complexity
D. None of the above

Answer B

Q5. Which are the following two phases of testing of program?

A. Best case and worst case
B. Space complexity and the time complexity
C. Validation and checking errors
D. Debugging and profiling

Answer D

Q6. The applications of stack data structure is/are?

A. Backtracking
B. Memory management
C. Arithmetic expression evaluation
D. All of the above

Answer D

Q7. If we want to implement a stack using queue then how many queues are needed? Consider the situation where no other data structure like arrays, linked list is there.

A. 1

B. 2

C. 3

D. 4

Answer B

Q8. Which of the following operations accesses each record exactly once?

A. Inserted
B. Deletion
C. Traversing
D. Searching

Answer C

Q9. Which of the following data structure that contains a relationship between a pair of elements; this is not necessarily hierarchical in nature?

A. Tree
B. Graph
C. String
D. None of the above

Answer B

Q10. Which of the following is the advantage of finding maximum and minimum using the divide and conquer method instead of conditional operators?

A. Reduce Space Complexity
B. For getting the consistent result
C. Reduce Time Complexity
D. All of the above

Answer C

Q11. Which of the following method will choose when sub-problems share sub-problems?

A. Backtracking
B. Greedy Method
C. Divide and Conquer
D. Dynamic Programming

Answer D

Q12. Which of the following is the time complexity of converting a prefix notation to infix notation is?

A. O(n) where n is the length of the equation
B. O(n) where n is number of operands
C. O(1)
D. O(logn) where n is length of the equation

Answer A

Q. The term Push and Pop is related to

A. Queue
B. Stack
C. Both
D. None

Answer B

Q. Stack can be implemented using _____ and _____ ?

A. Array and Binary Tree
B. Linked List and Graph
C. Array and Linked List
D. Queue and Linked List

Answer C

Q. ..... form of access is used to add and remove nodes from a queue.

A. LIFO, Last In First Out

B. FIFO, First In First Out

C. Both a and b

D. None of these

Answer B

Q. Before deletion condition into stack ..... has to be checked.

A. Overflow
B. Underflow
C. Maximum elements
D. Existing elements

Answer B

Q. ..... form of access is used to add remove nodes from a stack.

A. LIFO
B. FIFO
C. Both A and B
D. None of these

Answer A

Q. Which of the following is an application of stack?

A. finding factorial
B. tower of Hanoi
C. infix to postfix
D. all of the above

Answer D

Q. Reversing a great deal of space for each stack in memory will .....

A. Decrease the numbers of times overflow may occur
B. Increase the numbers of times overflow may occur
C. Increase the number of times underflow may occur
D. Increase the number of times underflow may occur

Answer A

Q. In the ..... traversal we process all of a vertex's descendants before we move to an adjacent vertex.

a. Depth Limited
b. With First
c. Breadth First
d. Depth First

Answer D

Q. Which of the following is not the type of queue?

a. Priority queue
b. Circular queue
c. Single ended queue
d. Ordinary queue

Answer C

Q. Circular Queue is also known as _____

a) Ring Buffer
b) Square Buffer
c) Rectangle Buffer
d) Curve Buffer

Answer A

Q. A data structure in which elements can be inserted or deleted at/from both ends but not in the middle is?

a) Queue
b) Circular queue
c) Dequeue
d) Priority queue

Answer C

Q. In conversion from prefix to postfix using stack data-structure, if operators and operands are pushed and popped exactly once, then the run-time complexity is

a) O(1)
b) O(n)
c) O(log n)
d) O(n2)

Answer C

Q. In linked representation of stack the null pointer of the last node in the list signals .....

A. Beginning of the stack
B. Bottom of the stack
C. Middle of the stack
D. In between some value

Answer B

Q. Identify the data structure which allows deletions as per the priority.

(a) Input–restricted deque
(b) Output–restricted deque
(c) Priority queues
(d) dequeue

Answer C

Q. A circular queue is implemented using an array of size 10.
The array index starts with 0, front is 6, and rear is 9.
The insertion of next element takes place at the array index.

a) 0
b) 7
c) 9
d) 10

Answer A

Q. A normal queue, if implemented using an array of size MAX_SIZE, gets full when

a) Rear=MAX_SIZE-1
b) Front=(rear+1)mod MAX_SIZE
c) Front=rear+1
d) Rear=front

Answer A

Q. Which function is used to return the value of first element without dequeueing it?

a) peek()
b) typedef
c) id
d) none of these

Answer A

Q. Identify the data structure which allows deletions at one end of the list but insertion at both ends.

(a) Input–restricted deque
(b) Output–restricted deque
(c) Priority queues
(d) None of above

Answer B

Q. A null pointer of the last node in the list signals .....

a) Beginning of the stack
b) Bottom of the stack
c) Middle of the stack
d) In between some value

Answer B

Q. What is the value of the postfix expression 6 3 2 4 + – *:

A. Something between -5 and -15
B. Something between 5 and -5
C. Something between 5 and 15
D. Something between 15 and 100

Answer D

Q1. A data structure in which linear sequence is maintained by pointers is known as

(A) Array
(B) Stack
(C) Linked list
(D) Pointer-based data structure

Answer C

Q2. Which of the following sorting algorithm is the slowest ?

(A) Bubble sort
(B) Heap sort
(C) Shell sort
(D) Quick sort

nswer A

Q2. Which of the following sorting algorithm is the slowest ?

(A) Bubble sort
(B) Heap sort
(C) Shell sort
(D) Quick sort

Answer A

Q3. Which of the following data structure can be used to represent many-to-many relation?

(A) B-tree
(B) Binary tree
(C) Graph
(D) All of above

Answer C

Q4. Which of the following statement is not true about linked lists?

(A) Element in a linked list, if it is sorted, can be quickly searched by applying binary search technique
(B) Elements are not necessarily stored in contiguous locations
(C) Insertions and deletions can be performed efficiently as compared to arrays
(D) Linked list is a dynamic structure

Answer A

Q5. A non-circular doubly linked list can best and most generally be defined as a ___

(A) Set of elements, each with two pointers
(B) Set of elements chained together with pointers
(C) Linear sequence of elements in sequential memory locations
(D) Linear sequence of elements chained together with pointers

Answer D

Q6. To create a linked structure, each node must have one member, which is ____

(A) A pointer to the head of the list
(B) A pointer to NULL
(C) A pointer to the node type
(D) A reference to the element type

Answer C

Q7. A linear list in which elements can be added or removed at either end is known as

(A) Circlular queue
(B) Priority queue
(C) Queue
(D) Deque

Answer D

Q8. Which of the following data structure is more appropriate to represent a heap?

(A) Two-dimensional array
(B) Doubly linked list
(C) Linear Array
(D) Linked list

Answer C

Q9. A graph in which all vertices have equal degree is known as ____

(A) Complete graph
(B) Regular graph
(C) Multi graph
(D) Simple graph

Answer A

Q10. A graph is a tree if and only if graph is

(A) Directed graph
(B) Contains no cycles
(C) Planar
(D) Completely connected

Answer B

Q11. The elements of a linked list are stored

(A) In a structure
(B) In an array
(C) Anywhere the computer has space for them
(D) In contiguous memory locations

Answer C

Q12. Which of the following data structure is required to convert arithmetic expression in infix to its equivalent postfix notation?

(A) Queue
(B) Linked list
(C) Binary search tree
(D) None of above

Answer D

Q13. If two trees have same structure and but different node content, then they are called ___

(A) Synonyms trees
(B) Joint trees
(C) Equivalent trees
(D) Similar trees

Answer D

Q14. The average case complexity of quick sort for sorting n numbers is

(A) O(n2)
(B) O(nlog2n)
(C) O(n)
(D) O(log2n)

Answer B

Q15. Which of the following operation is not supported by a queue?

(A) Inserting element at rear
(B) Removing element from front
(C) Removing element from middle
(D) None of above

Answer C

Q16. Which of the following statements about a binary tree is correct?

(A) No binary tree is both complete and full
(B) Every full binary tree is also a complete binary tree
(C) Every complete binary tree is also a full binary tree
(D) Every binary tree is either complete or full

Answer B

Q17. With an array-based stack, the algorithm for push is

(A) Increment top and add item to the new top location
(B) Add item to the top location and then increment top
(C) Return the top item and increment top
(D) Return the top item and decrement top

Answer A

Q18. What is the worst case time for quick sort to sort an array of n elements?

(A) 0(n)
(B) 0(nlog2n)
(C) 0(log2n)
(D) 0(log2n)

Answer D

Q19. The best way to find an item in a sorted list implemented using an array is with ___

(A) Direct search
(B) Random search
(C) Binary search
(D) Linear search

Answer C

Q19. Which of the following data structure works on the principle of First Come First Serve?

(A) Priority queue
(B) Heap
(C) Stack
(D) Queue

Answer D

Q1. What is the worst case run-time complexity of binary search algorithm ?

A) O(n2)
B) O(nlog n)
C) O(n3)
D) O(n)

Answer D

Q2. If there's no base criteria in a recursive program, the program will

A) not be executed.
B) execute until all conditions match.
C) execute infinitely.
D) obtain progressive approach.

Answer C

Q3. The depth of complete binary tree is given by

A) n = n log2n

B) n = n log2n +1

C) n = log2n

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Answer D

Q4. The postfix form of the expression
(A+ B)*(C*D- E)*F / G is ?

A) AB+ CD*E – FG /**
B) AB + CD* E – F **G /
C) AB + CD* E – *F *G /
D) AB + CDE * – * F *G /

Answer C

Q5. Which data structure is needed to convert infix notation to postfix notation?

A) Branch
B) Tree
C) Queue
D) Stack

Answer D

Q6. One can convert a binary tree to its mirror image by traversing it in

A) Inorder
B) Preorder
C) Postorder
D) None of the above

Answer C

Q7. For an undirected graph with n vertices and e edges, the sum of degree of each vertex is equal to

A) 2n
B) 2e
C) (e2+1)/2
D) (2n-1)/2

Answer B

Q8. A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is ?

A) Queue
B) Circular queue
C) Dequeue
D)Priority queue

Answer C

Q9. What would be the asymptotic time complexity to add a node at the end of singly linked list, if the pointer is initially pointing to the head of the list?

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B) O(n)
C) θ(n)
D) θ(1)

Answer C

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B) It is easy to insert and delete elements in Linked List
C) Random access is not allowed in a typical implementation of Linked Lists
D) Access of elements in linked list takes less time than compared to arrays

Answer D

Q11. You are given pointers to first and last nodes of a singly linked list, which of the following operations are dependent on the length of the linked list ?

A) Delete the first element
B) Insert a new element as a first element
C) Delete the last element of the list
D) Add a new element at the end of the list

Answer C

Q12. From where does the insertion and deletion of elements get accomplished in Queues ?

a. Front & Rear ends respectively
b. Rear & Front ends respectively
c. Only Front ends
d. Only Rear ends

Answer B

Q13. Which graph consists of an unordered pair of vertices representing the similar edge?

a. Directed Graph
b. Undirected Graph
c. Both a & b
d. None of the above

Answer B

Q14. Which type of Arrays are used to store the information in a matrix form?

a. Multidimensional Arrays
b. Arrays
c. Dimensional Arrays
d. Both A and C

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Answer A