

MCQs

Q.1 Process of removing an element from stack is called _____

- a. Create
- b. Push
- c. Evaluation
- d. Pop

Answer. Pop

Q.2 In a stack, if a user tries to remove an element from an empty stack it is called _____

- a. Overflow
- b. Crash
- c. Underflow
- d. User Flow

Answer. Underflow

Q.3 Number of binary trees formed with 5 nodes are?

- a. 30
- b. 36
- c. 108
- d. 42

Answer. 42

Q.4 In binary search tree which traversal is used for getting ascending order values?

- a. Inorder
- b. Preorder
- c. PostOrder
- d. None of these

Answer. Inorder

Q.5 Entries in a stack are “ordered”. What is the meaning of this statement?

- a. A collection of stacks is sortable
- b. Stack entries may be compared with the ‘<’ operation
- c. The entries are stored in a linked list
- d. There is a Sequential entry that is one by one

Answer. There is a Sequential entry that is one by one

Q.6 Which of the following is not an advantage of trees?

- a. Hirearichal structure
- b. Faster Search
- c. Router ALgorithm
- d. Undo/Redo Operations of notepad

Answer. Undo/Redo Operations of notepad

Q.7 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. FIFO, First In First Out

Q.8 A binary tree T has n leaf nodes. The number of nodes of degree 2 in T is:

- a. $\log_2 n$
- b. $n-1$
- c. n
- d. $2n$

Answer. $n-1$

Q.9 Which of the following is not the application of stack?

- a. A parentheses balancing program
- b. Tracking of local variables at run time
- c. Compiler Syntax Analyzer
- d. Data Transfer between two asynchronous process

Answer. Data Transfer between two asynchronous process

Q.10 If the no of leaves in a tree is not a power of 2, then the tree is not a binary tree.

- a. TRUE
- b. FALSE
- c.
- d.

Answer. FALSE

Q.11 It is possible to construct a binary tree uniquely whose pre-order and post-order traversals are given.

- a. TRUE
- b. FALSE

Answer. FALSE

Q.12 Consider the usual algorithm for determining whether a sequence of parentheses is balanced. Suppose that you run the algorithm on a sequence that contains 2 left parentheses and 3 right parentheses (in some order). The maximum number of parentheses that a

- a. 1
- b. 2
- c. 3
- d. 4 or more

Answer. 2

Q.13 A binary search tree T contains n distinct elements. What is the time complexity of picking an element in T that is smaller than the maximum element in T ?

- a. $O(1)$
- b. $O(n \log n)$
- c. $O(\log n)$
- d. $O(n)$

Answer. $O(1)$

Q.14 The number of ways in which the numbers can be inserted in an empty binary search tree, such that the resulting tree has height is _____.

- a. 24
- b. 32
- c. 64
- d. 128

Answer. 64

Q.15 What is the value of the postfix expression $6\ 3\ 2\ 4\ +\ -\ *$?

- a. 1
- b. 40
- c. 74
- d. -18

Answer. -18

Q.16 Which elements not in middle but can be inserted or deleted at/from both the ends?

- a. dequeue
- b. Priority queue
- c. Queue
- d. All of these

Answer. All of these

Q.17 How many distinct BSTs can be constructed with 3 distinct keys?

- a. 4
- b. 5
- c. 9
- d. 6

Answer. 5

Q.18 Here is an infix expression: $4 + 3*(6*3-12)$. Suppose that we are using the usual stack algorithm to convert the expression from infix to postfix notation. The maximum

number of symbols that will appear on the stack **AT ONE TIME** during the conversion of thi

- a. 1
- b. 2
- c. 3
- d. 4

Answer. 4

Q.19 A Binary Search Tree (BST) stores values in the range 37 to 573. Consider the following sequence of keys.

I. 81, 537, 102, 439, 285, 376, 305

II. 52, 97, 121, 195, 242, 381, 472

III. 142, 248, 520, 386, 345, 270, 307

IV. 550, 149, 507, 395, 463, 402, 270

- a. II and III only
- b. I and III only
- c. III and IV only
- d. III only

Answer. III only

Q.20 When searching for the key value 60 in a binary search tree, nodes containing the key values 10, 20, 40, 50, 70 80, 90 are traversed, not necessarily in the order given. How many different orders are possible in which these key values can occur on the sea

- a. 35
- b. 64
- c. 128
- d. 5040

Answer. 35

Q.21 The inorder and preorder traversal of a binary tree are d b e a f c g and a b d e c f g, respectively. The postorder traversal of the binary tree is:

- a. d e b f g c a
- b. e d b g f c a
- c. e d b f g c a
- d. d e f g b c a

Answer. d e b f g c a

Q.22 Suppose that we have numbers between 1 and 100 in a binary search tree and want to search for the number 55. Which of the following sequences **CANNOT** be the sequence of nodes examined?

- a. { 10,75,64,43,60,57,55}
- b. {90,12,68,34,62,45,55}
- c. {9,85,47,68,43,57,55}
- d. None of the above

Answer. {9,85,47,68,43,57,55}

Q.23 A stack is a data structure in which insertion and deletion can happen from

- a. front
- b. end
- c. both side
- d. at any position

Answer. end

Q.24 How many distinct binary search trees can be created out of 4 distinct keys?

- a. 5
- b. 14
- c. 24
- d. 42

Answer. 14

Q.25 A binary search tree contains the value 1, 2, 3, 4, 5, 6, 7, 8. The tree is traversed in pre-order and the values are printed out. Which of the following sequences is a valid output?

- a. 5 3 1 2 4 7 8 6
- b. 5 3 1 2 6 4 8 7
- c. 5 3 2 4 1 6 7 8
- d. 5 3 1 2 4 7 6 8

Answer. 5 3 1 2 4 7 6 8

Q.26 A program attempts to generate as many permutation as possible of the string “abcd” by pushing the character a,b,c,d in the same order onto a stack, but it may pop off the top character at any time. Which one of the following a strings CANNOT be generated

- a. abcd
- b. dcba
- c. cbad
- d. cabd

Answer. cabd

Q.27 Evaluate the following prefix expression: $* - + 4\ 3\ 5 / + 2\ 4\ 3$

- a. 4
- b. 8
- c. 1
- d. None of these

Answer. 4

Q.28 For Breadth-First Traversal on a graph is the data structure required?

- a. Stack
- b. queue
- c. array
- d. Tree

Answer. queue

Q.29 What value would the following function return for the input $x = 95$?

function fun (x:integer):integer;

Begin

If $x > 100$ then fun : $x - 10$

Else fun : fun(fun ($x + 11$))

End;

- a. 89
- b. 90
- c. 91
- d. 92

Answer. 91

Q.30 In deque if insertion and deletion happens from one end then it will behave like which data structure?

- a. Queue
- b. Stack
- c. Deque
- d. None of the above

Answer. Stack

Q.31 Which of the following permutations can be obtained in the output (in the same order) using a stack assuming that the input is the sequence 1, 2, 3, 4, 5 in that order?

- a. 3,4,5,1,2
- b. 3,4,5,2,1
- c. 1,5,2,3,4
- d. 5,4,3,1,2

Answer. 3,4,5,2,1

Q.32 In what order will they be removed If the elements “A”, “B”, “C” and “D” are placed in a queue and are deleted one at a time

- a. ABCD
- b. DCAB
- c. DCBA
- d. ABDC

Answer. ABCD

Q.33 Deque is an arrangement in which insertion and removal of element(s) can happen_____

- a. front
- b. end

- c. both ends d. at any position

Answer. both ends

Q.34 The following sequence of operations is performed on stack: PUSH (10),PUSH (20),POP,PUSH (10),PUSH (20),POP,POP,POP,PUSH (20),POP The sequence of the value popped out is:

- a. 20,10,20,10,20 b. 20,20,10,10,20
- c. 10,20,20,10,20 d. 20,20,10,20,10

Answer. 20,20,10,10,20

Q.35 A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as a ?

- a. Queue
- b. Stack
- c. Tree
- d. Linked List

Answer. Queue

Q.36 What data structure will you most likely see in non recursive implementation of a recursive algorithm?

- a. Linked List b. Stack
- c. Queue d. Tree

Answer. Stack

Q.37 The following postfix expression with single digit operands is evaluated using a stack: $8\ 2\ 3\ ^\wedge / 2\ 3\ ^\wedge + 5\ 1\ ^\wedge -$. Note that $^\wedge$ is the exponentiation operator. The top two elements of the stack after the first $^\wedge$ is evaluated are:

- a. 6,1
- b. 5,7
- c. 3,2,
- d. 1,5

Answer. 6,1

Q.38 The best data structure to check whether an arithmetic expression has balanced parentheses is a

- a. queue
- b. stack
- c. tree
- d. list

Answer. stack

Q.39 The result evaluating the postfix expression $10\ 5\ +\ 60\ 6\ /\ ^\wedge *\ 8\ -$ is

- a. 284
- b. 213
- c. 142
- d. 71

Answer. 142

$$((C*2)+1)/(A+B)$$

- Answer. / + * C 2 1 + A B**