

COURSE : DAC - FEB 2020

Subject : Algorithms and DS

Date : 4.1.2021

Time: 10 to 11

Duration: 1 hour

Q. No. 1

The Time Complexity of Enqueue is

- a. O(1)
- b. O(0)
- c. O(n)
- d. O(n-1)

Q. No. 2

The Time Complexity of Pop Operation in stack is

- a. O(1)
- b. O(0)
- c. O(n)
- d. O(n-1)

Q. No. 3

A Stack is used in

- a. Local variable tracking
- b. Syntax analyzer
- c. Both a) and b)
- d. None of the above

Q. No. 4

Asymptotic Time complexity to add an element in the linked list

- a. O(1)
- b. O(0)
- c. O(n)
- d. O(n-1)

Q. No. 5

In a Double Ended Queue (Dequeue) if these operations are performed on an empty queue what would the Queue comprise at the end?

```
int main(){
    Insert_Front(1);
    Insert_Front(2);
    Insert_Rear(3);
    Delete_Front();
    Insert_Rear(4);
    Insert_Rear(1);
    Delete_Rear();
    Insert_Rear(5);
    Display_list();
}
```

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

Q. No. 6

With minimum time complexity to sort an unsorted linked list we use

- a. Heap sort
- b. Linear Sort
- c. Bubble sort
- d. Merge Sort

Q. No. 7

The Time Complexity to count the elements in a linked list is

- a. O(1)
- b. O(0)
- c. O(n)
- d. O(n-1)

Q. No. 8

The output of this prefix notation is

- + 10 / 20 10 10

- a. 2
- b. 5
- c. 10
- d. 7

Q. No. 9

Converting prefix to infix time complexity is

- a. O(1)
- b. O(0)
- c. O(n)
- d. O(n-1)

Q. No. 10

When you convert infix to postfix, When an operator is read then it is placed in

- a. Output
- b. Stack
- c. Temp variable
- d. Any of the above

Q. No. 11

The Postfix form $a+b*c+d$ is

- a. abc^*+d+
- b. $abc+^*d+$
- c. $abc++d^*$
- d. $ab+cd+^*$

Q. No. 12

The Infix form of $abc-*d$

- a. $a^*(b-c)-d$
- b. $(a-b)^*c-d$
- c. $a-(b-c)^*d$
- d. None of the above

Q. No. 13

Which one the following option gives the best definition of a collision in a hash table?

- a. Two entries are identical except for their keys
- b. Two entries with different data have the exact same key
- c. Two entries with different keys have the same exact hash value
- d. Two entries with the exact same key have different hash values

Q. No. 14

In a Binary search tree if pre-order traversal produces 10 5 16 then post order is

- a. 5 16 10
- b. 10 16 5
- c. 5 10 16
- d. 16 5 10

Q. No. 15

In a Binary Search tree if post-order traversal produces 6 2 1 then pre-order is

- a. 1 2 6
- b. 6 1 2
- c. 1 6 2
- d. 2 1 6

Q. No. 16

A Binary Search tree contains three nodes then the number leaf or leaves present is/are

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

Q. No. 17

Inorder traversal of a binary search tree

- a. Traverses in Increasing Order
- b. Traverses in Non-Increasing Order
- c. Travels Randomly
- d. None of the above

Q. No. 18

A Balanced full Binary Tree with 8 leaves has _____ nodes

- a. 16
- b. 15
- c. 17
- d. 12

Q. No. 19

A Binary search tree with 8 null nodes has _____ nodes

- a. 7
- b. 16
- c. 9
- d. 10

Q. No. 20

What Data structure is used in RDBMS to store data?

- a. Binary Search Tree
- b. Balanced Binary Tree
- c. B+ tree
- d. B Tree

Q. No. 21

Which algorithm is used in solving the Eight Queens problem?

- a. Recursion
- b. Backtracking
- c. Kruskal's algorithm
- d. None of the above

Q. No. 22

The Multiplication method of hashing function uses

- a. $h(k) = \text{floor}(m(kA \bmod 1))$
- b. $h(k) = \text{ceil}(m(kA \bmod 1))$
- c. $h(k) = \text{floor}(kA \bmod m)$
- d. $h(k) = \text{ceil}(kA \bmod m)$

Q. No. 23

Convert the following infix expression into their Prefix form

$$(A^B)/(C*D)$$

- a. / ^ A B * C D
- b. A B ^ C D * /
- c. A ^ B C D * /
- d. None of the above

Q. No. 24

Convert the following infix expression into their Prefix form.

$$A+B^C*D\backslash E+F^*(G-H)$$

- a. ++A*^BCDE*F-GH
- b. AB^CDE*\+FGH*-+
- c. -*+ABC^D*E\+FGH-*+
- d. None of the above

Q. No. 25

Using stack algorithm to convert the expression $4+3*(6*3-12)$ to postfix notation, The maximum number of symbols (operators & parenthesis) that will appear on the stack AT ONE TIME during the conversion of this expression is

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

Q. No. 26

If the characters 'D', 'C', 'B', 'A' are placed in a queue (in that order), and then removed one at a time, in what order will they be removed?

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

Q. No. 27

Consider the following c++ function

```
void test_a(int n) {
    cout << n << " ";
    if (n>0)
        test_a(n-2);
}
```

What is printed by the call test_a(4)?

- a. 0 2 4
- b. 2 4
- c. 4 2
- d. 4 2 0

Q. No. 28

Consider the following function: What is printed by the call test_b(4)?

```
void test_b(int n) {
    if (n>0)
        test_b(n-2);
    cout << n << " ";
}
```

- a. 0 2 4
- b. 2 4
- c. 4 2
- d. 4 2 0

Q. No. 29

You What is this code doing in a binary search tree?

```
void min(BST node)
{
    while(node.left() != null) {
        node = root.left();
    }
    cout<< node.data();
}
```

- a. Finds the maximum element
- b. Find the minimum element
- c. Searching for a particular element
- d. In-order traversal

Q. No. 30

If you want to implement the heterogeneous linked list, what pointer type will you use?

- a. Normal pointer
- b. null pointer
- c. void pointer
- d. None of the above

Q. No. 31

To retrieve a value stored in a hash table.

- a. Do a linear search on the table
- b. Do a binary search on the table.
- c. Hash the key and then locate the associated record.
- d. Construct a binary search tree from the table and search the tree.

Q. No. 32

Point mutations of strings s1 into s2 are

- a. change a letter
- b. insert a letter or
- c. delete a letter
- d. Any one of the above

Q. No. 33

I have implemented the queue with a linked list, keeping track of a front pointer and a rear pointer. Which of these pointers will change during an insertion into an EMPTY queue?

- a. Neither changes
- b. Only front_ptr changes
- c. Only rear_ptr changes
- d. Both change

Q. No. 34

What this code is doing in a Binary search tree?

```
void do_job(BST node){
    if(node!=NULL) {
        do_job (node.left());
        do_job (node.right());
        cout<<Node.data;
    }
}
```

- a. Traversing post-order
- b. Traversing pre-order
- c. Traversing in-order
- d. Finding the dept

Q. No. 35

What is the recursive traversing of post-order traversal

- a. traverse the left sub-tree, visit the root node and traverse the right sub-tree
- b. visit the root node, traverse the left sub-tree, and traverse the right sub-tree
- c. traverse the left sub-tree, traverse the right sub-tree, and visit the root node
- d. None of the above

Q. No. 36

In-order, pre-order and post-order can be applied to

- a. any trees
- b. only binary trees
- c. any trees other than binary trees
- d. None of the above

Q. No. 37

Which of the following are not data structures?

- a. Stack
- b. Queue
- c. linked list
- d. groups

Q. No. 38

A queue structure would require

- a. head pointer to remove an existing node
- b. tail pointer to add to a new node
- c. both (a) and (b)
- d. None of the above

Q. No. 39

Which of the following are not related to stack?

- a. Push
- b. Pop
- c. LIFO
- d. FIFO

Q. No. 40

Pick the odd man out of searching

- a. linear search
- b. binary search
- c. backward search
- d. none of the above