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\*Required

## Section - 2 ::development

One way to ensure that the circular wait condition never holds is to : \* 1 point

- ☐ a. impose a total ordering of all resource types and to determine whether one precedes another in the ordering
- ☐ b. to never let a process acquire resources that are held by other processes
- ☐ c. to let a process, wait for only one resource at a time
- ☐ d. All of the mentioned

For Mutual exclusion to prevail in the system: 1 point

- ☐ a. at least one resource must be held in a non-sharable mode
- ☐ b. the processor must be a uniprocessor rather than a multiprocessor
- ☐ c. there must be at least one resource in a sharable mode
- ☐ d. all of the mentioned



A deadlock eventually cripples system throughput and will cause the CPU utilization to \_\_\_\_\_ \*

1 point

- ☐ a. Increase
- ☐ b. Drop
- ☐ c. stay still
- ☐ d. none of the mentioned

Reusability is a desirable feature of a language as it \*

1 point

- ☒ a. decreases the testing time
- ☐ b. lowers the maintenance cost
- ☐ c. reduces the compilation time
- ☐ d. Both (a) and (b)



What is the functionality of the following piece of code? Select the most appropriate \* 1 point

```
public void function(int data)
{
    int flag = 0;
    if( head != null)
    {
        Node temp = head.getNext();
        while((temp != head) && !(temp.getItem() == data)
        {
            temp = temp.getNext();
            flag = 1;
            break;
        }
    }
    if(flag)
        System.out.println("success");
    else
        System.out.println("fail");
}
```

- ☐ a. Print success if a particular element is not found
- ☒ b. Print fail if a particular element is not found
- ☐ c. Print success if a particular element is equal to 1
- ☐ d. Print fail if the list is empty



What is the functionality of the following piece of Java code? Assume: 'a' is a non-empty array of integers, the Stack class creates an array of specified size and provides a top pointer indicating TOS(top of stack), push and pop have normal meaning. \*

1 point

```
public void some_function(int[] a)
{
    Stack S=new Stack(a.length);
    int[] b=new int[a.length];
    for(int i=0;i<a.length;i++)
    {
        S.push(a[i]);
    }
    for(int i=0;i<a.length;i++)
    {
        b[i]=(int)(S.pop());
    }
    System.out.println("output :");
    for(int i=0;i<b.length;i++)
    {
        System.out.println(b[i]);
    }
}
```

- ☐ a. print alternate elements of array
- ☐ b. reverse the array
- ☐ c. duplicate the given array
- ☐ d. parentheses matching



What is the advantage of bubble sort over other sorting techniques? \*

1 point

- ☐ a. It is faster
- ☐ b. Consumes less memory
- ☐ c. Detects whether the input is already sorted
- ☐ d. All of the mentioned

The segment of code in which the process may change common variables, update tables, write into files is known as

1 point

- ☐ a. Program
- ☐ b. non – critical section
- ☐ c. critical section
- ☐ d. synchronizing

Breadth First Search is equivalent to which of the traversal in the Binary Trees? \*

1 point

- ☐ a. Pre-order Traversal
- ☐ b. Post-order Traversal
- ☐ c. Level-order Traversal
- ☐ d. In-order Traversal



Which of the following conditions must be satisfied to solve the critical section problem? \*

1 point

- ☐ a. Mutual Exclusion
- ☐ b. Progress
- ☐ c. Bounded Waiting
- ☐ d. All of the mentioned

In a binary search tree, which of the following traversals would print the numbers in the ascending order? \*

1 point

- ☐ a. Level-order traversal
- ☐ b. Pre-order traversal
- ☐ c. Post-order traversal
- ☐ d. In-order traversal

Which of the following graph traversals closely imitates level order traversal of a binary tree? \*

1 point

- ☐ a. Depth First Search
- ☐ b. Both of the mentioned
- ☐ c. Breadth First Search
- ☐ d. None of the mentioned



Recursion is a method in which the solution of a problem depends on

1 point

\_\_\_\_\_ \*

- ☐ a. Larger instances of different problems
- ☐ b. Larger instances of the same problem
- ☐ c. Smaller instances of the same problem
- ☐ d. Smaller instances of different problems

Consider an implementation of unsorted singly linked list. Suppose it has its representation with a head and tail pointer. Given the representation, 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

What will be the output of `sum(8).int sum(int n) { if (n==0) return n; else return n + sum(n-1); }` \*

1 point

- ☐ a. 40



- ☐ b. 36
- ☐ c. 8
- ☐ d. 15

QuickSort can be categorized into which of the following? \*

1 point

- ☐ a. Brute Force technique
- ☐ b. Divide and conquer
- ☐ c. Greedy algorithm
- ☐ d. Dynamic programming

You have 100 doors in a row that are all initially closed. you make 100 passes by the doors starting with the first door every time. the first time through you visit every door and toggle the door (if the door is closed, you open it, if its open, you close it). the second time you only visit every 2nd door (door #2, #4, #6). the third time, every 3rd door (door #3, #6, #9), etc, until you only visit the 100th door. What will be the state of door number 71

1 point

- ☐ a. Closed
- ☐ b. Open
- ☐ c. Partially Open
- ☐ d. Can't be determined

A process is thrashing if \*

1 point

- ☐ a. it is spending more time paging than executing
- ☐ b. it is spending less time paging than executing





- ☐ c. page fault occurs
- ☐ d. swapping cannot take place

If a simple graph  $G$ , contains  $n$  vertices and  $m$  edges, the number of edges in the Graph  $G'$  (Complement of  $G$ ) is \_\_\_\_\_ \*

1 point

- ☐ a.  $(n*n+n+2*m)/2$
- ☐ b.  $(n*n-n-2*m)/2$
- ☐ c.  $(n*n-n-2*m)/2$
- ☐ d.  $(n*n-n+2*m)/2$

Process synchronization can be done on \*

1 point

- ☒ a. hardware level
- ☐ b. software level
- ☐ c. both hardware and software level
- ☐ d. none of the mentioned

Which one of the following is not a valid state of a thread? \*

1 point

- ☐ a. Running
- ☐ b. Parsing
- ☐ c. Ready
- ☐ d. blocked



After performing these set of operations, what does the final list look contain?

1 point

InsertFront(10);InsertFront(20);InsertRear(30);DeleteFront();InsertRear(40);InsertRear(10);DeleteRear();InsertRear(15);display(); \*

- ☐ a. 10 30 10 15
- ☐ b. 10 30 40 15
- ☐ c. 20 30 40 15
- ☐ d. 20 30 40 10



What is the base case for the following code?

1 point

```
{  
  
    if(n == 0)  
  
        return;  
  
    printf("%d ",n);  
  
    my_recursive_function(n-1);  
  
}  
  
int main()  
  
{  
  
    my_recursive_function(10);  
  
    return 0;  
  
}
```

- ☐ a. return
- ☐ b. printf("%d ", n)
- ☐ c. if(n == 0)



☐ c.  $n(n-1)$

☐ d. my\_recursive\_function(n-1)

In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green? \*

1 point

☐ a.  $1/3$

☐ b.  $3/4$

☐ c.  $7/19$

☐ d.  $8/21$

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