

# **Design and Analysis of Algorithm**

## **PRACTICAL EXAM**

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**Semester** : *IV*  
**Course** : *Bsc (H) CS*  
**Examination Roll Number** : *19020570041*  
**College Roll Number** : *2019/1445*

# OUTPUT

## Question 1:

```
C:\Users\Anonymous\Desktop\TanyaJain@Q1.exe
<<<Code by Tanya Jain>>>
=====
Enter your choice:
1.Insertion.
2.Deletion.
3.Search a number.
4.Display its preorder and inorder transversals.
5.Exit.
```

## Insertion:

```
C:\Users\Anonymous\Desktop\TanyaJain@Q1.exe

Enter the number to be inserted in tree.
4
```

```
C:\Users\Anonymous\Desktop\TanyaJain@Q1.exe

Enter the number to be inserted in tree.
5
```

```
C:\Users\Anonymous\Desktop\TanyaJain@Q1.exe

Enter the number to be inserted in tree.
6
```

```
C:\Users\Anonymous\Desktop\TanyaJain@Q1.exe

Enter the number to be inserted in tree.
7
```

```
C:\Users\Anonymous\Desktop\TanyaJain@Q1.exe

Preorder:

Element: 5      Color: Black
Element: 4      Color: Black
Element: 6      Color: Black
Element: 7      Color: Red
Inorder:

Element: 4      Color: Black
Element: 5      Color: Black
Element: 6      Color: Black
Element: 7      Color: RedPress any key to continue . . .
```

## *Search:*

```
C:\Users\Anonymous\Desktop\TanyaJain@Q1.exe

<<<Code by Tanya Jain>>>
=====
Enter your choice:
1.Insertion.
2.Deletion.
3.Search a number.
4.Display its preorder and inorder transversals.
5.Exit.
3
```

C:\Users\Anonymous\Desktop\TanyaJain@Q1.exe

```
Enter number to be searched.  
5  
5color :blackPress any key to continue . . .
```

## Question 2:

C:\Users\Anonymous\Desktop\TanyaJain@Q2.exe

```
<<<Code by Tanya Jain>>>  
=====br/>Following are the edges in the constructed MST  
0 -- 2 == 7  
0 -- 3 == 9  
1 -- 3 == 11  
Minimum Cost Spanning Tree: 27  
  
-----br/>Process exited after 0.0385 seconds with return value 0  
Press any key to continue . . .
```

**Time Complexity:**  $O(E \log E)$  or  $O(E \log V)$

## Question 3:

C:\Users\Anonymous\Downloads\Sorting.exe

```
Enter the number of elements: 4
Enter element 0: 6
Enter element 1: 5
Enter element 2: 4
Enter element 3: 3
```

--- Sorting Program Menu ---

```
Press 1 for Bubble Sort
Press 2 for Selection Sort
Press 3 for Insertion Sort
Press 4 for Merge Sort
Press 5 for Quick Sort
Press 6 to exit
Enter your choice: 1
```

## Bubble sort:

```
Initial array: 6 5 4 3
Algorithm: Bubble Sort
Sorted array: 3 4 5 6
Number of Comparisons: 6
-----
Process exited after 10.6 seconds with return value 0
Press any key to continue . . .
```

## Selection sort:

```
Initial array: 6 5 4 3
Algorithm: Selection Sort
Sorted array: 6 5 4 3
Number of Comparisons: 6
-----
Process exited after 14.99 seconds with return value 0
Press any key to continue . . .
```

## Insertion sort:

```
Initial array: 6 5 4 3
Algorithm: Insertion Sort
Sorted array: 3 4 5 6
Number of Comparisons: 6
-----
Process exited after 12.35 seconds with return value 0
Press any key to continue . . .
```

## Merge sort:

```
Initial array: 6 5 4 3
Algorithm: Merge Sort
Sorted array: 3 4 5 6
Number of Comparisons: 4
-----
Process exited after 7.323 seconds with return value 0
Press any key to continue . . .
```

## Quick sort:

```
Initial array: 6 5 4 3
Algorithm: Quick Sort
Sorted array: 3 4 5 6
Number of Comparisons: 6
-----
Process exited after 7.64 seconds with return value 0
Press any key to continue . . .
```

-----END-----