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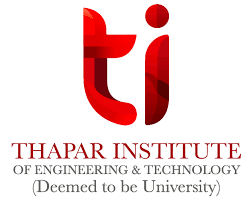
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A Practical activity Report submitted

for Data Structures (UCS301)

**DATA STRUCTURES**

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Computer Science and Engineering

Patiala Campus

**2020**

Submitted to

Maninder Kaur

**Assignment 5**

**Question 1 a)**

**SELECTION SORT**

**SOLUTION CODE**

**//Selection Sort**

**import java.util.\*;**

**class a6ques1**

**{**

**static void sort(int arr[])**

**{**

**int n = arr.length;**

**for (int i = 0; i < n-1; i++)**

**{**

**int min = i;**

**for (int j = i+1; j < n; j++)**

**{**

**if (arr[j] < arr[min])**

**min = j;**

**}**

**int temp = arr[min];**

**arr[min] = arr[i];**

**arr[i] = temp;**

**}**

**}**

**// Prints the array**

**static void printArray(int arr[])**

**{**

**int n = arr.length;**

**for (int i=0; i<n; ++i)**

**System.out.print(arr[i]+" ");**

**System.out.println();**

**}**

**public static void main(String args[])**

**{**

**Scanner scr=new Scanner(System.in);**

**System.out.print("Enter no. of elements : ");**

**int n=scr.nextInt();**

**int arr[]=new int[n];**

**for(int i=0;i<n;i++)**

**{**

**System.out.print("Element : ");**

**arr[i]=scr.nextInt();**

**}**

**printArray(arr);**

**System.out.println("Sorted array");**

**sort(arr);**

**printArray(arr);**

**}**

**}**

**OUTPUT**



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**Question 1 b)**

**INSERTION SORT**

**SOLUTION CODE**

**//Insertion Sort**

**import java.util.\*;**

**class a6ques2**

**{**

**static void sort(int arr[])**

**{**

**int n = arr.length;**

**for (int i = 1; i < n; ++i)**

**{**

**int key = arr[i];**

**int j;**

**for(j = i - 1; j >= 0 && arr[j] > key; j--)**

**{**

**arr[j + 1] = arr[j];**

**}**

**arr[j + 1] = key;**

**}**

**}**

**// Prints the array**

**static void printArray(int arr[])**

**{**

**int n = arr.length;**

**for (int i=0; i<n; ++i)**

**System.out.print(arr[i]+" ");**

**System.out.println();**

**}**

**public static void main(String args[])**

**{**

**Scanner scr=new Scanner(System.in);**

**System.out.print("Enter no. of elements : ");**

**int n=scr.nextInt();**

**int arr[]=new int[n];**

**for(int i=0;i<n;i++)**

**{**

**System.out.print("Element : ");**

**arr[i]=scr.nextInt();**

**}**

**printArray(arr);**

**System.out.println("Sorted array");**

**sort(arr);**

**printArray(arr);**

**}**

**}**

**OUTPUT**



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**Question 3**

**BUBBLE SORT**

**SOLUTION CODE**

**//Bubble Sort**

**import java.util.\*;**

**class a6ques1**

**{**

**static void bubbleSort(int arr[], int n)**

**{**

**int i, j, temp;**

**boolean swapped;**

**for (i = 0; i < n - 1; i++)**

**{**

**swapped = false;**

**for (j = 0; j < n - i - 1; j++)**

**{**

**if (arr[j] > arr[j + 1])**

**{**

**temp = arr[j];**

**arr[j] = arr[j + 1];**

**arr[j + 1] = temp;**

**swapped = true;**

**}**

**}**

**// IF no two elements were**

**// swapped by inner loop, then break**

**if (swapped == false)**

**break;**

**}**

**}**

**// Prints the array**

**static void printArray(int arr[])**

**{**

**int n = arr.length;**

**for (int i=0; i<n; ++i)**

**System.out.print(arr[i]+" ");**

**System.out.println();**

**}**

**public static void main(String args[])**

**{**

**Scanner scr=new Scanner(System.in);**

**System.out.print("Enter no. of elements : ");**

**int n=scr.nextInt();**

**int arr[]=new int[n];**

**for(int i=0;i<n;i++)**

**{**

**System.out.print("Element : ");**

**arr[i]=scr.nextInt();**

**}**

**printArray(arr);**

**System.out.println("Sorted array");**

**sort(arr);**

**printArray(arr);**

**}**

**}**

***OUTPUT***



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**Question 4**

**Write a program to find first non-repeating character in a string using Queue.**

**SOLUTION CODE**

**import java.util.Scanner;**

**import java.util.Queue;**

**import java.util.LinkedList;**

**import java.io.\*;**

**public class a5ques4**

**{**

**static Scanner scr= new Scanner(System.in);**

**static int SIZE=26;**

**static Queue<Character> q = new LinkedList<Character>();**

**static String str="";**

**public static void main(String[] args)**

**{**

**System.out.print("Enter String on which the operation is to be checked : ");**

**str=scr.nextLine();**

**check();**

**}**

**static void check()**

**{**

**int ch[]=new int[SIZE];**

**for(int i=0;i<SIZE;i++)**

**{**

**ch[i]=0;**

**}**

**for(int i=0;i<str.length();i++)**

**{**

**char temp= str.charAt(i);**

**if(temp==' ')**

**continue;**

**q.add(temp);**

**//System.out.println(temp-65+" "+temp+" "+ch[temp-65]);**

**ch[temp-'a']++;**

**while(!q.isEmpty())**

**{**

**if(ch[q.peek()-'a']==1)**

**{**

**System.out.print(q.peek()+" ");**

**break;**

**}**

**else**

**{**

**q.poll();**

**}**

**}**

**if(q.isEmpty())**

**System.out.print("-1 ");**

**}**

**System.out.println();**

**}**

**}**

***OUTPUT***

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**EXTRA**

**Question**

**WAP to Split a Circular Linked List into two halves.**

**SOLUTION CODE**

**//Java program to generate binary numbers from 1 to n**

**import java.util.LinkedList;**

**import java.util.Queue;**

**import java.util.Scanner;;**

**class a5BinaryExtra**

**{**

**static Scanner scr=new Scanner(System.in);**

**static void generatePrintBinary(int n)**

**{**

**Queue<String> q = new LinkedList<String>();**

**q.add("1");**

**for(int i=n;i>0;i--)**

**{**

**String s1 = q.peek();**

**q.remove();**

**System.out.println(s1);**

**String s2 = s1;**

**q.add(s1 + "0");**

**q.add(s2 + "1");**

**}**

**}**

**public static void main(String[] args)**

**{**

**System.out.print("Enter range : ");**

**int n=scr.nextInt();**

**generatePrintBinary(n);**

**}**

**}**

***OUTPUT***

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