**Assignment of Day 5**

**Name : Gayatri Vaibhav Surve.**

**Gmail id** : [gayatrisurve91@gmail.com](mailto:gayatrisurve91@gmail.com)

Question 1

Write the function for insertion sort.

Question 2

Write a function to find the maximum element in the stack.

Question 3

Write a function to find the minimum element in the stack.

**Answers :**

**Question (1)**

// C program for insertion sort

#include <math.h>

#include <stdio.h>

/\* Function to sort an array using insertion sort\*/

void insertionSort(int arr[], int n)

{

int i, key, j;

for (i = 1; i < n; i++) {

key = arr[i];

j = i - 1;

/\* Move elements of arr[0..i-1], that are

greater than key, to one position ahead

of their current position \*/

while (j >= 0 && arr[j] > key) {

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

j = j - 1;

}

arr[j + 1] = key;

}

}

// A utility function to print an array of size n

void printArray(int arr[], int n)

{

int i;

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

printf("%d ", arr[i]);

printf("\n");

}

/\* Driver program to test insertion sort \*/

int main()

{

int arr[] = { 12, 11, 13, 5, 6 };

int n = sizeof(arr) / sizeof(arr[0]);

insertionSort(arr, n);

printArray(arr, n);

return 0;

}

**Question (2) and (3)**

#include <stdio.h>

#include<stdlib.h>

struct node {

int data;

struct node \*next;

};

struct node \*top=NULL;

void push(int n)

{

struct node \*new;

new=(struct node \*)malloc(sizeof(struct node));

new->data=n;

new->next=top;

top=new;

}

void display()

{

struct node \*temp;

temp=top;

while(temp!=NULL)

{

printf("%d ",temp->data);

temp=temp->next;

}

}

void max\_element()

{

struct node \*temp;

temp=top;

int max\_ele=temp->data;

while(temp!=NULL)

{

if(max\_ele<temp->data)

max\_ele=temp->data;

temp=temp->next;

}

printf("\n\n The maximum element from the stack is %d",max\_ele);

}

void min\_element()

{

struct node \*temp;

temp=top;

int min\_ele=temp->data;

while(temp!=NULL)

{

if(min\_ele>temp->data)

min\_ele=temp->data;

temp=temp->next;

}

printf("\n\n The minimum element from the stack is %d",min\_ele);

}

int main() {

int ch,num;

while(1)

{

printf("\n the options are as follows : \n 1. push() \n 2.display() \n 3.max\_element from stack \n 4.min\_element from stack \n5.exit from code \n\n\n Enter the choise : ");

scanf("%d",&ch);

switch(ch){

case 1:printf("\n Enter new element ");

scanf("%d",&num);

push(num);

break;

case 2:printf("\n See the elements of the stack :\n");

display();

break;

case 3:max\_element();//program for question 2

break;

case 4:min\_element();//program for question 3

break;

case 5:exit(1);

break;

default: printf("\n Please choose the correct option\n");

break;

}

}

}