

(28\09\2020) (LAB_1)

Q.1) Write a program to simulate stack using array

a)PUSH

b)POP

c)DISPLAY

The program should print appropriate messages for STACKOVERFLOW and STACK UNDERFLOW

```
#include <stdio.h>
#include <process.h>
#define STACK_SIZE 3
```

```
int top=-1,st[10];
void push();
void pop();
void display();
```

```
int main()
{
int a;
for(;;)
{
```

```

printf("\nSTACK MENU IS FOLLOWING\n");
printf("\n-----\n");
printf("\n1)PUSH \n2)POP\n3)DISPLAY\n4)EXIT\n");
printf("\n-----\n");
printf("ENTER YOUR CHOICE:");
scanf("%d",&a);
switch (a)
{
case 1:push();
break;
case 2:pop();
break;
case 3:display();
break;
case 4:exit(0);
default:
printf("\nINVALID OPTION IS ENTERED\n");
}
}
return 0;
}

void push()
{
int item;
{

```

```
if(top==STACK_SIZE-1)
{
printf("\nSTACK OVERFLOW\n");
}
else
{
printf("\nENTER THE ELEMENT TO BE INSERTED : ");
scanf("%d",&item);
top=top+1;
st[top]=item;
}
}
}
```

```
void pop()
{
if(top== -1)
{
printf("\nSTACK UNDERFLOW\n");
}
else
{
printf("TOP VALUE OF STACK HAS BEEN DELETED:%d",st[top]);
top=top-1;
}
}
```

```
void display()
{
    int i;
    if(top== -1)
    {
        printf("\nSTACK IS EMPTY\n");
    }
    else
    {
        printf("\nCONTENTS IN STACK ARE:\n");
        for(i=top;i>=0;--i)
            printf("%d\n",st[i]);
    }
}
```

C:\Windows\SYSTEM32\cmd.exe

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:1

ENTER THE ELEMENT TO BE INSERTED : 5

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:1

ENTER THE ELEMENT TO BE INSERTED : 10

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:1

ENTER THE ELEMENT TO BE INSERTED : 15

C:\Windows\SYSTEM32\cmd.exe

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:1

STACK OVERFLOW

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:3

CONTENTS IN STACK ARE:

15
10
5

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:2

TOP VALUE OF STACK HAS BEEN DELETED:15

C:\Windows\SYSTEM32\cmd.exe

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:2

TOP VALUE OF STACK HAS BEEN DELETED

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:2

TOP VALUE OF STACK HAS BEEN DELETED

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:2

STACK UNDERFLOW

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:3

C:\Windows\SYSTEM32\cmd.exe

ENTER YOUR CHOICE:3

STACK IS EMPTY

STACK MENU IS FOLLOWING

- 1)PUSH
- 2)POP
- 3)DISPLAY
- 4)EXIT

ENTER YOUR CHOICE:3