Lab Program 1

Write a program to simulate the working of stack using an array with following

(a) push (b) pop (c) display

The program should print appropriate messages for stack overflow, stack underflow.

```
#include <stdio.h>
#include <stdlib.h>
#define STACK_SIZE 5
int top = -1, stack [STACK_SIZE];
int s[10];
int item;
void push()
{
  if (top == STACK_SIZE-1) {
printf ("Stack Overflow: can't add more
          elements to stack.\n");
  return;
}
top = top+1;
s[top] = item;
}
int pop()
{
```

```
if (top == -1) return -1;
 return s[top--];
} void display ()
 {
  int i;
  if (top == -1)
 {
  printf ("stack is empty.\n");
  return;
 } printf ("contents of the stack\n");
 for (i = top; i >= 0; i--) {
  printf ("%d\n", s[i]);
 } }
  int main()
{
int item_deleted;
int choice;
 for (;;)
{
 printf ("\n1: Push \n2: Pop \n3: Display\n4: Exit
 printf ("Enter your choice\n");
 scanf ("%d", &choice);
 switch (choice)
{
 case 1: printf ("Enter the item to be inserted\n");
```

```
        scanf("%d", &item);
        push();
        break;
case 2: item_deleted = pop();
        if(item_deleted == -1)
        printf("Stack is empty\n");
        else
        printf("item deleted is %d\n", item_deleted);
        break;
case 3: display();
        break;
case 4: exit(0);
}
}
}
```

Output:

1: Push
2: Pop
3: Display
4: Exit
Enter your choice
1
Enter the item to be inserted
23

1: Push
2: Pop
3: Display
4: Exit
Enter your choice
1
Enter the item to be inserted
24

1. Push
2: Pop
3: Display
4: Exit
Enter your choice
1

Enter the item to be inserted
56

1: Push
2: Pop
3: Display
4: Exit
Enter your choice
1
Enter the item to be inserted
34
Stack overflow: can't add more elements to stack

1: Push
2: Pop
3: Display
4: Exit
Enter your choice
3
contents of the stack
34 24 23

1: Push
2: Pop
3: Display

4: Exit
Enter your choice
2
item deleted is 34

1: Push
2: Pop
3: Display
4: Exit
Enter your choice
2
item deleted is 24

1: Push
2: Pop
3: Display
4: Exit
Enter your choice
2
item deleted is 23

1: Push
2: Pop
3: Display
4: Exit

Enter your choice
2
Stack is empty

1: Push
2: Pop
3: Display
4: Exit
Enter your choice
4

[Program finished]