Lab Program

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

a) Push

b) Pop

c) Display

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

Code for push, pop and peek in a stack

```
#include <stdio.h>

int N=5;
int stack[N];
int top=-1;

void push()
 {
  printf("Enter data:");
  scanf("%d",&x);
  if(top==(N-1))
   {
    printf("Overflow");
   }
  else
   {
    top++;
    stack[top]=x;
   }
 }

void pop()
 {
  int item;
  if(top==-1)
   {
    printf("Underflow");
   }
  else
```

```
    {
      item = stack[top];
      top--;
      printf("%d", item);
    }
  }

→ peek void peek()
  {
    if (top == -1)
    {
      printf("Underflow");
    }
    else
    {
      print("%d", stack[top]);
    }
  }

→ void display()
  {
    if (top == -1)
    {
      printf("Empty Stack");
    }
    else
    {
      int i;
      for(i=0; i<5; i++)
      {
        printf("%d\n", stack[i]);
```

```
void main()
  {
    int choice;
    do{
      printf("\n---Stack Menu---\n");
      printf("1. Push\n");
      printf("2. Pop\n");
      printf("3. Peek\n");
      printf("4. Display\n");
      printf("5. Exit");
      printf("Enter your choice: ");
      scanf("%d", &choice);

      switch (choice)
      {
      case 1: push(); break;

      case 2: pop(); break;

      case 3: peek(); break;

      case 4: display(); break;

      case 5: exiting
          printf("Exiting program:\n");
          break;
      default:
          printf("Invalid Input\n");
      }while(choice!=5);
    return 0;
  }
```

-- Stack Menu --
1. Push
2. Pop
3. Peek
4. Display
5. Exit
Enter your choice: 1
Enter Data 1

Enter your choice: 1
Enter Data 2

Enter your choice: 1
Enter Data 3

Enter your choice: 1
Enter Data 4

Enter your choice 1
Enter Data 5

Enter your choice 1
Enter Data 6
OverFlow

Enter your choice 3
5

Enter your choice 2
5

Enter your choice: 4

5	4
4	3
3	2
2	1

29/9/15

```
--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 2
Underflow
--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 1
Enter Data 1

--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 1
Enter Data 2

--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 1
Enter Data 3

--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 1
Enter Data 4

--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 1
Enter Data 5

--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 1
Enter Data 6
Overflow
--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 3
5
--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 2
5
--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 4
1
2
3
4
5

--- Stack Menu ---
1. Push
2. Pop
3. Peek (Top Element)
4. Display Stack
5. Exit
Enter your choice: 5
Exiting program.

Process returned 0 (0x0)   execution time : 233.296 s
Press any key to continue.
```