Lab program-1

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

a) push b) pop c) Display

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

```
#include <stdio.h>
void push();
void pop();
void peek();
int N=5;
int stack[5];
int top=-1;
int main(){
  int ch;
  do{
    printf("Enter your choice: 1.push 2.pop 3.peek 4.exit\n");
    scanf("%d",&ch);
    switch(ch){
      case1: push();
             break;
      case 2: pop();
              break;
      case 3: peek();
              break;
      case4: printf("Exiting..\n");
             break;
      default: printf("Choice out of range please enter 1,2
                3, or 4.\n");
               break;
    }
  }while(ch!=4);
  return 0;
}
```

```
void push(){
    int x;
    printf("Enter data :");
    scanf("%d", &x);
    if (top==N-1){
        printf("Overflow. Cannot enter data, stack is full.\n");
    }
    else{
        top++;
        stack[top]=x;
        printf("%d pushed to stack.\n", x);
    }
}
void pop(){
    if (top==-1){
        Printf("Underflow : stack is empty.\n");
    }
    else{
        int item=stack[top];
        top--;
        printf("popped item: %d\n", item);
    }
}
void peek(){
    if (top==-1){
        printf("stack is empty.\n");
    }else{
        printf("TOP item: %d\n", stack[top]);
    }
}
```

O/P Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

1

Enter data : 10

10 pushed to stack

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

1

Enter data : 20

20 pushed to stack

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

1

Enter data : 30

30 pushed to stack

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

Enter data : 40

40 pushed to stack

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

1

Enter data : 50

50 pushed to stack

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

1

Enter data : 60

Overflow : cannot enter data, stack is full

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

3

Top item : 50

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

2

Popped item : 50

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

2

popped item : 40

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

2

popped item : 30

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

popped item : 20

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

popped item : 10

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

2

Underflow : stack is empty

Enter your choice : 1.push / 2.pop / 3.peek / 4.exit

Exiting ...

RG
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