DS LAB

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Program 1: Stack Implementation using Array:

Output:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS C:\Users\BMSCE\Desktop\BRuchitha cse_3rdsec> gcc stack.c
PS C:\Users\BMSCE\Desktop\BRuchitha cse_3rdsec> ./a.exe
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 1
Enter the element to be pushed: 2
Pushed Element:2
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 1
Enter the element to be pushed: 3
Pushed Element:3
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 4
2 3
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 2
Popped element: 3
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 3
Peek element of stack: 2
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 5
Invalid Choice\n1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 2
Popped element: 2
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 2
Stack underflow
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 1
Enter the element to be pushed: 1
Pushed Element:1
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 1
Enter the element to be pushed: 2
Pushed Element:2
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 1
Enter the element to be pushed: 3
Pushed Element:3
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 1
Enter the element to be pushed: 4
Pushed Element:4
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 1
Enter the element to be pushed: 6
Pushed Element:6
1.Insert 2.Delete 3.Peek 4.Display
Enter the choice: 1
Stack Overflow
```

Observation:

Name : B. Ruchitha Subject : Data Structures

Std. : Div. : Roll No. :

School / College : BMSCE

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11/10/25 DATA STRUCTURES

Program1 — Stack implementation using array

```
#include<stdio.h>
#define N 5
 Stack[N];
 int top=-1;
void isFull {return top=N-1};
void isEmpty {return top=-1};

void push( ){
      if(isFull){
            Printf("Stack overflow");
            return;
          } else {int x;
                  Printf("Enter the number: ");
                  Scanf("%d", &x);
                  top++;
                  Stack[top] = x;
                  Printf("Pushed element:%d", Stack[top]);
          }
}
void pop( ) {
      if (isEmpty){
            Printf("Stack underflow");
            return;
          } else {
                  int item = Stack[top];
                  top--;
                  Printf("Poped element :%d", item);
          }
}
void peek ( ){
      if (isEmpty){
            Printf("Stack underflow");
            return;
      }else { Printf("Peek element :%d ", Stack[top]); }
```

```
void display(){
    if(isEmpty){
        Printf("Empty Stack");
        return;
    }else { Printf("Stack elements:\n");
        for(int i=top, top<=0, i--){
            Printf("%d", Stack[i]);
        }
    }
}
int main(){
    int choice;
    while(1){
        Printf("Enter your choice:\n");
        Printf("1: Insert, 2: Pop, 3: Peek, 4: Display");
        Scanf("%d", &choice);
        Switch(choice){
            Case 1:
                Push();
                break;
            Case 2:
                Pop();
                break;
            Case 3: Peek();
                break;
            Case 4:
                Display();
                break;
            default:
                Printf("Invalid choice").
        }
    }
}
```

```
Output :-
1. Insert
2. Delete
3. Peek
4. Display
Enter the choice: 1
Enter the element to be pushed: 2
Pushed element: 2
1. Insert
2. Delete
3. Peek
4. Display
Enter the choice: 1
Enter the element to be pushed: 3
Pushed element: 3
1. Insert
2. Delete
3. Peek
4. Display
Enter the choice: 4
  2 3
1. Insert
2. Delete
3. Peek
4. Display
Enter the choice: 2
Popped element: 3
1. Insert
2. Delete
3. Peek
4. Display
Enter the choice: 3
Peek element: 2.
```

Display}