

//Stack Operations

Q) 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

```
#include<stdio.h>

#include<conio.h>

#include<stdlib.h>

int stack[10],top=-1,i,item;

#define max 3

void push(){
    if(top==max-1){
        printf("Stack Overflow\n");
    }
    else{
        top++;
        printf("Enter Element to Push: ");
        scanf("%d",&item);
        stack[top]=item;
    }
}

int pop(){
    if (top==-1){
        printf("Stack Underflow\n");
        return -1;
    }
}
```

```
    item=stack[top];  
    top=top-1;  
    return (item);  
}
```

```
void display(){  
    if (top==-1){  
        printf("Stack Empty\n");  
    }  
    else{  
        printf("The Stack is: \n");  
        for(i=top;i>=0;i--){  
            printf("%d\n",stack[i]);  
        }  
    }  
}
```

```
void main(){  
    while(1){  
        int userInput;  
        printf("Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: ");  
        scanf("%d",&userInput);  
        switch(userInput){  
            case 1: push();  
                break;  
            case 2: item=pop();  
                if(item!=-1){  
                    printf("The Popped Element is: %d \n",item);  
                }  
                break;  
        }  
    }  
}
```

```
        case 3: display();
            break;
        case 4: exit(0);
            break;
    }
}
}
```

Output

```
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 1
Enter Element to Push: 18
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 1
Enter Element to Push: 45
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 1
Enter Element to Push: 7
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 1
Stack Overflow
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 3
The Stack is:
7
45
18
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 2
The Popped Element is: 7
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 2
The Popped Element is: 45
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 2
The Popped Element is: 18
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 2
Stack Underflow
Enter (1) to Push,(2) to Pop, (3) to Display, and (4) to Exit: 4

Process returned 0 (0x0)   execution time : 25.560 s
Press any key to continue.
|
```