

Write a program that stimulates 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.

```
#include <stdio.h>
```

```
#define SIZE 10
```

```
int stack [SIZE];
```

```
int top=-1;
```

```
void push (int value){
```

```
    if(top==SIZE-1){
```

```
        printf("Stack is full \n");
```

```
    }
```

```
    else{
```

```
        top=top+1;
```

```
        stack[top]=value;
```

```
    }
```

```
}
```

```
void pop(){
```

```
    if(top==--1){
```

```
        printf("Stack is empty \n");
```

```
    }
```

```
    else{
```

```
        printf("Element removed is %d \n",stack[top]);
```

```
        top=top-1;
```

```

    }
}

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

int main(){
    int choice,value;
    while(1){
        printf("Choose among options\n");
        printf(" 1)Push \n 2)Pop \n 3)Display \n 4)Exit \n");
        scanf("%d",&choice);

        switch(choice){

            case 1:
                printf("Enter value to push: ");
                scanf("%d",&value);
                push(value);

```

```
break;
```

```
case 2:
```

```
pop();
```

```
break;
```

```
case 3:
```

```
display();
```

```
break;
```

```
case 4:
```

```
printf("Exiting program\n");
```

```
return 0;
```

```
default:
```

```
printf("Invalid choice \n");
```

```
}
```

```
}
```

```
}
```

Output:

```
PS C:\Users\n6787\OneDrive\Desktop> cd "c:\Users\n6787\OneDrive\Desktop\c\big.c\" ; if ($?) { gcc stack.c -o stack } ; if ($?) { .\stack }
Choose among options
1)Push
1)Push
2)Pop
3)Display
4)Exit
1
Enter value to push: 2
Choose among options
1)Push
2)Pop
3)Display
4)Exit
1
Enter value to push: 5
Choose among options
1)Push
2)Pop
3)Display
4)Exit
3
The elements of stack are:
5
2
Choose among options
1)Push
2)Pop
3)Display
4)Exit
2
Element removed is 5
Choose among options
1)Push
2)Pop
3)Display
4)Exit
4
Exiting program
PS C:\Users\n6787\OneDrive\Desktop\c\big.c>
```