

18/12/23

## Program 1

①. write a program to simulate the working of stack using an array with the following:

- a) push
- b) pop
- d) Display

The program should print appropriate messages for stack overflow, stack underflow

```

#include <stdio.h>
int top = -1;
void push(int arr[], int value) {
    if (top > 4) {
        printf("In stack overflow can't insert the element");
    }
    else {
        ++top;
        arr[top] = value;
        printf("In stack successfully pushed the element %d", arr[top]);
    }
}

void pop(int arr[]) {
    if (top == -1) {
        printf("In stack underflow no element to pop\n");
    }
    else {
        printf("In one element was popped %d\n", arr[top]);
        top--;
    }
}

void display(int arr[]) {
    printf("The elements are\n");
    for (int i = top; i >= 0; i--) {
        printf("%d\n", arr[i]);
    }
}

```



```

void main () {
    int stack[5];
    void operations();
    int choice;
    int value;
    printf("\n Enter your choice\n");
    printf("1 to push\n Enter 2 to pop\n Enter 3 to display\n Enter 4 to Exit\n");
}

```

```

scanf("%d", &choice);

```

```

switch (choice) {

```

```

    case 1:

```

```

        printf("Enter the element to push\n");

```

```

        scanf("%d", &value);

```

```

        push(stack, value);

```

```

        operations();

```

```

        break;

```

```

    case 2:

```

```

        pop(stack);

```

```

        operations();

```

```

        break;

```

```

    case 3:

```

```

        display(stack);

```

```

        operations();

```

```

        break;

```

```

    case 4:

```

```

        printf("You have exited\n");

```

```

    }

```

```

    operations();

```

```

}

```

output:- stack underflow

Enter your choice

Enter 1 to push

Enter 2 to pop

Enter 3 to display

Enter 4 to exit

1

Enter the element to push 3

Successfully pushed the element 3

Enter your choice

Enter 1 to push

Enter 2 to pop

Enter 3 to display

Enter 4 to exit

3

The elements are

3

Enter your choice

Enter 1 to push

Enter 2 to pop

Enter 3 to display

Enter 4 to exit

2

One element was popped 3

Enter your choice

Enter 1 to push

Enter 2 to pop

Enter 3 to display

Enter 4 to exit

2

stack underflow no element to pop

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Stack overflow

Enter your choice

Enter 1 to push

Enter 2 to pop

Enter 3 to display

Enter 4 to Exit

1

Enter the element to push 3

Enter your choice

Enter 1 to push

Enter 2 to pop

Enter 3 to display

Enter 4 to Exit

Enter the element to push 8

Enter the element to push 56

Enter the element to push 83

Enter the element to push 100

Stack overflow can't insert the element.