```c
#include<stdio.h>
#include<stdlib.h>
# define MAX 5
 int stack [MAX];
 int top = -1;
 void push (int value){
    if (top ==MAX-1){
        printf("stack overflow!");
    }
    else {
        stack [++top] = value;
        printf("%d pushed into stack\n ", value);
    }
 }

 void pop (){
     if(top == -1){
    printf("stack underflow");}
    else {
        printf("%d dropped from stack\n", stack[top]);
 }
}

void display (){

    if(top==-1){
        printf("stack is empty\n");
    }
    else {
        printf("stack elements:");
        for(int i = top; i>=0;i--){
            printf("%d", stack[i]);
        }
        printf("\n");
    }
}
int main (){
    int choice, value;
    while(1){
        printf("\n---stack menu---\n");
        printf("1.push\n2.pop\n3.display\n4.exit\n");
        printf("enter your choice :");
        scanf("%d", &choice);

        switch(choice){
            case 1:
            printf("enter the value to push:");
            scanf("%d", &value);
            push(value);
            break;
            case 2:
            pop();
            break;
            case 3:
            display();
            case 4:
            exit(0);
            default:
            printf("invalid choice");
        }
    }
    return 0;
}
```

```
---stack menu---
1.push
2.pop
3.display
4.exit
enter your choice :1
enter the value to push:10
10 pushed into stack

---stack menu---
1.push
2.pop
3.display
4.exit
enter your choice :1
enter the value to push:20
20 pushed into stack

---stack menu---
1.push
2.pop
3.display
4.exit
enter your choice :3
stack elements:2010
```

LAB - Program 1

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 messages for stack overflows stack underflow.

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

# define MAX 5

int stack[MAX];
int top=-1;

Void push (int value){
    if (top==MAX-1){
    printf("Stack overflow!!"); }
    else {
        stack[++top] = value;
        printf("%d pushed into stack\n", value);
    }
}

Void pop(){
    if (top==-1){
        printf("stack underflow"); }
    else {
        printf("%d dropped from Stack\n", stack[top
        }
}

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

```
        printf("stack is empty \n");
    }
    else{
        printf("stack elements:");
        for (int i=top; i>=0; i--){
        printf("%d", stack[i]);
        }
        printf("\n");
    }
}

int main (){
    int choice, value;
    while(1){
        printf("\n--- stack menu ---\n");
        printf("1. push\n2. pop\n3. Display\n4. Exit\n");
        printf("Enter your choice:");
        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();
        case 4:
            exit(0);
```

```
default :
    printf("Invalid choice");
}
}
return 0;
}
```

Output

```
-- Stack Menu --
1. Push
2. Pop
3. Display
4. exit

Enter your choice: 1
Enter value to push: 10
10 pushed into stack

Enter your choice: 1
Enter value to push: 20
20 pushed into stack

Enter your choice: 3
stack element : 20, 10

Enter your choice: 2
20 popped from stack

Enter your choice: 2
Stack underflow!
```