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/*
Title- Stack Implimentation using array(statically)
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Batch- TechnOrbit(PPA-8)
*/

#include<stdio.h>
#define MAX 10

struct STACK
{
    int arr[MAX];
    int top;
};

void init_stack(struct STACK* stack)
{
    stack->top = -1;
}

int overflow(struct STACK* stack)
{
    if(stack->top == (MAX-1))
    {
        return 1;
    }
    else
    {
        return 0;
    }
}

int underflow(struct STACK* stack)
{
    if(stack->top == -1)
    {
        return 1;
    }
    else
    {
        return 0;
    }
}

void push(struct STACK* stack)
{
    (stack->top)++;
    printf("Enter Data for stack: ");
    scanf("%d",&(stack->arr[stack->top]));
}

void pop(struct STACK* stack)
{
    printf("Popped Element is: %d\n",stack->arr[stack->top]);
    (stack->top)--;
}

void display(struct STACK* stack)
{
    int i;
    for(i=stack->top;i>=0;i--)
    {
        printf("| %d |\n",stack->arr[i]);
    }
}
```

```
void main()
{
    int choice,data;
    struct STACK stack;
    init_stack(&stack);
    do
    {
        printf("*****\n");
        printf("1. PUSH\n2. POP\n3. IS UNDERFLOW\n4. IS OVERFLOW\n5. DISPLAY\n6. EXIT\n");
        printf("Enter your choice: ");
        scanf("%d",&choice);
        switch(choice)
        {
            case 1: if(overflow(&stack))
                {
                    printf("Stack Fuled.....!\n");
                }
                else
                {
                    push(&stack);
                }
                break;
            case 2: if(underflow(&stack))
                {
                    printf("Stack is Empty...\n");
                }
                else
                {
                    pop(&stack);
                }
                break;
            case 3: if(underflow(&stack))
                {
                    printf("Stack is Empty...\n");
                }
                else
                {
                    printf("%d positions filled....\n",stack.top+1);
                }
                break;
            case 4: if(overflow(&stack))
                {
                    printf("Stack is Fuled...\n");
                }
                else
                {
                    printf("%d positions empty....\n",MAX-(stack.top)-1);
                }
                break;
            case 5: if(underflow(&stack))
                {
                    printf("Stack is empty.....\n");
                }
                else
                {
                    display(&stack);
                }
                break;
            case 6: printf("Exiting.....\n");
                break;
            default: printf("Wrong choice ... Please enter correct choice...\n");
        }
    }while(choice != 6);
}
```