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/* Menu based C program for implementation of stack */


#include<stdio.h>
#include<stdlib.h>
#define MAX 10

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

/* Stack operations */

void push(int item);
int pop();
int peek();
int isEmpty();
int isFull();
void display();

/*Generating main function */
/*Ask user for choice using switch cases */
int main()
{
        int choice,item;
        while(1)
        {
                printf("\n1.Push\n");
                printf("2.Pop\n");
                printf("3.Display the top element\n");
                printf("4.Display all stack elements\n");
                printf("5.Quit\n");
                printf("\nEnter your choice : ");
                scanf("%d",&choice);
                switch(choice)
                {
                 case 1 :
                        printf("\nElement to be pushed is :\n”);
                        scanf("%d",&item);
                        push(item)
                        break;
                 case 2:
                        item = pop();
                        printf("\nElement popped is is : %d\n",item );
                        break;
                case 3:
                        printf("\nElement at the top is : %d\n", peek() );
                        break;
                case 4:
                        display();
                        break;
                case 5:
                        exit(1);
                default:
                        printf("\nEnter valid input\n");
                }/*End of switch*/
        }/*End of while*/

        return 0;

}/*End of main()*/
/* Push - Enter element in stack */
void push(int item)
{

        if( isFull() )
        {

                printf("\n You will get Stack Overflow\n");
                return;
        }
        top = top+1;
        stack_arr[top] = item;
}/*End of push()*/
/* Pop- Remove element */
int pop()
{

        int item;
        if( isEmpty() )
        {

                printf("\n You will get Stack Underflow\n"
                exit(1);
        }
        item = stack_arr[top];
        top = top-1;
        return item;
}/*End of pop()*/
/* Peek- Fetch first element */

int peek()
{
        if( isEmpty() )
        {
                printf("\nYou will get Stack Underflow\n");
                exit(1);
        }
        return stack_arr[top];
}/*End of peek()*/
 /* Check whether stack is empty*/
int isEmpty()
{
        if( top == -1 )
                return 1;
        else
                return 0;
}/*End of isEmpty*/
/* Check whether stack is full */
int isFull()
{
        if( top == MAX-1 )
                return 1;
        else
                return 0;
}/*End of isFull*/
 /* Display Stack */
void display()
{
        int i;
        if( isEmpty() )
        {
                printf("\nStack is empty\n");
                return;
        }
    printf("\nStack elements :\n\n");
        for(i=top;i>=0;i--)
                printf(" %d\n", stack_arr[i] );
        printf("\n");
}

/*End of display()*/
```