**DSA Assignment: 1**

**Exp 1: Implementation of Stack Data Structure using Array**

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D10A Roll No: 60

**AIM:** A Stack is an abstract data type for storage serving as a collection of elements that are inserted or removed according to the Last in First out approach. The Array based Stack implementation is studied below.

**CODE:**

#include <stdio.h>

void push(int a[],int\*top,int x);

int pop(int a[], int\*top);

void display(int a[], int top);

void main(){

    int a[100],x,i;

    int top=-1;

    int choice;

    printf("Shashwat Tripathi\_D10A\_60\n");

    do{

        printf("Enter your choice: \n1.Push \n2.Pop \n3.Display \n4.Exit\n");

        scanf("%d", &choice);

        switch(choice)

        {

            case 1: printf("Enter the element to be pushed:\n");

            scanf("%d", &x);

            push(a,&top,x);

            break;

            case 2: x=pop(a,&top);

            printf("The popped element is: %d\n", x);

            break;

            case 3: display(a,top);

            break;

            case 4: break;

        }

    }while(choice !=4);

}

void push(int a[],int\*top,int x)

{

    int n=100;

    if(\*top==n-1)

    {

        printf("The stack is full!");

    }

    else

    {

        \*top=\*top+1;

        a[\*top]=x;

    }

}

int pop(int a[], int\*top)

{

    int x;

    if(\*top<0)

    {

       printf("The stack is empty!");

       return 0;

    }

    else

    {

        x=a[\*top];

        \*top=\*top-1;

        return x;

    }

}

void display(int a[], int top)

{

    int i;

    for(i=top; i>=0; --i)

    {

        printf("%d\n", a[i]);

    }

}

