**LAB PROGRAM 3a:**

**Design, develop and implement a menu driven program for the following operations on stack of integers using ARRAYS.**

**(i)PUSH**

**(ii)POP**

**(iii)DISPLAY**

**Demonstrate stack overflow and underflow condition.**

#include <stdio.h>

#include <stdlib.h>

#define max 2

int stack[2],choice,n,top;

int top=-1,stack[max];

void push();

void pop();

void display();

void main()

{

int ch;

while(1)

{

printf("Stack Menu");

printf("\n1.Push 2.Pop 3.Display 4.Exit");

printf("\nEnter your choice:");

scanf("%d",&ch);

switch(ch)

{

case 1:push();

break;

case 2:pop();

break;

case 3:display();

break;

case 4:exit(0);

default:printf("Wrong Choice!\n");

}

}

}

void push()

{

int val;

if(top==max-1)

{

printf("stack is full\n");

}

else

{

printf("enter the value to be inserted\t");

scanf("%d",&val);

top=top+1;

stack[top]=val;

}

}

void pop()

{

if(top==-1)

{

printf("stack is empty\n");

}

else

{

printf("value to be deleted is %d\n",stack[top]);

top=top-1;

}

}

void display()

{

int i;

if(top==-1)

{

printf("stack is empty\n");

}

else

{

printf("the stack is:\n");

for(i=top;i>=0;i--)

printf("%d",stack[i]);

}

}

**LAB PROGRAM 3b:**

**Design, develop and implement a menu driven program for the following operations on stack of integers using STRUCTURE.**

**(i)PUSH**

**(ii)POP**

**(iii)DISPLAY**

**Demonstrate stack overflow and underflow condition.**

#include <stdio.h>

#include <stdlib.h>

#define MAX 2

struct stack

{

int top;

int stack[MAX];

}s;

void push( struct stack \*s)

{

int val;

if(s->top==MAX-1)

{

printf("Stack is full");

}

else

{

printf("Enter the value to be inserted");

scanf("%d",&val);

s->top=s->top+1;

s->stack[s->top]=val;

}

}

void pop( struct stack \*s)

{

if (s->top==-1)

{

printf("Stack is empty");

}

else

{

printf("\nDeleted element is %d",s->stack[s->top]);

s->top=s->top-1;

}

}

void display(struct stack \*s)

{

int i;

if(s->top==-1)

{

printf("\nStack is empty");

}

else

{

printf("The Stack is \n");

for(i=s->top;i>=0;i--)

{

printf("%d",s->stack[i]);

}

}

}

int main()

{

s.top=-1;

int ch;

while(1)

{

printf("\n 1-push 2-pop 3-display 4-Exit");

printf("\nEnter the character");

scanf("%d",&ch);

switch(ch)

{

case 1: push(&s);

break;

case 2: pop(&s);

break;

case 3: display(&s);

break;

case 4: exit(0);

default : printf("\n Wrong choice");

}

}

}

**OUTPUT(same for both a and b):**

****