**EX:6 ARRAY IMPLEMENTATION OF STACK**

**PROGRAM:**

#include<stdio.h>

int top=-1,stack[50],size;

void create()

{

printf("\nEnter the size of Stack:\n");

scanf("%d",&size);

if(size<=0)

{

printf("Invalid Input\n");

create();

}

}

void push(int data)

{

if(top == size-1)

{

printf("Sorry Stack is Full\n");

}

else

{

top = top+1;

stack[top]=data;

}

}

void pop()

{

int i;

if(top==-1)

{

printf("Sorry Stack empty\n");

}

else

{

top = top-1;

}

}

void isempty()

{

if(top == -1)

printf("the stack is Empty");

else

printf("The stack is not empty");

}

void isfull()

{

if(top == size-1)

printf("the stack is Full");

else

printf("The stack is not full");

}

void search(int value)

{

int i=0,temp=-1;

for(i=0;i<=top;i++)

{

if(stack[i]==value)

{

temp=i;

break;

}

}

if(temp!=-1)

{

printf("Element Found");

}

else

{

printf("No element Found");

}

}

void display()

{

int i;

if(top==-1)

{

printf("List is Empty");

}

else

{

printf("The Elements are:\n");

for(i=0;i<=top;i++)

{

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

}

}

}

void main()

{

int choice,data,value;

printf("Name:R.Sridevi");

printf("\nRoll.no:20UIT021");

printf("\nProgram Name:Array implementation of Stack");

create();

do

{

printf("\nMenu\n1.Push\n2.Pop\n3.Is Empty\n4.Is Full\n5.search\n6.Display\n7.Exit\n");

printf("\nEnter the choice: \n");

scanf("%d",&choice);

switch(choice)

{

case 1:

printf("PUSH\n");

printf("Enter the Element:\n");

scanf("%d",&data);

push(data);

break;

case 2:

printf("POP\n");

pop();

break;

case 3:

printf("Is the stack Empty\n");

isempty();

break;

case 4:

printf("Is the stack Full\n");

isfull();

break;

case 5:

printf("Search\n");

printf("Enter the Search element:\n");

scanf("%d",&value);

search(value);

break;

case 6:

printf("Display\n");

display();

break;

case 7:

printf("Bye\n");

break;

default:

printf("Invalid Input\n");

}

}while(choice!=7);

}

**OUTPUT:**

Name:R.Sridevi

Roll.no:20UIT021

Program Name:Array implementation of Stack

Enter the size of Stack:

5

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

6

Display

List is Empty

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

1

PUSH

Enter the Element:

10

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

1

PUSH

Enter the Element:

20

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

1

PUSH

Enter the Element:

30

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

1

PUSH

Enter the Element:

40

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

1

PUSH

Enter the Element:

50

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

6

Display

The Elements are:

10

20

30

40

50

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

1

PUSH

Enter the Element:

60

Sorry Stack is Full

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

3

Is the stack Empty

The stack is not empty

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

2

POP

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

6

Display

The Elements are:

10

20

30

40

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

5

Search

Enter the Search element:

20

Element Found

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

5

Search

Enter the Search element:

50

No element Found

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

6

Display

The Elements are:

10

20

30

40

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

1

PUSH

Enter the Element:

50

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

6

Display

The Elements are:

10

20

30

40

50

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

4

Is the stack Full

the stack is Full

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

2

POP

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

2

POP

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

2

POP

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

6

Display

The Elements are:

10

20

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

2

POP

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

2

POP

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

2

POP

Sorry Stack empty

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

3

Is the stack Empty

the stack is Empty

Menu

1.Push

2.Pop

3.Is Empty

4.Is Full

5.search

6.Display

7.Exit

Enter the choice:

7

Bye