Stack implementation using array

VAISHAK S(R3-258)

**Algorithm**

**Input**: Size of stack and elements to be stored in the stack

**Output** : Overflow-underflow situation and elements of the stack

**Steps**:

**push**(int a[size])

1. Start
2. if(top==size-1)
3. Print "Overflow"
4. else
5. Print “Enter an element: “
6. Read ele
7. top++
8. a[top]=ele
9. Stop

**pop**(int a[size])

1. Start
2. if(top==-1)
3. Print "Underflow"
4. else
5. Set ele=a[top]
6. top--
7. Print ele
8. Stop

**display**(int a[size])

1. Start
2. If(top==-1)
3. Print “Empty”
4. else
5. i=0
6. If(i<=top)
7. Print a[i]
8. i++
9. goto step 6
10. Stop

**main**( )

1. Start
2. Read size of stack from user to ‘size’
3. Declare array stack[size]
4. do

{

1. print “1. Push

2. Pop

3. Display”

1. Read choice ch
2. if(ch=1)
3. Call function push(stack)
4. else if(ch=2)
5. Call function pop(stack);
6. else if(ch=3)
7. Call function display(stack)
8. else
9. Print “Invalid choice”
10. Print "Do you want to continue? (y/n)"
11. Read ans
12. } Closing do loop

while(ans='y' or ans='Y')

1. Stop

**Program**

#include<stdio.h>

#include<stdlib.h>

int top=-1;

int size;

void push(int a[size])

{

int ele;

if(top==size-1)

{

printf("Overflow\n");

}

else

{

printf("\nEnter a element: ");

scanf("%d",&ele);

top++;

a[top]=ele;

}

}

void pop(int a[size])

{

int ele;

if(top==-1)

{

printf("Underflow\n");

}

else

{

ele=a[top];

top--;

printf("Deleted element: %d",ele);

}

}

void display(int a[size])

{

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

printf("%d\t",a[i]);

}

void main()

{

char ans;

printf("Enter the size of the stack:");

scanf("%d",&size);

int stack[size],ch;

do

{

printf("......MENU......\n");

printf("1. Push Operation\n");

printf("2. Pop Operation\n");

printf("3. Display Stack\n");

printf("Enter your choice: ");

scanf("%d",&ch);

if(ch==1)

push(stack);

else if(ch==2)

pop(stack);

else if(ch==3)

display(stack);

else

printf("Invalid choice\n");

printf("\nDo you want to continue? (y/n)");

scanf("%s",&ans);

}while(ans=='y' || ans=='Y');

}