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USN- 1NT21IS117

Q.Design and implement a stack (Array implementation) and demonstrate its working with necessary inputs. Display the appropriate messages in case of exceptions.

Aim : To implement stack using Linked List.

Algorithm:

1. Declare top and initialize with -1.

2. Create array of constant size.

3. In main, make a list of menu to perform operations.

4. For push operation

begin

if top = n then stack full

else top = top + 1

stack (top): = item;

end

5. For pop operation

begin

if top = 0 then stack empty;

else item= stack(top);

top = top - 1;

end;

6. For display operation

begin

if top=-1 then stack empty;

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

print stack[i]

end

CODE:

#include<stdio.h>

int stack[100],choice,n,top,x,i;

void push(void);

void pop(void);

void display(void);

int main()

{

top=-1;

printf("\n Enter the size of STACK[MAX=100]:");

scanf("%d",&n);

printf("\n\t STACK OPERATIONS USING ARRAY");

printf("\n\t--------------------------------");

printf("\n\t 1.PUSH\n\t 2.POP\n\t 3.DISPLAY\n\t 4.EXIT");

do

{

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

scanf("%d",&choice);

switch(choice)

{

case 1:

{

push();

break;

}

case 2:

{

pop();

break;

}

case 3:

{

display();

break;

}

case 4:

{

printf("\n\t EXIT POINT ");

break;

}

default:

{

printf ("\n\t Please Enter a Valid Choice(1/2/3/4)");

}

}

}

while(choice!=4);

return 0;

}

void push()

{

if(top>=n-1)

{

printf("\n\tSTACK is over flow");

}

else

{

printf(" Enter a value to be pushed:");

scanf("%d",&x);

top++;

stack[top]=x;

}

}

void pop()

{

if(top<=-1)

{

printf("\n\t Stack is under flow");

}

else

{

printf("\n\t The popped elements is %d",stack[top]);

top--;

}

}

void display()

{

if(top>=0)

{

printf("\n The elements in STACK \n");

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

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

printf("\n Press Next Choice");

}

else

{

printf("\n The STACK is empty");

}

}

OUTPUT : Attached as screenshot.

