PROGRAM – WRITE A PROGRAM TO IMPLEMENT A STACK CLASS USING TEMPLATE CLASS AND PERFORM PUSH AND POP FUNCTIONS.

//BHAVNA VERMA-171210019-16/04/2019

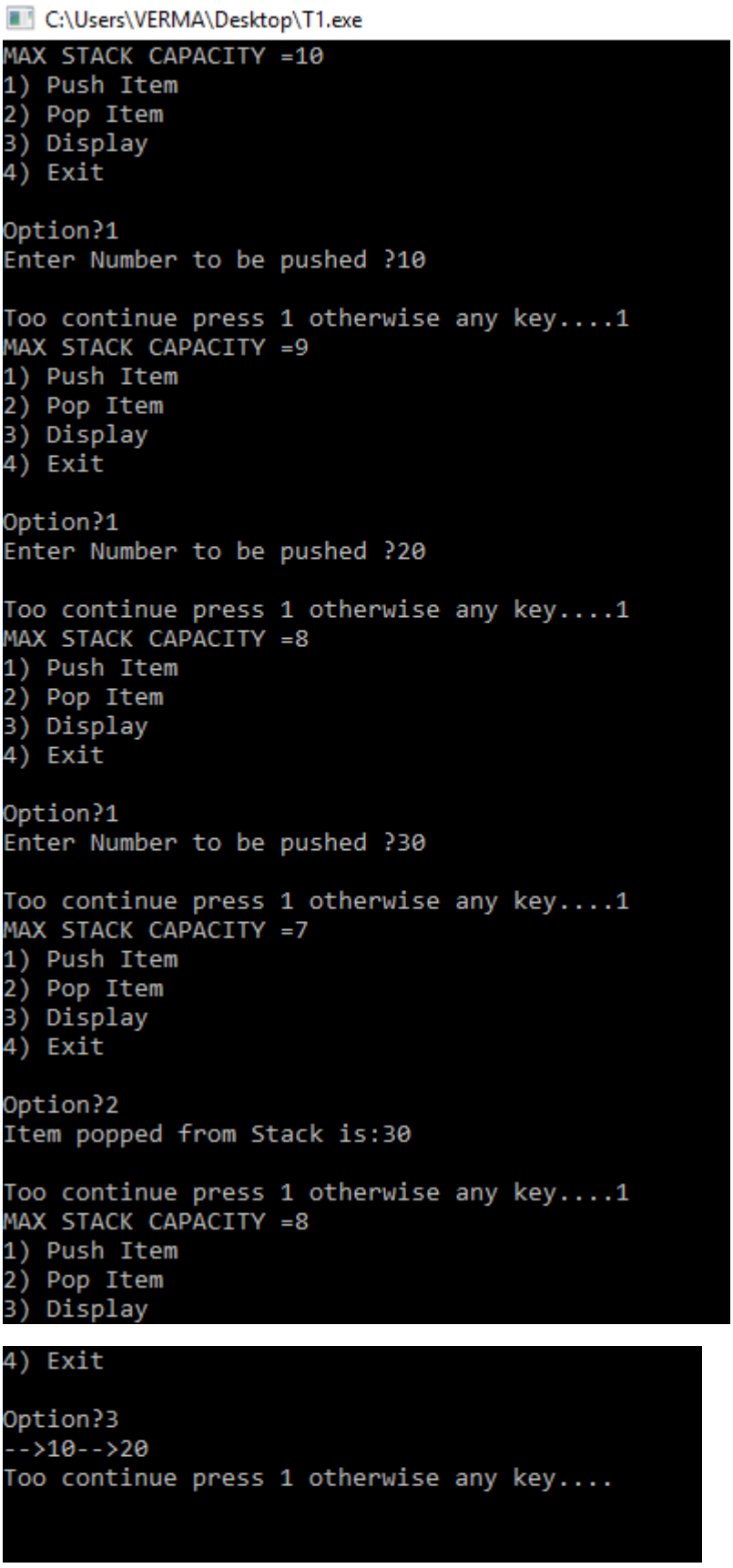
//GENERIC TYPE STACK CLASS

```
#include <iostream>
#include <conio.h>
using namespace std;
#define MAX 10
template <class T>
class stack
{
	protected:
		T arr[MAX];
	public:
		T item, r;
		int top;
	stack()
	{
		for (int i = 0; i < MAX; i++)
		{
			arr[i] = INT_MAX;
		}
	top = -1;
	}
	void push(T a)
	{
		top++;
		if(top < MAX)
		{
			arr[top] = a;
		}
		else
		{
```

```
                cout<<"STACK IS FULL!!!!!"<<endl;
                top--;
        }
    }
    T pop()
    {
        if (top == -1)
        {
            cout<<"STACK IS EMPTY"<<endl;
            return INT_MAX;
        }
        else
        {
            T data = arr[top];
            arr[top] = INT_MAX;
            top--;
            return data;
        }
    }
    T display()
    {
        top=0;
        while(arr[top]!=INT_MAX)
        {
            cout<<"-->"<<arr[top];
            top++;
        }
    }
};
int main()
{
    stack<int> a;
    int opt, key=1;
    while (key=1)
```

```
        {
          cout << "MAX STACK CAPACITY =" << ((MAX - a.top) - 1) <<"\n";
          cout << "1) Push Item\n";
          cout << "2) Pop Item\n";
          cout << "3) Display\n";
          cout << "4) Exit\n\n";
          cout << "Option?";
          cin >> opt;
          switch (opt)
          {
          case 1: cout << "Enter Number to be pushed ?";
                  cin >> a.item;
                  a.push(a.item);
                  break;
          case 2: a.r = a.pop();
                  cout << "Item popped from Stack is:" << a.r << endl;
                  getch();
                  break;
          case 3: a.display();
                  break;
          case 4: exit(0);
        }
        cout<<"\nToo continue press 1 otherwise any key....";
        cin>>key;
    }
    return 0;
}
```

OUTPUT –


C:\Users\VERMA\Desktop\T1.exe
MAX STACK CAPACITY =10
1) Push Item
2) Pop Item
3) Display
4) Exit
Option?1
Enter Number to be pushed ?10
Too continue press 1 otherwise any key....1
MAX STACK CAPACITY =9
1) Push Item
2) Pop Item
3) Display
4) Exit
Option?1
Enter Number to be pushed ?20
Too continue press 1 otherwise any key....1
MAX STACK CAPACITY =8
1) Push Item
2) Pop Item
3) Display
4) Exit
Option?1
Enter Number to be pushed ?30
Too continue press 1 otherwise any key....1
MAX STACK CAPACITY =7
1) Push Item
2) Pop Item
3) Display
4) Exit
Option?2
Item popped from Stack is:30
Too continue press 1 otherwise any key....1
MAX STACK CAPACITY =8
1) Push Item
2) Pop Item
3) Display
4) Exit
Option?3
-->10-->20
Too continue press 1 otherwise any key....