Stack Mechanism Discussion with Time Complexity

2. *IsEmpty*

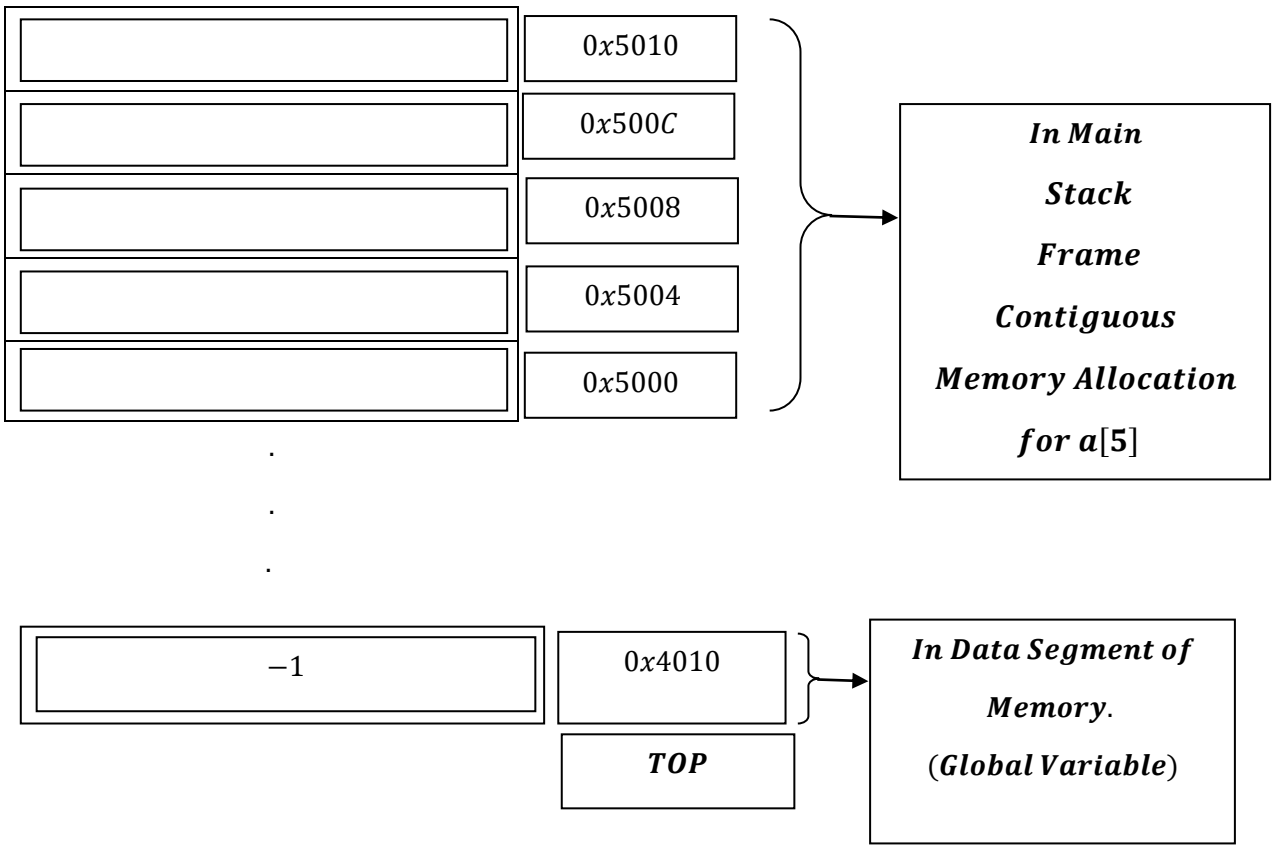
```
void isEmpty()
{

    if (top == -1)
    {

        cout << "Stack is empty" << endl;
    }
    else
    {

        cout << "Stack is not empty" << endl;
    }
}
…
       case 5:
            isEmpty();
            break;
```

IF top = −1 , then :

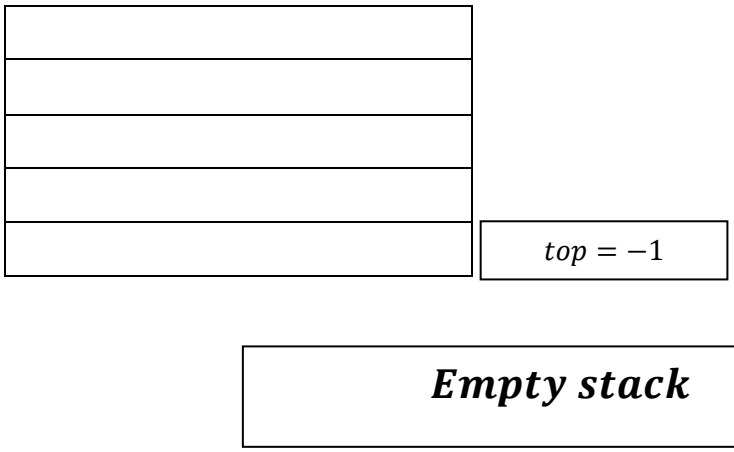
output : ``Stack is Empty``

Else

output:``Stack is not Empty``



This is Physical Demonstration



This is Logical Demonstration

Time Complexity

```
void isEmpty()
{

    if (top == -1)
    {

        cout << "Stack is empty" << endl;
    }
    else
    {

        cout << "Stack is not empty" << endl;
    }
}
```

→ ***Function overhead or stack frame creation when isEmpty() is called takes constant time `c` takes*** $O(1)$.

→ ***if*** $(top = -1)$ ***is true*** $[Takes\ constant\ time\ O(1)]$ ***then***:

Outputs: ``***Stack is Empty***`` → ***also takes***: $O(1)$.

If $(top \neq -1)$ ***then***:

Outputs: ``***Stack is not Empty***`` → ***also takes***: $O(1)$.

Total Time Complexity : $O(1) + (O(1) + (O(1)) = O(1)$.
