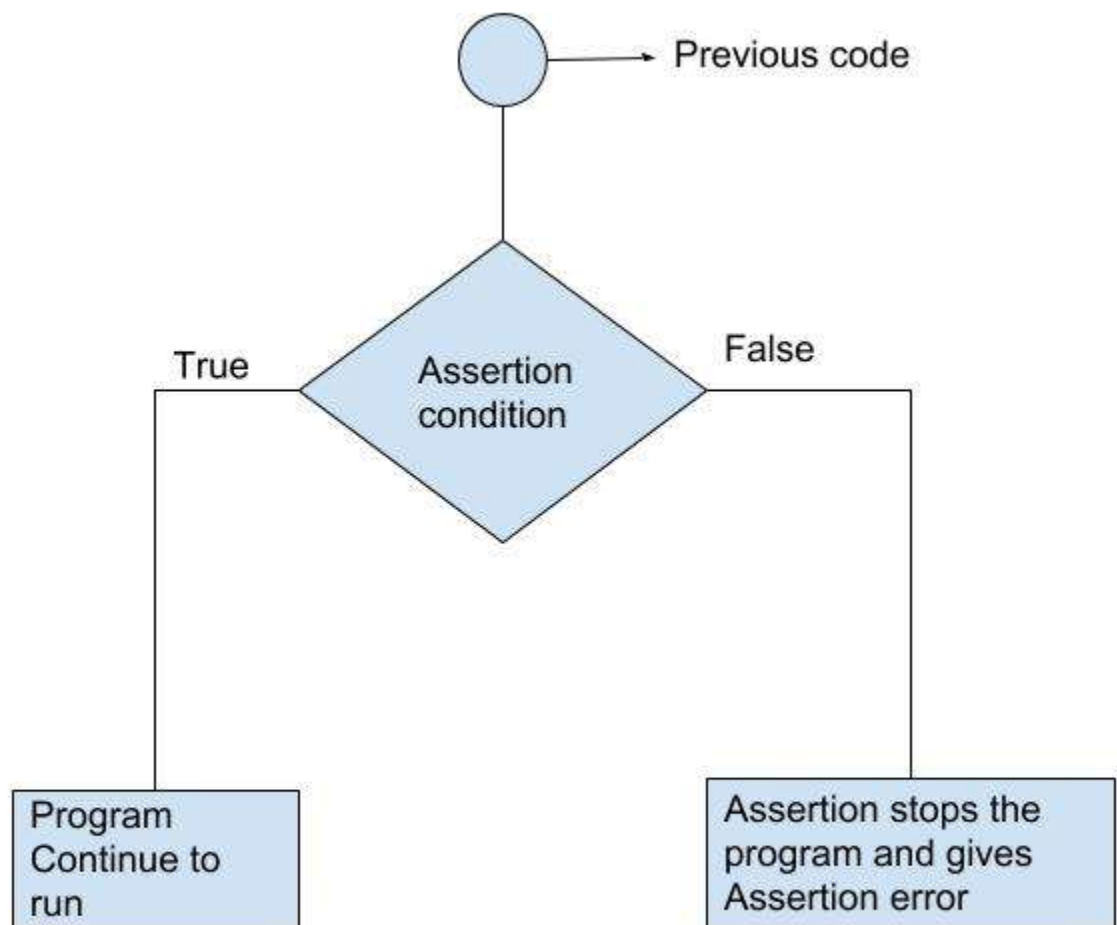


# What is an Assertion?

- Assertions are statements that assert or state a fact confidently in your program. For example, while writing a division function, you're confident the divisor shouldn't be zero, you assert divisor is not equal to zero.
- Assertions are simply boolean expressions that checks if the conditions return true or not. If it is true, the program does nothing and move to the next line of code. However, if it's false, the program stops and throws an error.
- It is also a debugging tool as it brings the program on halt as soon as any error is occurred and shows on which point of the program error has occurred.

We can be clear by looking at the flowchart below:



## **Python assert Statement**

Python has built-in assert statement to use assertion condition in the program. assert statement has a condition or expression which is supposed to be always true. If the condition is false assert halts the program and gives an AssertionError.

### **Syntax for using Assert in Python:**

1. `assert <condition>`
2. `assert <condition>,<error message>`

In Python we can use assert statement in two ways as mentioned above.

1. assert statement has a condition and if the condition is not satisfied the program will stop and give AssertionError.
2. assert statement can also have a condition and an optional error message. If the condition is not satisfied assert stops the program and gives AssertionError along with the error message.

Let's take an example, where we have a function which will calculate the average of the values passed by the user and the value should not be an empty list. We will use assert statement to check the parameter and if the length of the passed list is zero, program halts.

### **Example 1: Using assert without Error Message**

```
def avg(marks):  
    assert len(marks) != 0  
    return sum(marks)/len(marks)  
mark1 = []  
print("Average of mark1:",avg(mark1))
```

### **Example 2: Using assert with error message**

```
def avg(marks):  
    assert len(marks) != 0,"List is empty."  
    return sum(marks)/len(marks)  
mark2 = [55,88,78,90,79]  
print("Average of mark2:",avg(mark2))  
mark1 = []  
print("Average of mark1:",avg(mark1))
```

### **Key Points to Remember**

- Assertions are the condition or boolean expression which are always supposed to be true in the code.
- assert statement takes an expression and optional message.
- assert statement is used to check types, values of argument and the output of the function.
- assert statement is used as debugging tool as it halts the program at the point where an error occurs.