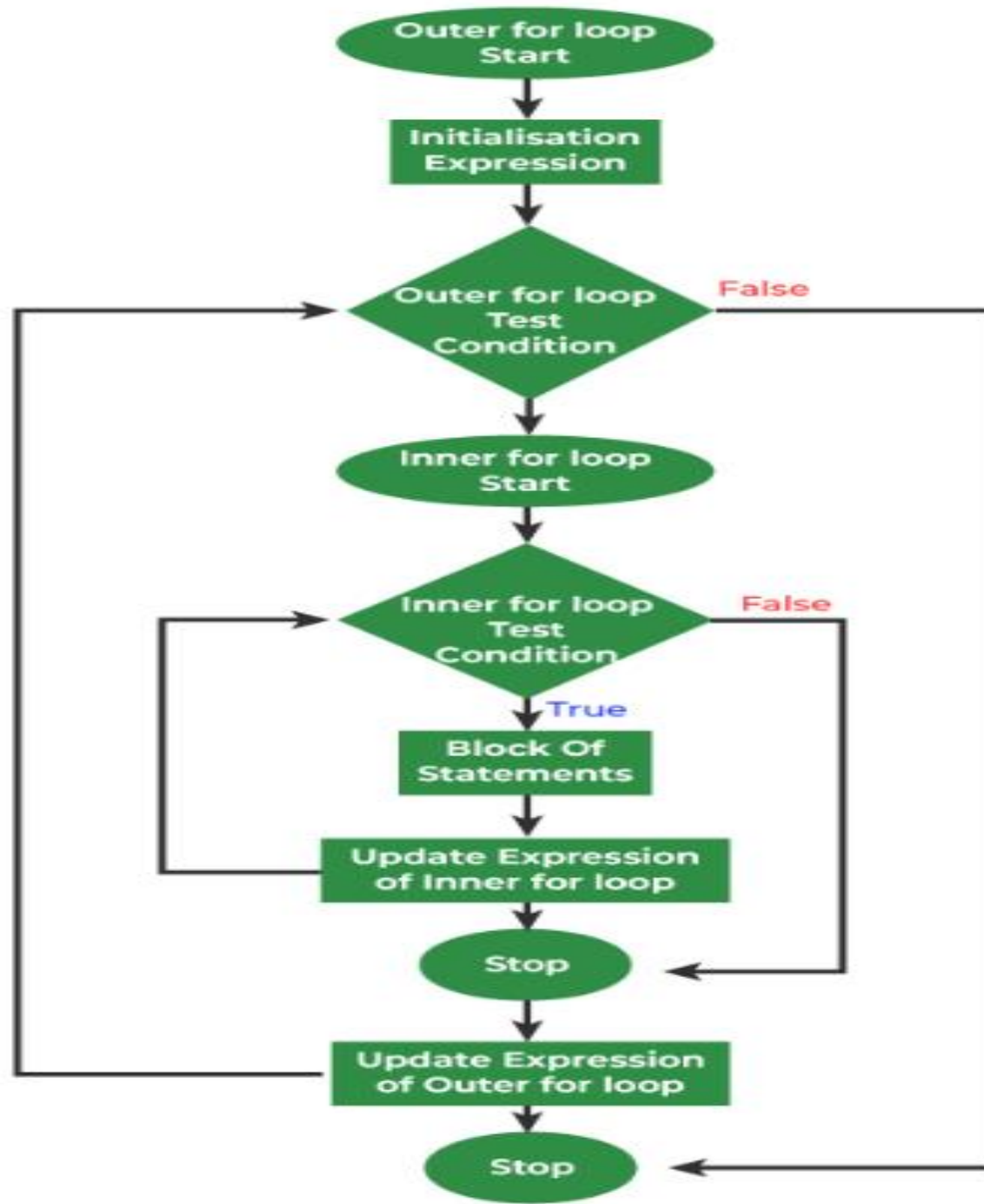# Nested Loops

Nested Loop

- A **nested loop** means a loop statement inside another loop statement. That is why nested loops are also called "**loop inside loops**". We can define any number of loops inside another loop.

Nested For Loop

- Nested for loop refers to any type of loop that is defined inside a 'for' loop.

Java

```java
public class NestedLoops {
    Run | Debug
    public static void main(String[] args) {
        for (int i = 1; i <= 3; i++) {
            for (int j = 1; j <= 4; j++) {
                System.out.print(i * j + " ");
            }
            System.out.println();
        }
    }
}
```

Python

```python
for i in range(1, 4):
    for j in range(1, 5):
        print(i * j, end=" ")
    print()
```

C++

```cpp
#include <iostream>
using namespace std;

int main() {
    for (int i = 1; i <= 3; i++) {
        for (int j = 1; j <= 4; j++) {
            cout << i * j << " ";
        }
        cout << endl;
    }
    return 0;
}
```
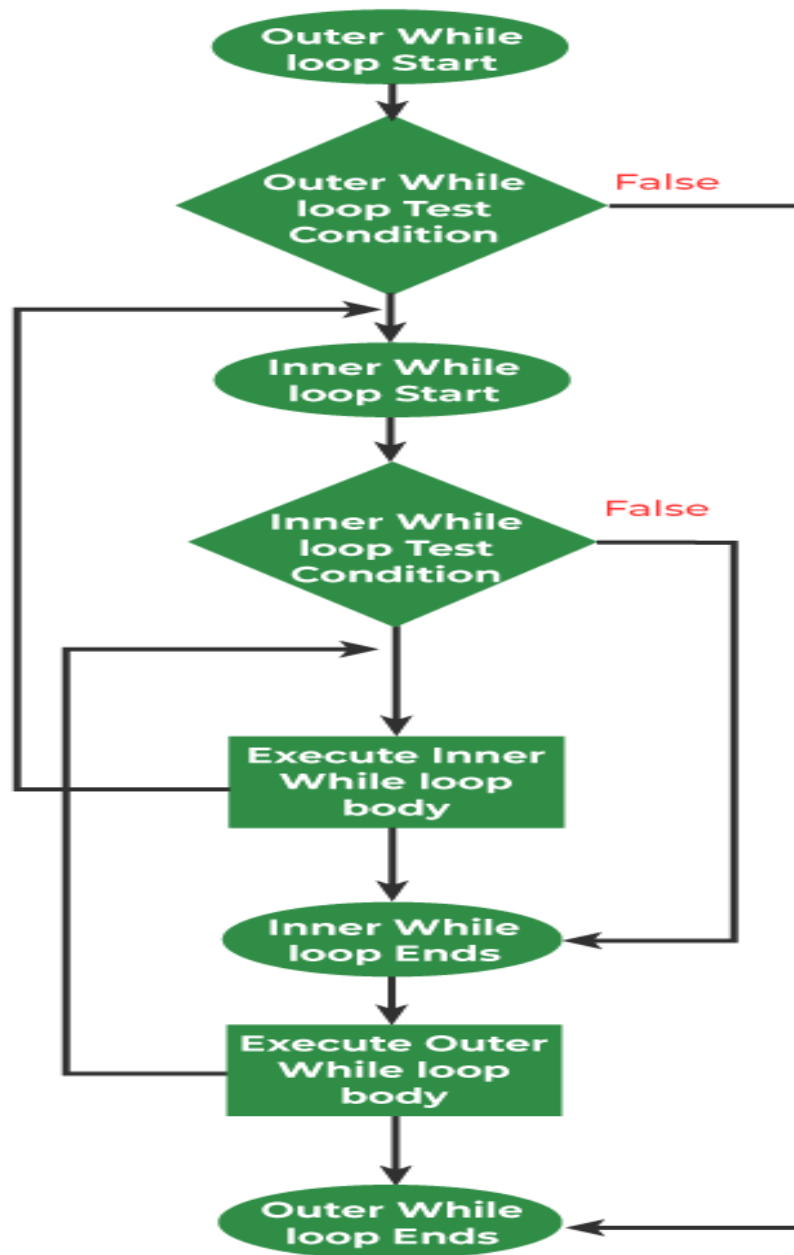
Nested While Loop

- A nested while loop refers to any type of loop that is defined inside a 'while' loop.

Java

```java
public class NestedLoops {
    Run | Debug
    public static void main(String[] args) {
        int rows = 5;
        int i = 1;
        while (i <= rows) {
            int j = 1;
            while (j <= i) {
                System.out.print(s:"* ");
                j++;
            }
            System.out.println();
            i++;
        }
    }
}
```

Python

```python
rows = 5
i = 1
while i <= rows:
    j = 1
    while j <= i:
        print("*", end=" ")
        j += 1
    print()
    i += 1
```

C++

```cpp
#include <iostream>
using namespace std;

int main() {
    int rows = 5;
    int i = 1;
    while (i <= rows) {
        int j = 1;
        while (j <= i) {
            cout << "* ";
            j++;
        }
        cout << endl;
        i++;
    }
    return 0;
}
```

Task

- Write a program that takes a number as input from the user and prints a right angle triangle with that many rows using asterisks. For example, if the user inputs 5.

- Write a program that takes a number as input from the user and prints an inverted right angle triangle with that many rows using asterisks.

- Write a program that takes a number as input from the user and prints a pyramid with that many rows using asterisks.

- Write a program that takes a number as input from the user and prints a diamond shape with that many rows using asterisks.

- Write a program that takes a number as input from the user and prints a hollow square with that many rows and columns using asterisks.