

Date C++ for Loop

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In a Computer programming, loops are used to repeat a block of code.

For example, let's say we want to show a message 100 times. Then instead of writing the print statement 100 times, we can use loops.

There are three types of loops in C++

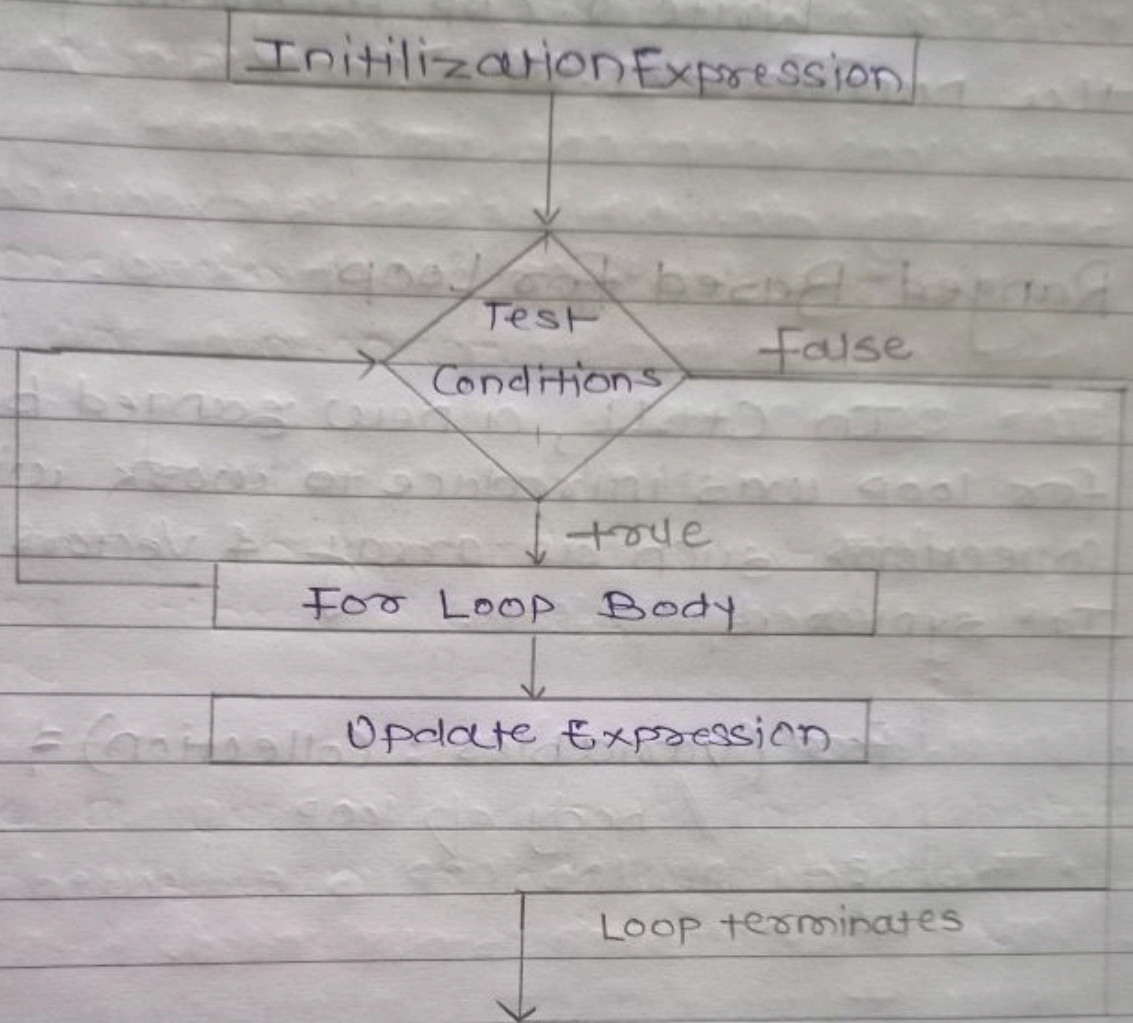
- 1] for loop.
- 2] While loop.
- 3] do...While loop.

C++ for Loop

The syntax of for...Loop is

- Initialization - Variables & is execute only once.
- Condition - If true, the body of for loop is executed if false, the loop is terminated.
- Update - Update the value of initialize variables & again check the condition.

Flowchart of for Loop in c++



Display a text 5-times

```
#include <iostream>
using namespace std;
int main() {
    for (int i = 0; i <= 5; i++) {
        cout << "Hello Teyas" << endl;
    }
    return 0;
}
```


Quick Quiz: Write a C++ program for printing the numbers 1 to 5.

Write a C++ program for printing the numbers 1 to 5.

Ranged Based for Loop

In C++11, a new ranged based for loop was introduced to work with collections such as array & vectors.

Its syntax is:

```
for (variables : collection) {  
    // body of loop  
}
```

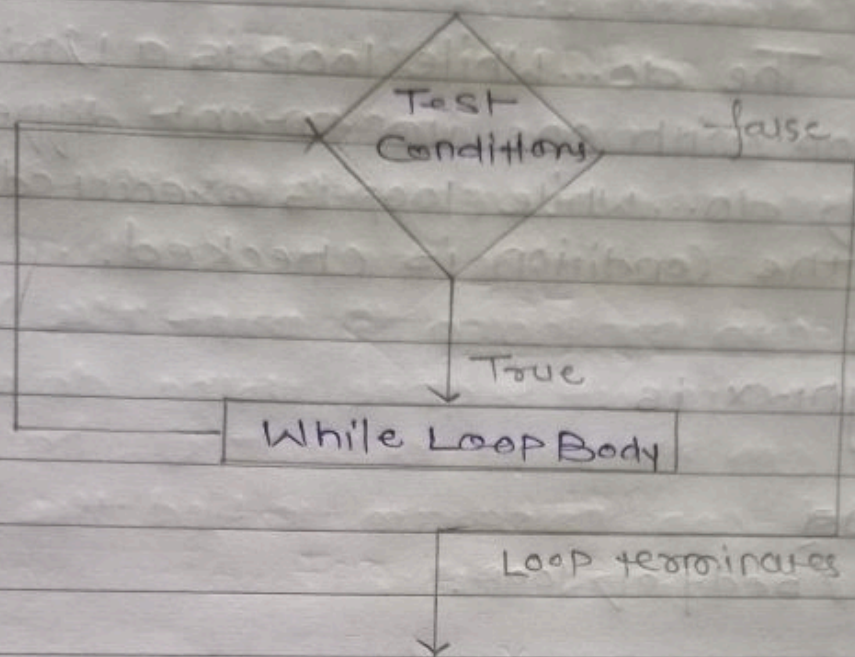
C++ While loop

The syntax of while loop is

```
while (condition) {  
    // body of the loop  
}
```

- A while loop evaluates the condition true, the code inside the loop is executed.
- When the code evaluates false, the loop halt / terminated.

Flowchart of While loop



Example :

Display the numbers 1 to 5

```
#include <iostream>
using namespace std;
int main() {
    int i = 1;
    while (i <= 5) {
        cout << " i << " ";
        ++i;
    }
    return 0;
}
```

Quick Quiz:

Convert the above program into the user input.

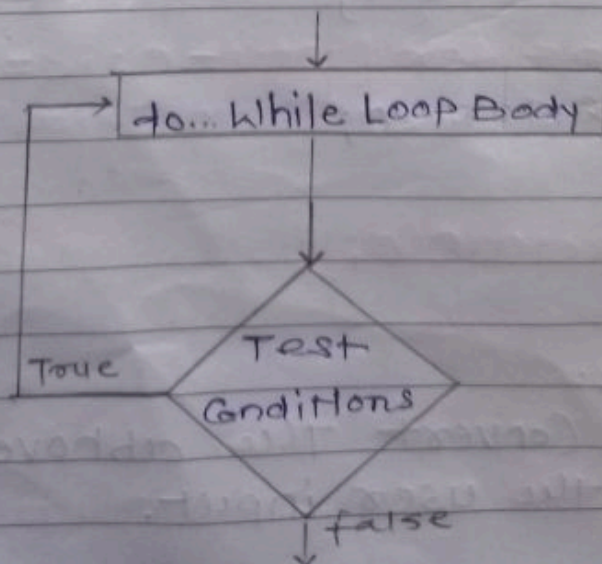
C++ do...While Loop

The do...While loop is a variant of the while loop with one important difference: the body of do...while loop is executed once before the condition is checked.

Its syntax is

```
do {  
    // body of loop.  
} while (condition);
```

- The body of the loop is executed at first. Then the condition is evaluated.
- If the condition evaluated to true, the body inside the do statement is executed again.
- The process continues until the condition evaluates to false. Then the loop stops.



Example : Display Number from 1 to 5.

```
#include <iostream>
using namespace std;
int main() {
    int i = 1;
    do {
        cout << " " << i << " ";
        ++i;
    }
    while (i <= 5);
    return 0;
}
```

Expected output :

1, 2, 3, 4, 5

1. Write a C++ program to find the sum of n natural numbers using for loop.
2. Write a C++ program to print the multiplication table with the given input range.
3. Write a C++ program to print the half pyramid using *
*
* *
* * *

4. Write a C++ program to find the sum of positive numbers if the number entered negative the loop ends, the negative number entered is not added to the sum.