Lab # 6: More Loops

EC-102 – Computer Systems and Programming

Usama Wajhi

School of Mechanical and Manufacturing Engineering (SMME),
National University of Sciences and Technology (NUST)

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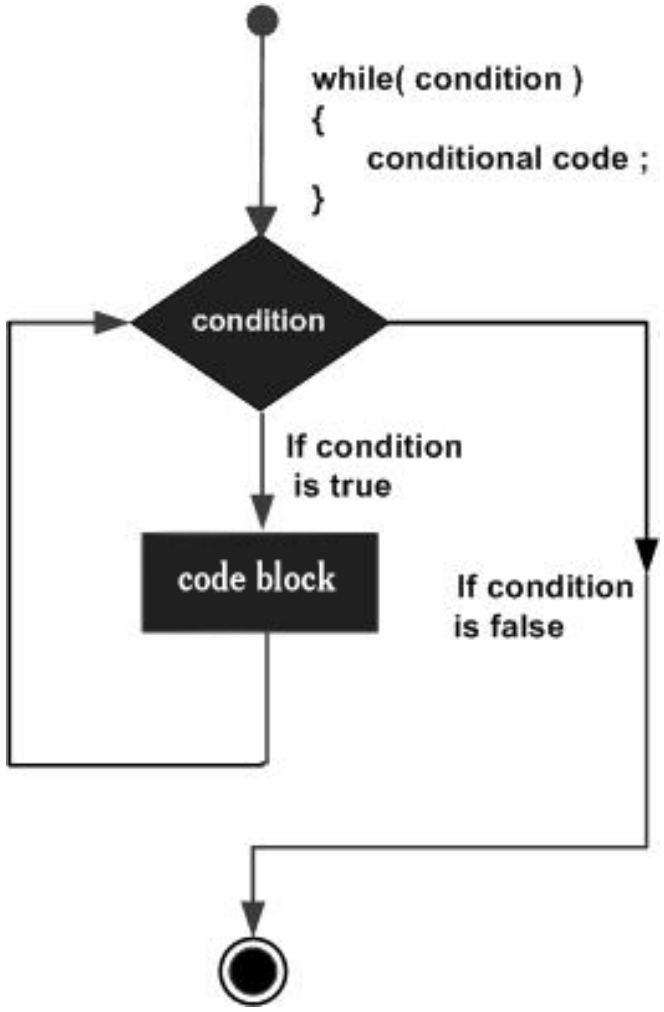
Outline

The `while` Loop

- The `for` loop does something a fixed number of times
- What happens if we don't know how many times are we going to do something before we start the loop?



The `while` Loop – Syntax

```
1 while(test)
2     {
3         statement;
4         statement;
5         statement;
6         statement;
7     }
```

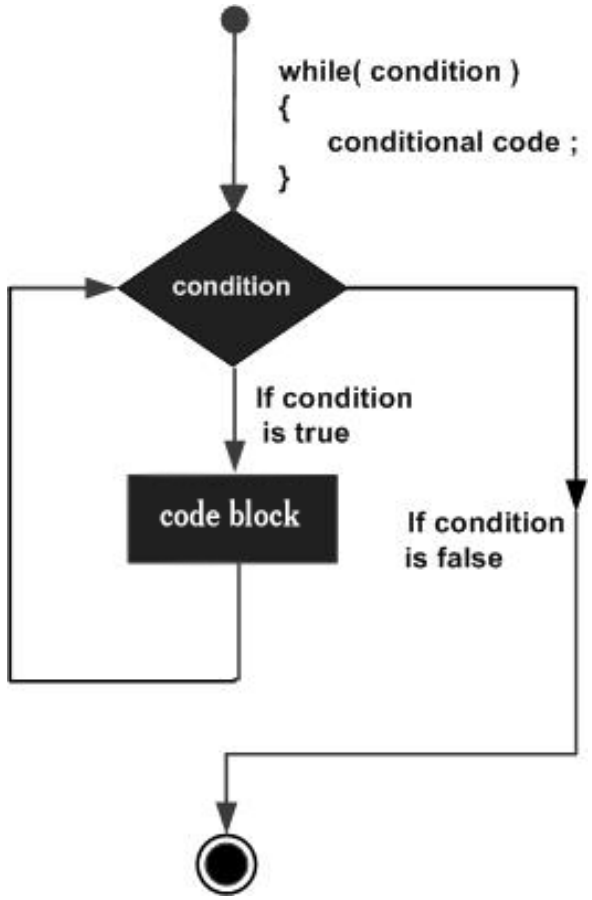
- Keyword `while` followed by a pair of parentheses that contain a test expression
- Although there is no initialization expression, the loop variable must be initialized before the loop begins
- The body of the loop, delimited by the left and right braces, is the code to be executed each time through the loop
- Similarly, the loop body must also contain some statement that keeps updating the value of the loop variable

The while Loop – Solved Example 1

```
1  // demonstrates WHILE loop
2  #include <iostream>
3  using namespace std;
4  int main(){
5      int num, endOfLoop = -1;
6      cout << "Enter a number: ";
7      cin >> num;
8
9      while(num != endOfLoop){
10         if(num % 2 == 0)
11             cout << "The number is even.\n";
12         else
13             cout << "The number is odd.\n";
14         cout << "Enter a number: ";
15         cin >> num;
16     }
17     return 0;
18 }
```

The while Loop – Solved Example 2

```
1  // sum using while loop
2  #include <iostream>
3  using namespace std;
4
5  int main(){
6      int num, sum = 0;
7      cout << "Enter a number: ";
8      cin >> num;
9
10     while(num != -1){
11         sum = sum + num;
12
13         cout << "Enter a number: ";
14         cin >> num;
15     }
16     cout << "Sum = " << sum << endl;
17     return 0;
18 }
```



Exercise

Write a calculator using `while` loop which keeps on getting a number and an operator as an input until 'q' is entered as an operator. As soon as 'q' is entered, the total result of the calculation is displayed and the execution of the program is stopped.

Here goes a sample interaction with the program:

```
Number: 5
Operator: +
Number: 5
Operator: *
Number: 3
Operator: -
Number: 2
Operator: /
Number: 2
Operator: q
```