C++ Function Parameters

In this lesson, you will get acquainted with actual parameters, formal parameters, and the default values of the parameters.

We'll cover the following

Function parameters

We can declare the variables inside the function definition as parameters. We specify the list of parameters separated by a comma inside the round brackets. In C++, we have:

- Formal parameters
- Actual parameters

Formal parameters

Formal parameters are the variables defined in the function definition. These variables receive values from the calling function. Formal parameters are commonly known as **parameters**.

Actual parameters

Actual parameters are the variables or values passed to the function when it is called. These variables supply value to the called function. Actual parameters are commonly known as **arguments**.

```
#include  <stdio.h>                                        formal parameter / parameter

return_type function_name ( variable declared in the function declaration ) ;

......

int  main  ( )
{
function_name ( value passed to the function parameter ) ;

return 0;
                                   actual parameter / argument
}
```

Example program

Press the **RUN** button and see the output!

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

// Function definition
int make_juice ( int water , int fruit){
// Define new  variable juice of int type
  int juice ;
// Adds water in apple and saves the output in juice
  juice = water + fruit;
// Prints text on the screen
  cout << "Your juice is ready" << endl ;
 // Returns juice value in output
  return juice;

}


int main() {
  // Declares a variable juice_glass
  int juice_glass;
  // Calls function make_juice and save its output in juice_glass
  juice_glass = make_juice ( 2 , 5);
  // Prints value of juice_glass
  cout << "Number of juice glass = " << juice_glass << endl;
  return 0;
}
```

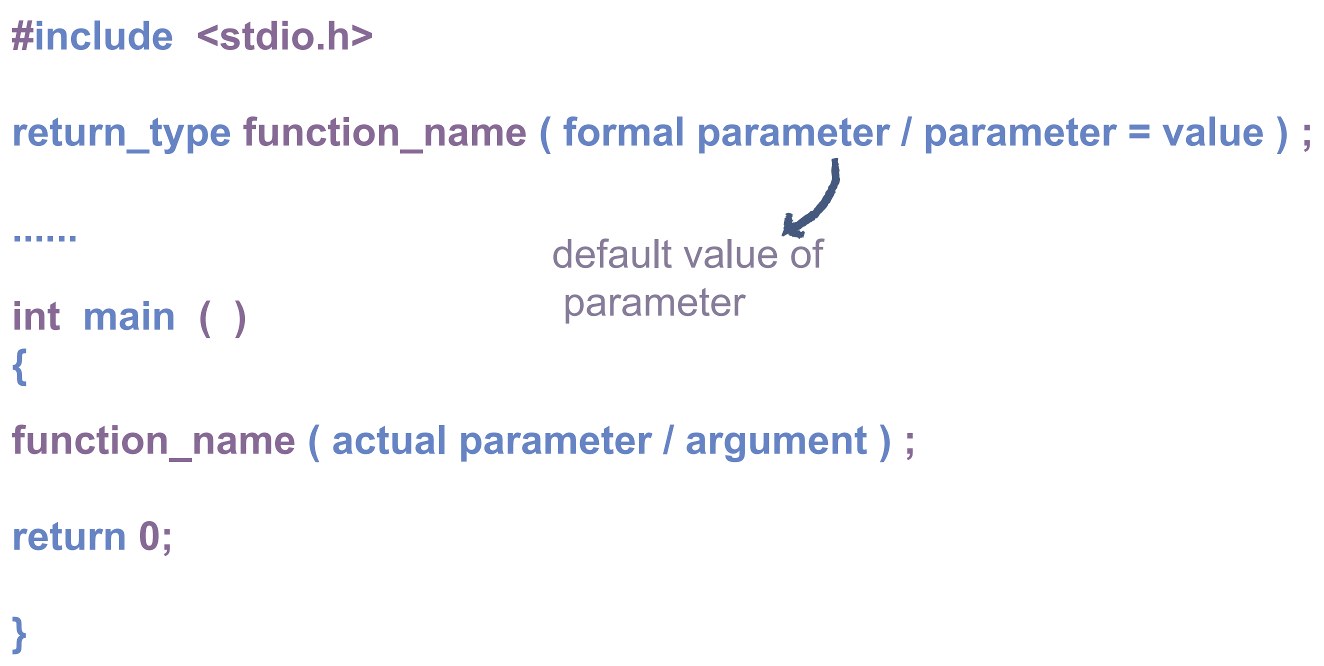
In the above program:

Line No. 5: We defined the function `make_juice`. In the `make_juice` definition, we declare the variables `water` and `fruit` that take integer values. These are the **formal parameters**.

Line No. 22: In the `main` function, we call the function `make_juice`. `make_juice` takes **2** and **5** inside the round brackets. Here, **2** and **5** are the **actual parameters**.

Default parameter values

If we provide fewer or no arguments to the calling function, then the default values of the parameters are used. We specify the default values in the function declaration using an equal sign `=`.



```
#include  <stdio.h>

return_type function_name ( formal parameter / parameter = value ) ;

......

int  main  (  )
{

function_name ( actual parameter / argument ) ;

return 0;

}
```

Example program

Press the **RUN** button and see the output!

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

// Function definition
int make_juice ( int water = 1 , int fruit = 3){
// Define new  variable juice of int type
  int juice ;
// Adds water in apple and saves the output in juice
  juice = water + fruit;
// Prints text on the screen
  cout << "Your juice is ready" << endl ;
 // Returns juice value in output
  return juice;
}


int main() {
  // Declares a variable juice_glass
  int juice_glass;

  // Calls function make_juice without any actual paramters
  juice_glass = make_juice ( );
  cout << "Number of juice glass = " << juice_glass << endl;
  // Calls function make_juice with only one actual paramters
  juice_glass = make_juice (5);
  cout << "Number of juice glass = " << juice_glass << endl;
    // Calls function make_juice and save its output in juice_glass
  juice_glass = make_juice ( 2 , 5 );
  cout << "Number of juice glass = " << juice_glass << endl;

  return 0;
}
```

Explanation

In the code above:

Line No. 23: If we call the function without specifying the actual values of the `water` and `fruit`, then the compiler uses the default values of the parameters.

Line No. 26: If we call the function with one actual parameter, then the compiler uses the actual value for `water` and the default value for `fruit`.

Line No. 29: If we specify the actual values for both `water` and `fruit`, then the compiler uses their actual values.

> 📝 If we specify the default value of the parameters, then the parameters following it must have a default value. Otherwise, you\ get an error. However, it is not necessary to assign the default values to the parameters preceding it.

Passing actual parameters to the function

We can pass the actual parameters to the function in two ways:

- Pass by value

- Pass by reference

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What is the output of the following code?

```
int number_sum (int num1 = 30 , int num2 ){
return num1 + num2;
}

int main() {
  int sum = number_sum (20) ;
  cout << sum ;
  return 0;
}
```

Retake Quiz

Let’s dig deeper into passing the parameters to the functions in the upcoming lesson.

See you there!