The main function.

main() Function in C++

main() function is the entry point of any C++ program. It is the point at which execution of program is started. When a C++ program is executed, the execution control goes directly to the main() function. Every C++ program have a main() function.

Syntax

```
 void main()
{
  ............
  ............
}
```

In above syntax;

- **void:** is a keyword in C++ language, void means nothing, whenever we use void as a function return type then that function nothing return. here main() function no return any value.
- In place of void we can also use **int** return type of main() function, at that time main() return integer type value.
- **main:** is a name of function which is predefined function in C++ library.

Simple example of main()

Example

```
#include<stdio.h>

void main()
{
cout<<"This is main function";
}
```

Output

```
This is main function
```

C++ Functions

In this tutorial, we will learn about the C++ function and function expressions with the help of examples.

A function is a block of code that performs a specific task.

Suppose we need to create a program to create a circle and color it. We can create two functions to solve this problem:

- a function to draw the circle
- a function to color the circle

Dividing a complex problem into smaller chunks makes our program easy to understand and reusable.

There are two types of function:

1. **Standard Library Functions:** Predefined in C++
2. **User-defined Function:** Created by users

In this tutorial, we will focus mostly on user-defined functions.

C++ User-defined Function

C++ allows the programmer to define their own function.

A user-defined function groups code to perform a specific task and that group of code is given a name (identifier).

When the function is invoked from any part of the program, it all executes the codes defined in the body of the function.

C++ Function Declaration

The syntax to declare a function is:

```
returnType functionName (parameter1, parameter2,...) {
    // function body
}
```

Here's an example of a function declaration.

```
// function declaration
void greet() {
```

```
    cout << "Hello World";
}
```

Here,

- the name of the function is `greet()`
- the return type of the function is `void`
- the empty parentheses mean it doesn't have any parameters
- the function body is written inside `{}`

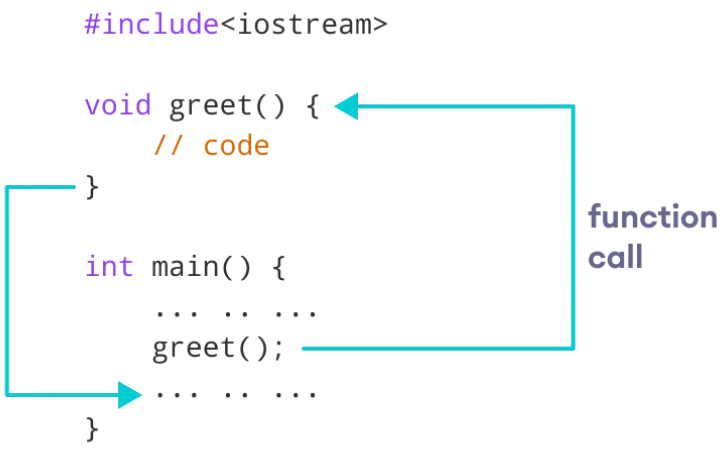
Note: We will learn about `returnType` and `parameters` later in this tutorial.

Calling a Function

In the above program, we have declared a function named `greet()`. To use the `greet()` function, we need to call it.

Here's how we can call the above `greet()` function.

```
int main() {

    // calling a function
    greet();

}
```



How Function works in C++

Example 1: Display a Text

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

// declaring a function
void greet() {
    cout << "Hello there!";
}

int main() {

    // calling the function
    greet();

    return 0;
}
```

Output

```
Hello there!
```

Function Parameters

As mentioned above, a function can be declared with parameters (arguments). A parameter is a value that is passed when declaring a function.

For example, let us consider the function below:

```
void printNum(int num) {
    cout << num;
}
```

Here, the `int` variable num is the function parameter.

We pass a value to the function parameter while calling the function.

```
int main() {
    int n = 7;

    // calling the function
    // n is passed to the function as argument
    printNum(n);

    return 0;
}
```

Example 2: Function with Parameters

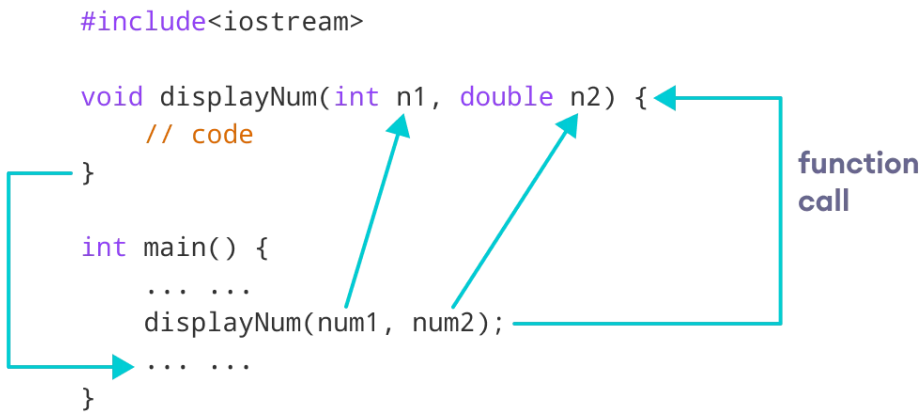
```
// program to print a text

#include <iostream>
using namespace std;

// display a number
void displayNum(int n1, float n2) {
    cout << "The int number is " << n1;
    cout << "The double number is " << n2;
}

int main() {

     int num1 = 5;
     double num2 = 5.5;

    // calling the function
    displayNum(num1, num2);

    return 0;
}
```

Output

```
The int number is 5
The double number is 5.5
```

In the above program, we have used a function that has one `int` parameter and one `double` parameter.

We then pass num1 and num2 as arguments. These values are stored by the function parameters n1 and n2 respectively.



C++ function with parameters

Note: The type of the arguments passed while calling the function must match with the corresponding parameters defined in the function declaration.

Return Statement

In the above programs, we have used void in the function declaration. For example,

```
void displayNumber() {
    // code
}
```

This means the function is not returning any value.

It's also possible to return a value from a function. For this, we need to specify the `returnType` of the function during function declaration.

Then, the `return` statement can be used to return a value from a function.

For example,

```
int add (int a, int b) {
   return (a + b);
}
```

Here, we have the data type `int` instead of `void`. This means that the function returns an `int` value.

The code `return (a + b);` returns the sum of the two parameters as the function value.

The `return` statement denotes that the function has ended. Any code after `return` inside the function is not executed.

Example 3: Add Two Numbers

```
// program to add two numbers using a function

#include <iostream>

using namespace std;

// declaring a function
int add(int a, int b) {
    return (a + b);
}

int main() {

    int sum;
```

```
    // calling the function and storing
    // the returned value in sum
    sum = add(100, 78);

    cout << "100 + 78 = " << sum << endl;

    return 0;
}
```

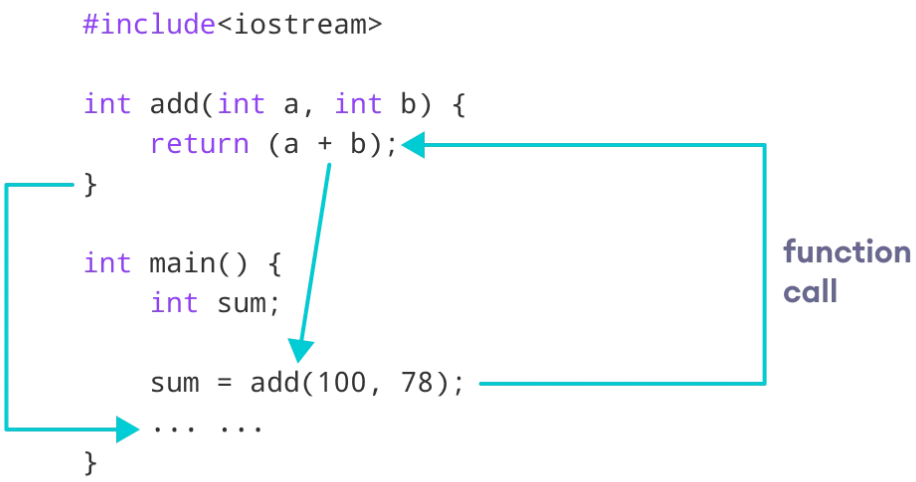
Output

```
100 + 78 = 178
```

In the above program, the `add()` function is used to find the sum of two numbers.

We pass two `int` literals `100` and `78` while calling the function.

We store the returned value of the function in the variable sum, and then we print it.



Working of C++ Function with return statement

Notice that sum is a variable of `int` type. This is because the return value of `add()` is of `int` type.