This lesson will teach you the basics of programming in C++. By the end of this lesson, you will be able to write simple programs in C++ and understand the basics of how they work.

We will start by talking about what C++ is and what it can be used for. Then, we will write our first program together. Finally, we will talk about some of the basic concepts of programming in C++.

What is C++?

C++ is a programming language that was created in the early 1980s. It was designed to be an extension of the programming language C, hence its name. C++ was created to add object-oriented programming features to C.

Object-oriented programming is a way of writing programs that uses objects to represent data and methods to represent the actions that can be taken on that data. C++ is one of the most popular programming languages in the world and is used for everything from creating small programs to large, complex software systems.

How do I write a program in C++?

A C++ program is written in a text editor, such as Microsoft Notepad, and saved with a ".cpp" extension. For example, the program that we will write in this lesson will be saved as "firstprogram.cpp".

Once you have written your program, you need to compile it before it can be run. Compiling a program means converting it from human-readable code into machine-readable code. The machine-readable code can be run on your computer.

There are many different C++ compilers available, but we will be using the Microsoft Visual C++ compiler in this lesson. To compile our program, we will use the following command:

```
cl /EHsc firstprogram.cpp
```

This will create an executable file called "firstprogram.exe" in the same directory as our source code file. We can then run this program by double-clicking on the executable file.

Our First C++ Program

Let's write our first C++ program together. Type the following code into your text editor and save it as "firstprogram.cpp":

```
#include <iostream>

using namespace std;

int main()

{

cout << "Hello, world!" << endl;

return 0;

}
```

Let's go over what each line of this program does.

The first line, "#include <iostream>", tells the compiler to include the header file "iostream". This header file contains the definitions of the input/output stream objects that we will be using in our program.

The second line, "using namespace std;", tells the compiler to use the standard namespace. This namespace contains the standard library of C++ functions and objects.

The third line, "int main()", is the main function of our program. This function is where the program starts execution.

The fourth line, "cout << "Hello, world!" << endl;", uses the standard output stream object "cout" to print the string "Hello, world!" to the screen. The "endl" at the end of the line tells "cout" to start a new line after it has finished printing the string.

The fifth and final line, "return 0;", tells the main function to return the value 0 to the operating system. This value indicates that the program has completed successfully.

Now that we have written our program, let's compile and run it. Open a command prompt and navigate to the directory where you saved your program. Then, type the following command:

cl /EHsc firstprogram.cpp

This will compile your program and create an executable file called "firstprogram.exe". You can now run your program by double-clicking on the executable file.

When you run the program, you should see the string "Hello, world!" printed to the screen. Congratulations, you have just written and run your first C++ program!

Basic Concepts

Now that we have written our first program, let's talk about some of the basic concepts of programming in C++.

First, let's talk about variables. A variable is a piece of data that is given a name so that it can be used in a program. For example, we could have a variable called "counter" that keeps track of how many times a loop has been executed.

We declare variables in C++ by specifying their type and name. For example, the following code declares a variable of type "int" called "counter":

int counter;

There are many different types of variables in C++, but we will talk about the most common ones. The two types of variables that we will use in this lesson are "int" variables and "string" variables.

"int" variables are used to store integers, which are whole numbers. "string" variables are used to store strings, which are sequences of characters.

We assign values to variables using the assignment operator, which is the equal sign (=). For example, the following code assigns the value 10 to the variable "counter":

```
counter = 10;
```

We can also declare and assign values to variables in the same line of code. For example, the following code declares a variable of type "int" called "counter" and assigns it the value 10:

```
int counter = 10;
```

We can print the value of a variable to the screen using the "cout" object and the insertion operator (<<). For example, the following code would print the value of the variable "counter" to the screen:

```
cout << counter;
```

This would print the value 10 to the screen.

One last concept that we need to talk about before we move on is the concept of a function. A function is a block of code that can be executed when it is called.

We have already seen one function in our program - the main function. The main function is the entry point for our program. That means that when we run our program, the first line of code that is executed is the main function.

We can also define our own functions. For example, we could define a function that prints a string to the screen. We would do this as follows:

```
void printString(string str)

{

cout << str << endl;

}
```

This function takes in one parameter - a string variable called "str". The function then prints the value of this variable to the screen followed by a new line.

We call this function by passing in a string variable as an argument. For example, we could call our function as follows:

```
printString("Hello, world!");
```

This would print the string "Hello, world!" to the screen.

Now that we have talked about the basics of programming in C++, you are ready to write your own programs!