Variables And DataTypes

By **James Bruce** / October 23, 2011 23-10-2011 / 4 mi

Having introduced and talked a little about **Object Oriented Programming** before and where its namesake comes from, I thought it's time we go through the absolute basics of computer programming in a non-language specific way. This is the kind of stuff computer science majors learn in the first term, and I'm aiming this at people with absolutely zero experience in programming.

Where Did "Object Oriented" Programming Get Its Name From?

Object Oriented isn't just a random buzzword you hear in programming circles. There's a reason behind the name - but what? Join me as I explore some of the fundamentals of programming concepts and explain...

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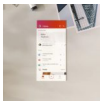

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ering the most fundamental part of any programming language – variables and datatypes. We'll have a few more lessons after this on the fundamentals before we delve into any actual code, so no worries about things getting complicated yet.

Variable and Datatypes:

At the core of any program are *variables*. Variables are where the dynamic information is stored. When you type your name into a web form and send it, your name is a variable.

Not all variables are the same though. In fact, there are many different types of variables that nearly every programming language has. Let' s look at a small selection of them, as well as their short names if they have one:

Character (char): This is a single character, like **X**, **£**, **4**, or *****. You don't often create single character variables, but they are at the core of the language so you need to know what they are.

String: This is a "string" of *characters* (see how they're at the core?) of any length. In my previous example – your

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Integer (int): A whole number – whole meaning there are no digits after a decimal point. So *65* would be a valid integer; *65.78* would not.

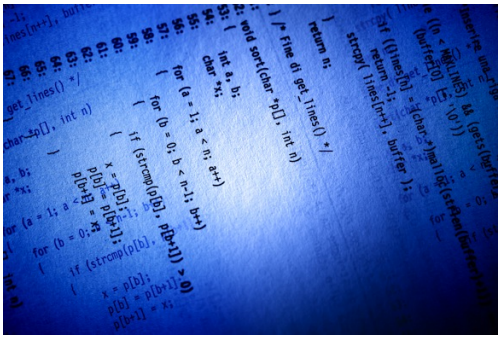
Floating-point number (float): A number that may have digits after the decimal place. *65.00* is technically a floating point number, even though it could be represented just as easily as an integer as *65*. It takes more memory to store a float, which is why there is a distinction instead of just creating a "number" datatype.

Boolean (bool): A variable to represent true or false (or it could also mean 0 or 1, on or off). The simplest datatype and commonly used – get used to this one!

Array: These are essentially lists of other variables. There are a variety of array types depending on the language, but basically they're just a collection of variables in a sequential list. For example: *1,2,3,4,5* might be stored as an array (of length 5) containing integer variables. Each variable in the array can then be accessed using an index – but you should know the first item in the list has an index of 0 (yes, that can be be confusing sometimes). By storing them as an array, we make it easy to send a collection of variables around the program and do things with them

the same thing to each item (which is called an iteration, and we'll get to that another time). You should also know that a **string** is actually just an **array** of **characters**.

Phew, I hope that wasn't too technical. If you need to re-read that, no one would blame you. If you still don't get it, tell me in the comments.



Strong and Weak Typed:

Moving on, programming languages can be divided into those that are strongly-typed, and those that are weakly-typed. A strongly typed language (such as Java) requires that you explicitly declare what type of variable you are creating, and they get very upset if you start trying to do things with them that you shouldn't. For example, a strongly typed language would give you errors if you tried to add an **integer** and a **string** together. "*How on earth am I supposed*

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though you as a human clearly understand a **string "5"** is semantically the same as an **integer with the value of 5**.

A weakly typed language on the other hand would just say "*whatever*", and give it a shot without complaint – but the answer could go either way. Perhaps "5+5" = 10, perhaps it's "55" – who knows! It might seem at first like weakly-typed languages are easier to write, but they can often result in curious errors and unexpected behavior that take you a while to figure out.

Assignment and Equality:

Nothing to do with socialism...Instead, its a concept that catches out many programming newbies so I wanted to address it now. There is a difference between **assigning** and **testing for equality**. Consider the following, both of which you would probably read as "*A is equal to 5*":

```
A = 5;
A == 5;
```

Can you tell the difference? The first is known as assignment. It means **assign the value of 5 to variable A**. You are "setting" the variable value. The

equal to 5? ... the answer given back to you would be a **boolean value**, true or false. You'll see how this can mess up your programs in later lessons.

That's it for today's lesson. Please don't hesitate to ask questions in the comments if you didn't understand something, and I'll be more than happy to re-word it or explain differently. Next time we'll take a look at *functions and return values*, before moving onto *loops and iteration*.

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Smartphone as a Windows Microphone

By **Joe Keeley** / Updated November 6, 2019 06-11-2019 / 5 minute

Whether you're chatting with friends over Skype, talking tactics on a game, or laying down some tunes, a microphone can come in very handy for your computer. But what if you don't have one?

While you may not have a microphone for your computer, chances are that you have a smartphone. There's the solution to your problem: you can use your smartphone as a PC microphone and it's incredibly easy to set up.

We'll show you different ways to use your phone as a microphone.

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One of the best ways to achieve this is by using **WO Mic**. With this program, you can use USB, Bluetooth, or Wi-Fi to connect your smartphone's microphone to your computer.

WO Mic Windows screenshot

It's entirely free to use, has low latency, and will work in any application just like a standard microphone.

Head over to the **WO Mic website** and download the PC client and PC driver. Install them both. Then grab either the **Android** or **iOS** app.

Launch the PC program. Go to **Connection > Connect...** and choose a **Transport type**.

We'll detail the steps for all the different options below.

1. Connect via Bluetooth

setup-bluetooth-windows

First, enable Bluetooth on your computer. Press **Windows key + I** to open Settings and go to **Devices > Bluetooth & other devices**. Slide **Bluetooth** to **On**. Your computer will now be discoverable to other devices.

Next, enable Bluetooth on your phone. The exact location of this option will vary on a device, but it's usually inside your Settings, perhaps beneath a Connections category.

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connection.

On the Windows WO Mic program, select **Bluetooth** as your Transport type and select your phone from the **Target Bluetooth device** dropdown. Click **OK**.

On the phone WO Mic app, tap the **settings cog**, tap **Transport**, and select **Bluetooth**. Go back a screen and tap the **play icon** to begin transmitting your voice.

2. Connect via USB

Connect phone to computer with USB

Image Credit: caluian.daniel/Depositphotos

This method only works for Android. Connect your phone to your computer using a USB cable. It's the same one you use to charge the phone.

Windows may prompt you to install a driver, so follow that process through if so.

Next, **enable USB debugging in the Developer options of your phone**. Your phone should then be recognized by Windows as a device.

On the Windows WO Mic program, select **USB** as your Transport type. Click **OK**.

On the phone WO Mic app, tap the **settings cog**, tap **Transport**, and select **USB**. Go back a screen and tap the **play icon** to activate your phone's microphone.

3. Connect via Wi-Fi

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need to be connected to the same Wi-Fi network.

To alter your Wi-Fi network on Windows, press **Windows key + I** to open Settings and to go **Network & Internet > WiFi**.

On the phone WO Mic app, tap the **settings cog**, tap **Transport**, and select **Wi-Fi**. Go back a screen and tap the **play icon**. A gray banner message should appear at the top with a number at the end. This is the IP address.

On the Windows WO Mic program, select **Wi-Fi** as your Transport type. Click **OK**. In the **Server IP address** field, input the IP address from the app. Click **OK** to begin using the microphone.

4. Connect via Wi-Fi Direct

This method requires you **turn your phone into a Wi-Fi hotspot** and use your network data. Use this as a last resort; if your computer doesn't have its own internet connection, and the other methods above aren't suitable.

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Don't have a regular ISP? Don't worry, you can still go online wherever you are without an internet service provider.

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in Settings and you can find it usually beneath a Connections or Tethering category.

Next, you need to link your computer to this hotspot. Press **Windows key + I** to open Settings, go to **Network & Internet > WiFi** and select the hotspot.

On the phone WO mic app, tap the **settings cog**, tap **Transport**, and select **Wi-Fi Direct**. Go back a screen and tap the **play icon**.

On the Windows WO Mic program, select **Wi-Fi Direct** as your Transport type. Leave the **Soft AP IP address** field at its default of **192.168.43.1**. Click **OK** and you're good to go.

Is Windows Not Detecting Your Voice?

You shouldn't run into any problems, but if you follow the above instructions and Windows isn't detecting the microphone, there's an easy fix.

Press **Windows key + I** to open Settings. Go to **System > Sound**. Beneath **Input**, use the dropdown to select **Microphone (WO Mic Device)**.

Change sound input on Windows 10

Speak into your smartphone and you should see the volume reflected on the **Test your microphone** bar.

Alternative Methods to WO Mic

Free for iOS, **Microphone** for Android, and **Real Microphone** for Windows Phone should do the trick.

Download these apps, hook your phone to your Windows computer using a male-to-male headphone jack and your phone will then function as a computer microphone.

A headphone

You can even plug in a pair of headphones to your computer's microphone jack and use them. It might seem like an odd idea, but both make use of vibrations for different primary functions.

Simply put, headphones vibrate to create sound, while microphones monitor for vibrations. But you can still switch it and use the headphones as a microphone. However, bear in mind that the audio quality will leave a lot to be desired, so make this a last resort option.

Smartphone as Webcam

While using your smartphone as a Windows microphone might not be ideal for everyone, it's a perfect solution for those who need to get talking quickly and don't have a traditional microphone handy.

When you can get yourself chatting within minutes without spending a penny, it's hard to complain. You're being cost-effective and making use of the devices you already have.

How to Use an Android Phone as a Webcam

Need to record video on your PC but don't have a webcam? Use your Android phone as a webcam with these nifty apps!

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