## C# Programming – Variables and Types

## A variable is a storage location paired with an associated name, which contains some known or unknown quantity of information referred to as a value. In other terms, it’s a handy way to create, keep track of, and alter the information we need for our games.

## Variables consist of four parts: visibility, a type, an identifier and a value.

1. **<visibility> <data\_type> <variable\_name>** = **value**;

## Types

## Variable types are defined in C# as sets of complex logical constructs. All C# scripts in Unity will use types from the main libraries as well as user-defined types that model the project specific concepts. We will look at those later on.

## There are many different types, but here is a list of the basic ones that are used most commonly.

|  |  |  |  |
| --- | --- | --- | --- |
| Type Name | Type short | Description | Examples |
| String | string | A combination of characters, including symbols and spaces, in a row | “apple”, “types are fun”, “12 mice” |
| Integer | int | A single whole number | 1, 15, -3 |
| Float | float | A single precision number | 2.0, 0.5, 17.08, -6.8234 |
| Boolean | bool | A type that is either true or false | true, false |

## Assigning Variables

## Variables can be created by declaring the type of the variable followed by the identifier. This will create a new variable with no current information.

## Remember that each line of code needs to end with a semi colon .

1. **string** a;
2. **int** b;
3. **float** c;
4. **bool** d;

## Now we can set the value of each of our variables by using the identifier and setting it equal to our desired value. Note that using a value that doesn’t correspond to our declared type will throw an error. Also note that strings are surrounded by quotation marks and floats require the letter f after the number.

1. a = "hello";
2. b = 5;
3. c = 4.0f;
4. d = **true**;
5. c = "hello"; **//This would throw an error, as the variable c is a float, and we are declaring a string**

## However, it is possible to declare and assign the variables at the same time.

1. **string** a = "hello";
2. **int** b = 5;
3. **float** c = 4.0f;
4. **bool** d = **true**;

## Accessing Variable Values

## To access the value of a variable we have created we simply just use the variable’s identifier. For example, we can print out our variables.

1. print("howdy");
2. print(a);
3. print(b);
4. print(243);
5. print(c);

## Which would print out the following:

1. howdy
2. hello
3. 5
4. 243
5. 4.0