

# Naming Rules and Conventions

C, C++, C#, Java,  
Python, Visual Basic, etc.

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## Rules

You can use the following characters when creating a name for something inside a program:

A to Z, a to z, 0 to 9, and \_ (underscore)

Some languages like C, C++ and Java permit the use of the dollar sign \$ as part of a name.

## More Rules

**IMPORTANT:** Names can not start with a digit (0-9). Starting with the underscore \_ is discouraged.

**ALSO IMPORTANT:** You can't use a keyword, also known as a reserved word that belongs to the language.

## Use Multiple Words to Form a Name

Multiple words can be used to form a name but spaces can't be used. Here are some good examples:

hoursWorked

hours\_worked

federalTaxWithholding

federal\_tax\_withholding

## Legal and Illegal Names

Legal	Illegal	Why?
firstName	1stName	can't start with a digit
SecondName	first name	space is illegal
third_name	name#1	non-valid character #
Fourth_Name	while	reserved word

## Case Sensitivity

Many languages like C, C++, Java, C#, and Python are case sensitive. Other languages like Visual Basic are not. When we say a language IS case sensitive, that means the capital letters and small letters are treated as though they have no relation to each other. It is like there are 52 different letters. For example, in C++, you could have three completely different variables named

counter, Counter, COUNTER – but in Visual Basic, all three names would refer to the exact same variable.

## Naming Conventions

Names can be as long as needed to make them meaningful. Abbreviations can also be used to shorten names. Just make sure they are meaningful to other people.

### Camel case vs. Snake case

When combining multiple human words to form a name in a program, you can either capitalize the first letter of each word in the middle, or separate each word using the underscore `_` character. Capitalizing each word is called 'camelCase'. Separating each word with the underscore character is called either snake\_case or Darwin case.



## Variable and Subroutine Names

Start the names of variables, subroutines, functions and objects with a lower case letter:

regularHours

overtimeHours

pay = computePay(regularHours, overtimeHours);



Function call

## ‘Class’ Names

Object Oriented Programming is based on the concept of **objects**, which can contain data and executable code. The structure and form of an object is defined by a piece of code called a **class**. An analogy between a class definition and objects built from the class is similar to a blueprint (class) and buildings (objects). Names of classes should start with a capital letter while names of objects should start with a small letter.

## Names of Constants

Variables and constants are similar except that once defined, the value of a constant can not be changed by the program when it is running. By convention, constants are defined using only capital letters and the underscore character.

C	<code>#define TAX_RATE 0.085 // 8.5%</code>
C++	<code>const double TAX_RATE = 0.085; // 8.5%</code>
Java	<code>final double TAX_RATE = 0.085; // 8.5%</code>

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Do not use an equal sign = or a semicolon ; when defining a constant in the C language

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## Hungarian Notation

Hungarian notation starts a variable or object's name with a group of lower case letters that identify the data type. For example, an integer may start with the letters int (intCounter), or a double with the letters dbl (dblPayRate). There are advantages and disadvantages of Hungarian notation.

## Hungarian Notation

**RECOMMENDATION:** follow the naming convention already established if working on an existing project.

Wikipedia has an excellent article

[http://en.wikipedia.org/wiki/Hungarian\\_notation](http://en.wikipedia.org/wiki/Hungarian_notation)