

# Difference Between Identifier and Variable

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## Key Difference - Identifier vs Variable

A [programming language](#) is designed to process certain kind of data and to provide useful information. The data can be numbers, characters, strings etc. A program is a set of instructions written in a specific programming language to provide instructions to a computer. The computer process data according to the instructions. When manipulating data, it is necessary to store them. A variable is a storage area capable of holding value. The variables have names to identify them. Not just variables, functions, classes etc. also have names, which are called identifiers. Identifiers are created by the programmer. Identifier and variable are two common terms in [programming](#). The **key difference** between identifier and variable is that **an identifier is a name given to a variable, function, array, class or structure while a variable is a name given to a memory location that can hold a value.**

## What is an Identifier?

An identifier refers to a name of a variable, function, [array](#), [class](#) or structure. The identifiers are created by programmers. It is important to use unique names for identifiers because they are identified in the execution of the program. Programming languages follow a specific set of rules to name identifiers. Most of the time, only alphabetical characters (A to Z or a to z), underscore ( \_ ) and digits (0 to 9) are used for valid identifiers. Generally, the first character of the identifier can be an underscore or a letter, and should not be a digit.

In programming, if there is a statement as `int number`; it means that there is a variable called `number` which can hold an integer value. The word 'number' is an identifier. When there is a statement as `double area`; it means that there is a variable called `area` that can hold a double value. The 'area' is a valid identifier. Some examples of valid identifiers are `age`, `salary`, `studentNo`, `amount` and `_empNo`. Some examples of invalid identifiers are `123abc`, `-studentno`. The identifier `123abc` starts with a digit. So, it is invalid. The identifier `-studentno` starts with a character other than alphabetical character or underscore.



**Figure 01: Identifier and Variable**

Most programming languages are case sensitive. Therefore, lowercase and uppercase letters are distinct. The identifier amount and AMOUNT are two separate identifiers even they have the same name. It is important to use meaningful names for identifiers because it improves code readability. Meaningful identifiers also make the program easy to understand.

## What is a Variable?

In programming, it is required to store data. Computations are carried on the stored data. These data should be stored in a [memory](#) location. A variable is a container or a storage area to hold data. A unique name or an identifier is given to variables to identify each storage area. Variable names represent the memory locations to store data. Each variable has a specific data type to store.

In the variable declaration, the variable name is specified, but there is no memory allocated for the variable. When there is a statement as `int number;` it means that the variable name is number and it can store an integer value. But does not set aside any memory for the variable number. Assigning an initial value for the variable is called initialization. When there is a statement as `int number = 5;` the variable number can store an integer value and it is initialized to 5.

## What is the Similarity Between Identifier and Variable

- Both Identifier and Variable are used in programming.

## What is the Difference Between Identifier and Variable?

An identifier is a name given to a variable, function, array, class or structure.	A variable is a name given to a memory location that can hold a value.
<b>Range</b>	
The range of identifiers is higher than variables.	Variables names are identifiers.
<b>Usage</b>	
An identifier is used to give a unique name to an entity.	A variable is a unique name to identify a memory location.

## Summary - Identifier vs Variable

In programming, there are so many concepts such as variables, functions, classes etc. The main purpose of each is to manipulate data correctly to solve computation problems. The variables, function, classes should be given appropriate names in order to identify them and to understand the program. Identifiers are the names given to them. The data is stored in memory, and these memory locations should be given names to identify them. This article discussed the difference between the identifier and a variable. The difference between identifier and variable is that an identifier is a name given to a variable, function, array, class or structure while a variable is a name given to a memory location that can hold a value.

### Reference:

1.tutorialspoint.com. "Java Basic Syntax." *The Point*, [Available here](#)

### How to Cite this Article?

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