Difference Between Ruby and Python

Key Difference - Ruby vs Python

Ruby and Python are high-level programming languages because they follow a syntax similar to the English Language. Therefore, these languages are easily understandable by the programmer. Ruby and Python both are interpreted languages. Both languages have large community support. One major advantage of Ruby and Python is that these languages support object-oriented programming (OOP). OOP methodology is helpful to model a program or a set of programs using objects. The **key difference** between Ruby and Python is that **Ruby is mostly used for web development while Python is mostly used for a variety of applications including web development.** Python is also commonly used for scientific computing, data science applications, embedded systems and also as an academic programming language.

What is Ruby?

Ruby is a high-level programming language designed by Yukihiro Matsumoto in 1995. It runs on various platforms such as Windows, Mac etc. Ruby has features similar to Small Talk, Python and Perl. The main purpose of creating Ruby was to make the language powerful than Perl and more object-oriented than Python. Ruby supports object-oriented programming. Therefore, it is easier for the developers to model and build complex software. The program can modify its own structure and behaviour at runtime. Therefore, it is reflective.

Ruby syntax is easy to learn and read. There is not much complex syntax, naming and behaviour. Ruby syntax is similar to English language and easily understandable by the programmer, so it is categorized as a high-level programming language. The programmer understandable ruby program is converted into a machine-readable format using an interpreter. Therefore, Ruby is an interpreted language. Ruby is a not a fast as a compiled language C or C++.

Methods in Ruby are similar to functions in other programming languages. A method contains a set of statements to be executed to perform a certain task. Ruby defines closures using blocks. Closures have read and write access to variables from the outer scope. Ruby has data types such as arrays, hashes.

Figure 01: Ruby

Ruby on Rails is a web framework written in Ruby for web development. It is easily embedded into Hypertext Markup Language ([HTML](#)). Ruby can also be used to build multi-threaded applications that are to run multiple threads simultaneously. Overall Ruby is useful for web development, network programming and for creating Graphical User Interfaces.

What is Python?

Python is a high-level general purpose programming language. It was designed by Guido van Rossum. Python is considered as one of the popular languages among beginners because it is easy to read, learn and maintain. Python is also useful even for complex applications. There is large community support for Python. It is a multi-paradigm programming language. It supports Object Oriented Programming (OOP) that is used to model a program or system using objects. Python is reflective because the program can change the structure at runtime. It also supports functional programming that is to

build the program or the software using functions avoiding mutable data and shared state.

Python is an interpreter-based language. Unlike in compiler-based languages that use a [compiler](#) to convert the [source code in to object code](#), Python uses an interpreter. It runs Python statement after statement. Therefore, Python is a slow language. However, Python is an interactive language. The programmer can install Python and use the command line to run Python instructions. There are also sophisticated Integrated Development Environments used to Python developments. These IDEs contain code editors and perform automatic code completion. Those IDEs also arranges all the related files necessary for the project. Some IDEs for Python are PyCharm and Eclipse.

Python supports data types such as Lists, Dictionaries and Tuples. In Python, can define a function inside another function. The inner function has read access to variables from the outer function. Outer functions do not have write access.

Figure 02: Python

Python is useful for developing Graphical User Interfaces. It is also easy to connect Python with databases such as [MySQL](#), Oracle. Python is a language that can be used for multiple applications. It is used for web development, embedded systems, scientific computing, multithreaded applications and many more. Now it is also popular for developing algorithms for natural language processing, computer vision and machine learning.

What are the Similarities Between Ruby and Python?

- Both are high-level programming languages.
- Both are multi-paradigm programming languages. Both support object-oriented, functional , reflective paradigms.
- Both are interpreted languages.
- Both languages have clean and easy syntax.
- Statements do not require a semi colon to end.
- Both run on various platforms such as Windows, Mac etc.
- Both can be used to build Graphical User Interfaces.
- Both can be easily integrated with databases such as MySQL, Oracle, DB2 etc.
- Both languages are slower comparing to compiler languages such as C or C++.
- Both languages can be used to implement multi-threading.

What is the Difference Between Ruby and Python?

Ruby vs Python	
Ruby is a dynamic, object-oriented, reflective general purpose programming language.	Python is an interpreted high-level programming language for general purpose programming.
Designer	
Ruby was designed by Yukihiro Matsumoto.	Python was designed by Guido van Rossum.
File Extension	
Ruby files are saved with. rb extension.	Python files are saved with .py extension.
Data Types	
Ruby has data types such as numbers, strings, arrays, hashes.	Python has data types such as numbers, strings, lists, dictionaries, tuples.
Switch/Case	
Ruby supports switch case statements.	Python does not support switch case statements.
Functions	

In Ruby, methods cannot be directly passed to a method. Instead, use Procs.	Python supports functions. Functions can be passed to another function.
Add Modules	
Ruby uses the keyword require to add modules.	Python uses the keyword import to add necessary modules.
Anonymous Functions	
Ruby contains blocks, Procs and lambdas.	Python contains lambdas.
Major Web Frameworks	
Ruby on Rails is a Ruby-based web framework.	Django, Flask is Python-based web frameworks.

Summary - Ruby vs Python

Ruby and Python are easy to learn and use languages. These languages are quite popular in the community. They are high-level programming languages. Both are multi-paradigm languages. Both support object-oriented programming. The difference between Ruby and Python is that Ruby is mostly usied for web development while Python is mostly used for a variety of applications including web development.

Reference:

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