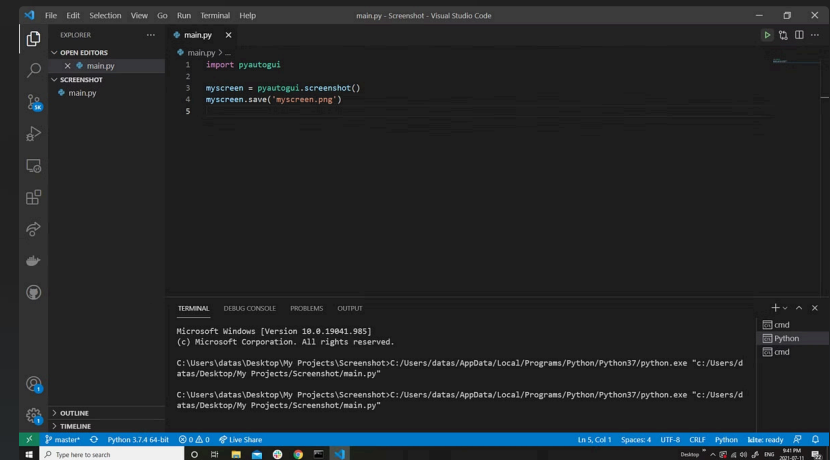# Introduction to Python

Python is a popular, versatile programming language that is used in a wide range of applications. It's known for its readability, ease of use, and extensive libraries. Python is a great choice for beginners and experienced programmers alike.

🗼 **by Prabh Jit**

What is Python?

Python is an interpreted, high-level, general-purpose programming language. It emphasizes code readability and uses a simple syntax. Python is dynamically typed and garbage-collected.

Interpreted

Code is executed line by line, making it easier to debug and test.

High-level

Abstraction allows programmers to focus on the logic of the code, without worrying about low-level details.

General-purpose

Python can be used for a wide variety of tasks, from web development to data analysis to scientific computing.

Python Syntax and Basics

Python uses indentation to define blocks of code. It has a simple syntax that is easy to learn and understand.

Variables

Variables store data. Use the assignment operator (=) to assign values to variables.
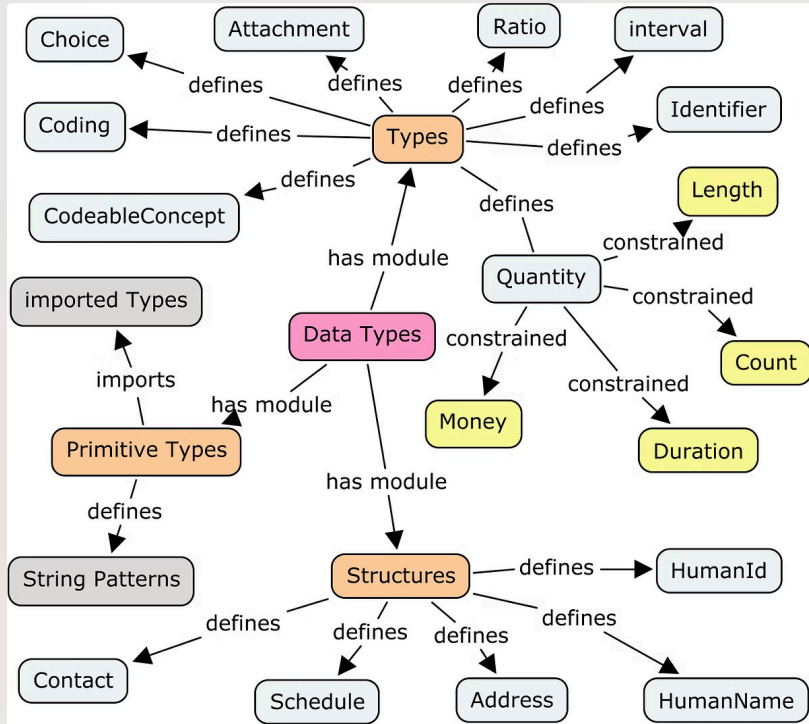
Data Types

Python has several built-in data types, including integers, floats, strings, and booleans.

Operators

Operators perform operations on data, such as arithmetic, comparison, and logical operators.

Python Data Types and Variables

Python supports various data types, each representing different kinds of data. Variables are used to store these data values.

1 Integers

Whole numbers, for example, 10, -5, 0.

2 Floats

Numbers with decimal points, for example, 3.14, -2.5.

3 Strings

Sequences of characters enclosed in quotes, for example, "hello", "world".
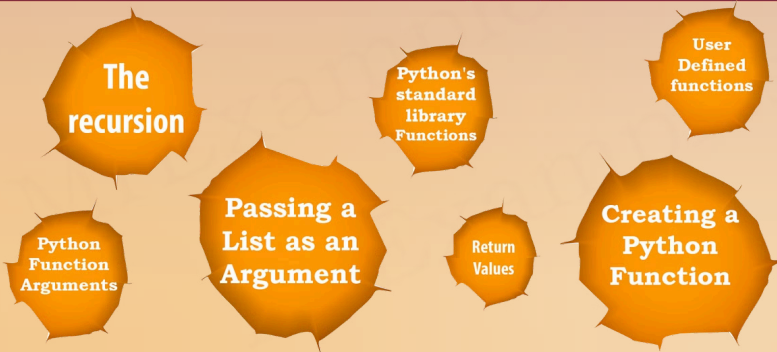
4 Booleans

Represent truth values, either True or False.

Python Functions and Modules

Functions are reusable blocks of code that perform specific tasks. Modules are collections of functions and classes that can be imported and used in other programs.

Learn Python Functions - MrExamples

The recursion

User Defined functions

Python's standard library Functions

Python Function Arguments

Passing a List as an Argument

Return Values

Creating a Python Function

1 **Defining Functions**

Use the def keyword to define a function, followed by the function name, parameters, and code block.

2 **Calling Functions**

To execute a function, simply type the function name followed by parentheses.

3 **Importing Modules**

Use the import keyword to import modules into your program.

Python Control Structures

Control structures determine the flow of execution in a program. They allow you to control which parts of the code are executed and in what order.

1 If-Else Statements
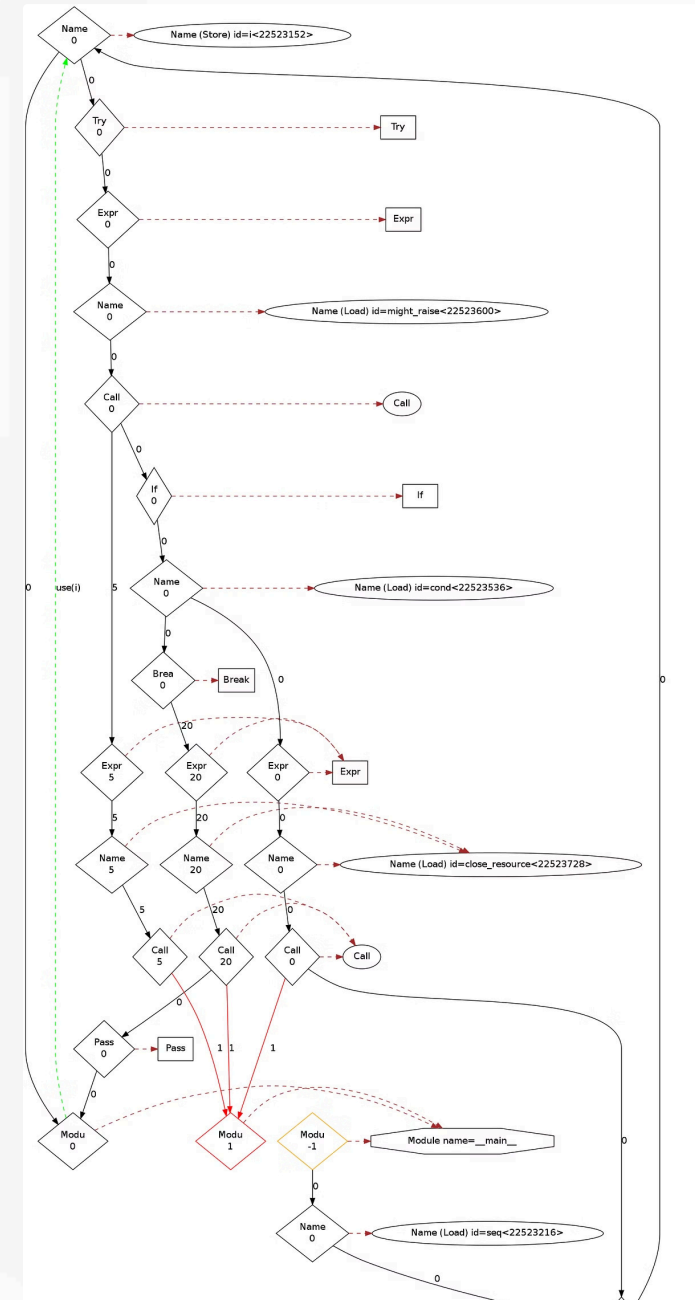
Execute different blocks of code based on a condition.

2 Loops

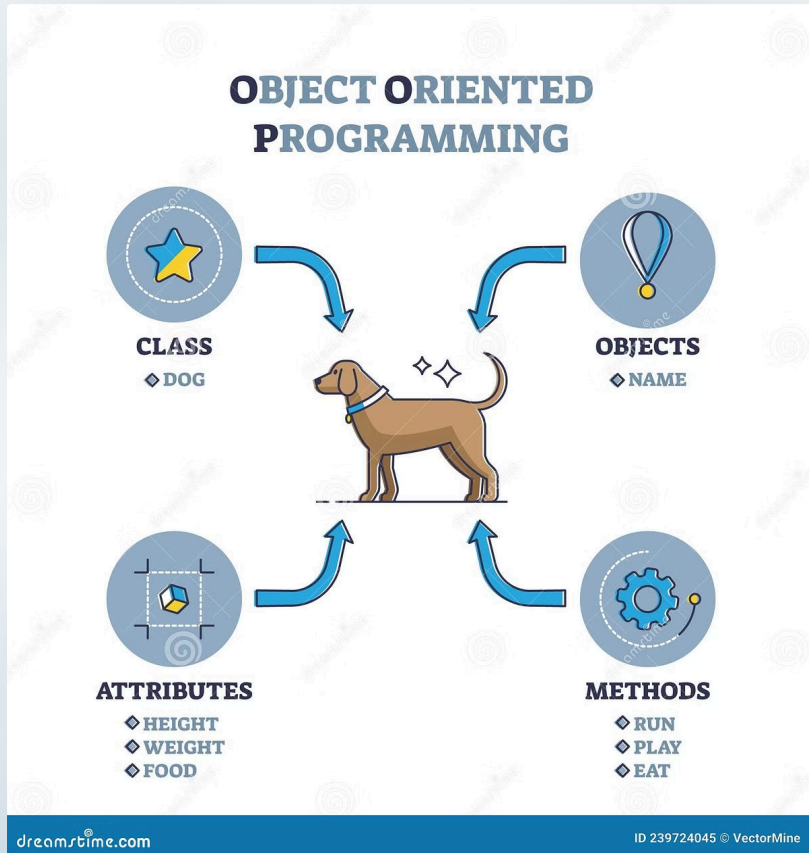Repeat a block of code multiple times, until a condition is met.

3 For Loops

Iterate over a sequence of values.

Python Object-Oriented Programming

Object-oriented programming (OOP) is a paradigm that uses objects to represent data and actions.

Classes	Blueprints for creating objects.
Objects	Instances of classes that represent real-world entities.
Methods	Functions associated with objects, defining their behavior.
Attributes	Data associated with objects, representing their state.

Python Libraries and Frameworks

Python has a rich ecosystem of libraries and frameworks that extend its capabilities and provide ready-made solutions.

Web Development

Frameworks like Django and Flask simplify web application development.

Data Science

Libraries like NumPy, Pandas, and Scikit-learn provide tools for data analysis and machine learning.

Game Development

Pygame is a popular library for creating 2D games.

Automation

Libraries like Selenium and Beautiful Soup enable web scraping and automating tasks.

Complete Python Libraries for Data Science
Visit: bit.ly/datasciencelibraries

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