

Introduction to Python

Python is a high-level, interpreted programming language known for its simplicity and readability. It's widely used for web development, data science, automation, artificial intelligence, and more. Python uses indentation to define blocks of code, making it visually clean and easy to understand for beginners.

Variables in Python

A **variable** is a name that refers to a value stored in the computer's memory. You can think of it as a container to store data that you can use or change later.

Example:

```
name = "Alice"
```

Here, name is a variable that stores the string "Alice".

Variables in Python do not require you to declare their type explicitly. Python figures it out based on the value you assign.

Data Types in Python

Python has several built-in **data types** that represent different kinds of information. Here are the most common ones:

1. **String (str)** – A sequence of characters.

Example: `greeting = "Hello, world!"`

2. **Integer (int)** – Whole numbers, positive or negative.

Example: `age = 25`

3. **Float (float)** – Numbers with decimal points.

Example: `height = 5.9`

4. **Boolean (bool)** – Represents True or False values.

Example: `is_student = True`

Indexing in strings

Strings are sequences of characters, so you can access characters using indexes.

Example:

```
text = "Python"
```

`text[0]` gives "P"

`text[-1]` gives "n"

What is a String in Python?

A **string** is a sequence of characters.

Example:

```
text = "Python"
```

This string contains 6 characters: P, y, t, h, o, n

What is Indexing?

Indexing means accessing a specific character in a string using its position number, called an index.

There are two types of indexing in Python:

1. **Positive Indexing** – Counts from the start of the string (left to right)

1. Positive Indexing

This starts from the beginning of the string.

The first character has index 0, the second has index 1, and so on.
Using the example text = "Python":

- `text[0]` gives 'P'
- `text[1]` gives 'y'
- `text[5]` gives 'n'