Learn Python VARIABLES in 10 minutes!

🐍 Introduction to Variables in Python

In this chapter, we will learn about **variables** and the **four main data types** in Python. These are:

1. **Strings**
2. **Integers**
3. **Floats**
4. **Booleans**

🌟 What is a Variable?

A **variable** is like a **container** that holds information. Think of it like a labeled box. Whatever you put in the box can be used later. Each variable should have a **unique name**, so you know what it stores.

🧠 Think About It:

If you have a box labeled `first_name`, and you put the word `"Alex"` in it, anytime you use `first_name`, Python will treat it like it's the word `"Alex"`.

📝 Creating a Variable

In Python, to **assign** a value to a variable, we use the **equals sign** `=`.

Example:

```
first_name = "Alex"
```

In this case, `first_name` is the variable, and `"Alex"` is the value stored inside it.

🔤 1. Strings

A **string** is a series of characters. It can include **letters**, **numbers**, **symbols**, and **spaces**.

Strings are written between **quotes** — either **double quotes** (`"`) or **single quotes** (`'`). Most people use double quotes.

Example:

```
email = "alex123@example.com"
favorite_food = "Pizza"
```

✅ Printing Strings

You can show your string using the `print()` function.

```
print(first_name)
```

⚠️ Be Careful!

```
print("first_name")  # This will print: first_name (not the value!)
```

If you use **quotes around the variable name**, Python will think you mean the actual word `"first_name"` — not the value inside the variable.

🧠 F-Strings: Combining Text and Variables

An **f-string** lets you mix text and variables easily.

```
print(f"Hello {first_name}")
```

This prints something like:

```
Hello Alex
```

The `f` stands for **format**. Anything inside `{ }` will be replaced with the value of the variable.

Example:

```
food = "Pizza"
print(f"Hello {first_name}, you like {food}")
```

Output:

```
Hello Alex, you like Pizza
```

🔢 2. Integers

An **integer** (often shortened to **int**) is a **whole number**. It has **no decimal point**.

Examples:

```
age = 15
students_in_class = 30
items_bought = 3
```

Printing Integers:

```
print(f"You are {age} years old")
print(f"Your class has {students_in_class} students")
print(f"You are buying {items_bought} items")
```

❌ Don't Put Integers in Quotes

```
age = "15"  # This is actually a string!
```

If you put a number in quotes, it becomes a string, not an integer.

🔣 3. Floats

A **float** is a number that includes a **decimal point**. It can represent more precise values.

Examples:

```
price = 10.99
gpa = 3.2
distance = 5.5
```

Printing Floats:

```
print(f"The price is ${price}")
print(f"Your GPA is {gpa}")
print(f"You ran {distance} km")
```

✅ 4. Booleans

A **Boolean** is a special data type that only has **two possible values**:

- `True`
- `False`

Booleans are used to **answer yes or no questions**, like:

- Are you a student?
- Is the item for sale?
- Is someone online?

Example:

```
is_student = True
is_online = False
```

Printing Booleans:

```
print(f"Are you a student? {is_student}")
print(f"Are you online? {is_online}")
```

But usually, Booleans are used in **conditions**, not just printed directly.

❓ Using Booleans in an If Statement

Booleans are often used with **if** statements to control what your program does.

Example:

```
is_student = True

if is_student:
    print("You are a student")
else:
    print("You are not a student")
```

More Boolean Examples:

```
# Example 1: For Sale
for_sale = True

if for_sale:
    print("That item is for sale")
else:
    print("That item is not available")

# Example 2: Online Status
is_online = True

if is_online:
    print("You are online")
else:
    print("You are offline")
```

📦 Summary: Variable Types

TYPE	NAME	EXAMPLE	WHAT IT REPRESENTS
`str`	String	`"Hello"`	Text or characters
`int`	Integer	`15`	Whole numbers
`float`	Float	`3.14`	Numbers with decimals
`bool`	Boolean	`True` or `False`	Yes or No / On or Off / True or False

📝 Assignment

Create **four variables**:

1. A **string** (your name, favorite movie, etc.)
2. An **integer** (your age, number of pets, etc.)
3. A **float** (price of something, GPA, etc.)
4. A **Boolean** (are you hungry, is it raining, etc.)

Example:

```
name = "Jordan"
age = 14
gpa = 3.8
is_hungry = True

print(f"Hello {name}")
print(f"You are {age} years old")
print(f"Your GPA is {gpa}")
print(f"Are you hungry? {is_hungry}")
```

Try it yourself and experiment with different values!

🎉 Congratulations!

You've just learned how to:

- Create and use variables in Python
- Understand the four basic data types
- Use `print()` and `f-strings`
- Work with simple conditions using Booleans
