Learning Material: Variables and Data Types

Variables

1. What Are Variables?

Variables are containers used to **store data** in a program. In Python, you don't need to declare a type—Python automatically detects it.

Example

```
name = "Anna"
age = 20
price = 19.99
```

2. Rules for Naming Variables

✓ Must start with a letter or underscore
✓ Cannot start with a number
✓ No spaces
✓ Case-sensitive ($Age \neq age$)
✓ Use meaningful names when possible

Valid Examples

```
student_name = "Mark"
total = 100
```

Invalid Examples

```
2name    # starts with number
my-name # contains hyphen
```

3. Assigning and Reassigning Variables

Variables can change their value at any time.

```
x = 10
x = "Hello"
```

Python updates the type automatically.

Data Types

1. Basic Data Types in Python

String (str)

Text values enclosed in quotes.

```
city = "Manila"
```

Integer (int)

Whole numbers.

```
count = 25
```

Float (float)

Numbers with decimal points.

```
temperature = 36.5
```

Boolean (bool)

Stores True or False.

```
is_passed = True
```

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2. Collections (Group Data)

List

Ordered, changeable collection.

```
fruits = ["apple", "banana", "orange"]
```

Tuple

Ordered but **unchangeable**.

```
colors = ("red", "green", "blue")
```

Dictionary

Stores data in **key–value** pairs.

```
student = {"name": "Anna", "age": 20}
```

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3. Checking a Variable's Data Type

Use the `type()` function.

```
x = 10
print(type(x))   # <class 'int'>
```