

# Python: Variables

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<https://yasirbhutta.github.io/python/docs/variables.html>

## Variables

- Storage containers for data (numbers, text, etc.).

### What is a variable

- A variable is a named storage location in a computer's memory that is used to hold data or values. It allows programmers to store and manipulate data within a program.

**Purpose:** Variables provide a way to store and manage data that can be used and manipulated throughout a program. They make programs more flexible and allow for dynamic data storage.

**Assignment statement:** in Python is used to assign a value to a variable. Its primary purpose is to store and manage data within a program.

### Imagine variables as labeled boxes:

- You have boxes for storing different things (numbers, words, etc.).
- Each box has a name (label) to identify what's inside.
- You can put things in, take them out, and change what's inside.

### Example #1: Storing a name

```
name = "Muhammad Hamza"  
print(name)
```

### Example #2: Tracking a score:

```
score = 0  
score = score + 10 # adds 10 to the score  
print(score)
```

### Example #3: Remembering a favorite color

```
favorite_color = "blue" #stores "blue" in variable  
print(favorite_color)
```

**Example #4:** Calculating the area of a rectangle

```
length = 10
width = 5

# calculates the area
area = length * width
print(area)
```

**Key Points:**

- **Choose meaningful names:** Use names that describe what the variable stores (e.g., pizza\_slices instead of x).
  - [video: Meaningful Variable Names | Python Best Practices](#)
- **Assign values using =:** The equals sign is used to put a value into a variable.
- **Change values:** You can update a variable's value later in your code.
- **Use variables in calculations and operations:** Variables can be used just like regular numbers or text in expressions.
- **Think of variables as placeholders:** They hold information that can change as your program runs.

## Key Terms

True/False (Mark T for True and F for False)

**Answer Key (True/False):**

Multiple Choice (Select the best answer)

Fill in the Blanks

**Answer Key (Fill in the Blanks):**

## Exercises

## Review Questions

- 1. What is a variable in computer programming? Answer:** A variable is a named storage location in a computer's memory that is used to hold data or values. It allows programmers to store and manipulate data within a program.
- 2. What is the purpose of using variables in programming? Answer:** Variables provide a way to store and manage data that can be used and manipulated throughout a program. They make programs more flexible and allow for dynamic data storage.
- 3. What is the difference between declaring and initializing a variable? Answer:** Declaring a variable involves specifying its name and data type, while initializing a variable means giving it an initial value. Initialization usually follows declaration but is not always required.

## References and Bibliography

