**EXPERIMENT: 02**

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**Experiment No**:  
**Branch**: Electronics (EN-1)  
**Software Used**: Thonny

**AIM:**

Programs to study variables, constants, literals, and operators

**SOFTWARE USED:**

Thonny

**THEORY:**

**1. Variables in Python**

A variable is a symbolic name that refers to a memory location used to store data. Python allows dynamic typing, meaning the type of a variable is determined at runtime. Variable names must start with a letter or an underscore (\_) and are case-sensitive. Python provides flexibility by allowing reassignment of different data types to the same variable.

**2. Constants in Python**

Constants are values that remain unchanged throughout the execution of a program. Although Python does not have built-in constant support, the convention is to use uppercase variable names to indicate constants (e.g., PI = 3.14). Using constants improves code readability and maintainability.

**3. Data Types in Python**

Python supports multiple data types, categorized as follows:

* **Numeric Types:** int, float, complex
* **Sequence Types:** str, list, tuple
* **Set Types:** set, frozenset
* **Mapping Type:** dict
* **Boolean Type:** bool (True or False)
* **Special Type:** NoneType (represents the absence of a value)

**4. Literals in Python**

Literals are fixed values assigned directly to variables. Python provides various types of literals:

* **Numeric Literals:** Integers, Floating-point numbers, and Complex numbers
* **String Literals:** Enclosed within single (') or double (") quotes
* **Boolean Literals:** True, False
* **Special Literal:** None, which represents a null value in Python

**5. Operators in Python**

Operators are symbols that perform operations on variables and values.

**Types of Operators in Python:**

* **Arithmetic Operators:** +, -, \*, /, //, %, \*\* (used for mathematical calculations)
* **Comparison Operators:** ==, !=, >, <, >=, <= (used for comparison between values)
* **Logical Operators:** and, or, not (used for logical expressions)
* **Assignment Operators:** =, +=, -=, \*=, /=, //=, \*\*= (used for assigning values)
* **Identity Operators:** is, is not (used to compare memory locations of objects)
* **Membership Operators:** in, not in (used to check for membership in sequences like lists or strings)

Program:

