**EXPERIMENT: 04**

**Name**: Sahil Ashok Jagdale  
**PRN**: 23410005  
**Experiment No**:  
**Branch**: Electronics (EN-1)  
**Software Used**: Thonny

**AIM:**

Programs to study Numbers, Type Conversion, Mathematics, and Lists.

**SOFTWARE USED:**

Thonny

**THEORY:**

**1. Numbers in Python**

Python provides built-in support for various numeric types:

* **Integers (int)**: Whole numbers, both positive and negative (e.g., 25, -7).
* **Floating-point numbers (float)**: Numbers with decimal points (e.g., 3.14, -0.99).
* **Complex numbers (complex)**: Numbers with real and imaginary parts (e.g., 4 + 2j).

Python allows mathematical operations such as addition, subtraction, multiplication, and division on numeric types. These operations can be performed directly or using built-in functions.

**2. Type Conversion in Python**

Type conversion changes the data type of a value. It can be classified as:

* **Implicit Type Conversion**: Python automatically converts smaller data types to larger ones (e.g., int to float) to prevent data loss.
* **Explicit Type Conversion (Type Casting)**: The programmer manually converts types using functions like int(), float(), and str(). This is useful when handling user input or performing operations that require a specific data type.

**3. Mathematics in Python**

Python provides various mathematical operations and functions for numerical computations:

* **Basic Arithmetic Operators**: +, -, \*, /, //, %, \*\* for mathematical calculations.
* **Common Built-in Functions**: abs() (absolute value), pow() (power calculation), round() (rounding numbers), max() and min() (finding the largest and smallest numbers).
* **Math Module (math) Functions**: Advanced mathematical functions like sqrt() (square root), sin(), cos(), log(), and constants like pi are available through the math module.

**4. Lists in Python**

A list is a versatile, ordered collection of elements that can store multiple data types. Lists are mutable, meaning their elements can be modified after creation.

* **Creating Lists**: Defined using square brackets ([]), e.g., my\_list = [1, 2, 3, "hello"].
* **Accessing Elements**: List items can be accessed using indexing (positive and negative).
* **Modifying Lists**: Elements can be added, updated, or removed.
* **Common List Methods**:
  + append(): Adds an element at the end.
  + remove(): Removes a specific element.
  + sort(): Sorts the list in ascending order.
  + reverse(): Reverses the order of elements.
  + **Slicing**: Extracts a portion of the list using [start:end] notation.

Program:

