LAB 1 — Python Calculator (Numbers & Arithmetic)

Create a program that:

1. Takes two numbers from the user
2. Calculates and prints:
    - Sum
    - Difference
    - Product
    - Division
    - Power
3. Print the results in a nicely formatted way.

Goal: Practice numeric operations & print formatting.

LAB 2 — Variables & Reassignment

Students must:

1. Create variables for salary, bonus, and tax_rate.
2. Calculate:
    - total income
    - taxes
    - net income
3. Reassign variables to simulate a raise and recalc everything.

Goal: Understand variable assignment and updating values.

LAB 3 — String Indexing & Slicing Explorer

Given the string:

s = "ProgrammingIsFun"

Students must extract:

1. The first letter
2. The last 3 letters
3. Every second letter
4. The word "Programming"
5. The word "Fun" without using indices directly (must use slicing)

6. The string reversed

Goal: Practice indexing, slicing, stepping.

LAB 4 — String Methods Investigation

Using a string from user input, students must show:

1. Uppercase version
2. Lowercase version
3. How many characters the string has
4. Split the string into words
5. Replace one letter with another

Goal: Practice built-in string methods & transformations.

LAB 5 — Username Generator

Ask the user for:

- First name
- Last name
- Birth year

Then generate a username using slicing, for example:

first 2 letters of first name + last 3 letters of last name + last 2 digits of birth year

Goal: Combine indexing, slicing, formatting, variables.

LAB 6 — List Builder

Students must:

1. Create a list with 5 mixed-type elements
2. Use append() to add two new items
3. Use pop() to remove an element
4. Reverse the list
5. Sort the list (if possible)
6. Print the final result

Goal: Practice list manipulation.

LAB 7 — Shopping Cart Program

Simulate a shopping cart using lists.

Steps:

1. Start with an empty list cart = []
2. Ask user 5 times to input an item and append it
3. After all items are added:
    - Print the full cart
    - Remove the last item
    - Show how many items remain
    - Print only the first and last items

Goal: Combine lists, len(), append(), pop(), indexing.

LAB 8 — Matrix Navigation

Create three lists and nest them to form a matrix. Example:

[[1,2,3],

[4,5,6],

[7,8,9]]

Students must:

1. Print the number in row 1, column 2
2. Print the entire second row
3. Print the diagonal (1,5,9)
4. Create a new list of all first-column elements using indexing
5. Then repeat using a **list comprehension**

Goal: Practice nesting + comprehensions.

LAB 9 — List Comprehension Transformations

Given:

numbers = [1,2,3,4,5,6,7,8,9]

Students must create using list comprehensions:

1. A list of squares

2. A list of only even numbers
3. A list of numbers doubled
4. A list of only numbers greater than 5
5. A list of strings: "Number: X" for each element

Goal: Become comfortable with comprehensions.

LAB 10 — Mini Project: Student Information Formatter

Ask user for:

- Name
- Age
- Favorite subject
- Favorite quote

Then:

1. Use formatting (.format() or f-strings) to print a nicely formatted paragraph.
2. Capitalize the name.
3. Remove whitespace around inputs.
4. Create a list of the letters from the name.
5. Print the first and last letter from that list.

Goal: Combine strings, formatting, indexing, list creation.