مكتـــب

Lab Activity 🖥

Week 4: Making Programs Interactive

Duration: 45 minutes — Work in pairs!

Name: _____   **Partner:** _____

Lab Goals

By the end of this lab, you will be able to:
- Get information from users with the `input()` function
- Convert text input into numbers for calculations
- Format output using commas, concatenation, and `f`-strings
- Create simple interactive programs

Getting Started

1. Extract the given `week4_lab.zip` file to your desktop. This folder contains all the files you need for this lab.

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1 Exercise 1: Your First Interactive Program (5 minutes)

Open the file `week4_ex1.py` in Thonny. Type this code exactly as shown and run it:

```python
# Exercise 1: Getting user input
name = input("What is your name? ")
print("Hello, " + name + "!")
print("Welcome to Python programming.")

favorite_color = input("What is your favorite color? ")
print("Nice! " + favorite_color + " is a great color.")
```

✅ **Checkpoint:** Show your teacher the program running and responding to your input!

Now modify the code:

- Add another `input()` to ask for the user's favorite subject

- Print a message about their favorite subject

- Make sure to add a space after your prompt text!

💡 **Tip:** Always add a space at the end of your prompt: `"Name:  "` looks better than `"Name:"`

2 Exercise 2: Complete the Personal Info Program (5 minutes)

Open the file `week4_ex2.py`. This program is almost complete, but it needs your help! Fill in the blanks to make this program work:

```python
# Program to collect student information
student_name = input(_____)  # Ask for their name
school = _____("Which school do you go to? ")  # User input
city = input("Which city do you live in? ")

# Now let's display the information
print("Student Information:")
print("Name:", _____)  # Which variable has the name?
print("School:", school)
print(_____: " + city)  # Fix this line to show "City: Lahore"
```

Test your program:

- Enter your name, school, and city

- Make sure all three pieces of information display correctly

> ✅ **Checkpoint:** All information displaying correctly? Well done!

> 👥 **Pair Programming:** Switch who types every 5 minutes!

3 Exercise 3: Converting Strings to Numbers (10 minutes)

Let's make a calculator that actually works with numbers. Open the file `week4_ex3.py` which contains a broken calculator.

Step 1: Start with this broken calculator:

```python
# Broken calculator - it doesn't add correctly!
first = input("Enter first number: ")
second = input("Enter second number: ")
total = first + second
print("The sum is:", total)
```

Step 2: Run it and see what happens:

1. Enter 5 and 3. What do you get?

   Result: _____

2. Why didn't it add the numbers?

   Because: _____

Step 3: Fix the calculator by converting strings to integers:

```python
# Fixed calculator
first = input("Enter first number: ")
second = input("Enter second number: ")
first_num = int(first)  # Convert to integer
second_num = int(second)  # Convert to integer
total = first_num + second_num
print("The sum is:", total)
```

Step 4: Now create a multiplication calculator that:

- Gets two numbers from the user

- Converts them to integers

- Multiplies them

- Shows the result

> 💡 **Tip:** You can also convert in one line: `num = int(input("Enter number:  "))`

4   Exercise 4: String Formatting (5 minutes)

Open the file `week4_ex4.py`. Fill in the blanks to practice different formatting methods:

```python
# Get user information
name = input("Enter your name: ")
age = int(input("Enter your age: "))
pocket_money = float(input("Enter weekly pocket money in rupees: "))

# Method 1: Using commas
print("Name:", _____, "Age:", _____)  # Fill in variables

# Method 2: Using + (remember to convert numbers!)
print("Hello " + name + "! You are " + _____ + " years old.")

# Method 3: Using f-strings (easiest!)
print(f"_____ gets Rs. _____ per week")  # Use {name} and {pocket_money}
```

> ✅ **Checkpoint:** All three formatting methods working? Show it to your teacher!

5   Exercise 5: Fix the Interactive Program (10 minutes)

Open the file `week4_ex5.py`. This program has some issues. Work with your partner to find and fix them:

```python
# Broken shopping calculator - fix me!
print("Welcome to the Samosa Shop!")

price = input(Enter price per samosa: )
quantity = input("How many samosas? ")
total = price * quantity
print("Price per samosa: Rs.", Price)
print("Total cost: Rs. " + total)
```

Hints:

- Error 1: Check the `input()` syntax - what's missing?

- Error 2: Can you multiply a string by a string?

- Error 3: Python is case-sensitive! Check capital letters.

- Error 4: Use `str()` or a better formatting method

> ✅ **Checkpoint:** Fixed program calculating totals correctly? Great debugging!

6   Exercise 6: Quick Quiz - Circle the Correct Answer (5 minutes)

1. What type of data does `input()` always return?

   ○ A. integer

   ○ B. string

   ○ C. float

   ○ D. It depends on what the user types

2. Which line will cause an error?

```python
age = input("Enter age: ")
next_year = age + 1
print("Next year:", next_year)
```

   ○ Line 1

   ○ Line 2

   ○ Line 3

   ○ No error

3. What is the output of this f-string if `name = "Ali"` and `score = 95`?
`print(f"name scored score points")`

   ○ A. name scored score points

   ○ B. Ali scored 95 points

   ○ C. name scored score points

   ○ D. Error

7   Exercise 7: Bonus - Simple ID Card with f-strings (5 minutes)

If you finish early, open the file week4_ex7.py. Create a simple student ID card program:

```python
# Student ID Card Generator
# Get three pieces of information from the user
name = _____    # Ask for their name
grade = _____    # Ask for their grade (e.g., 6, 7, 8)
hobby = _____    # Ask for their favorite hobby

# Create the ID card using f-strings
print("=" * 30)
print(f"_____")   # Print "STUDENT ID CARD" centered
print("=" * 30)
print(_____)   # Use f-string to show: Name: [their name]
print(_____)   # Use f-string to show: Grade: [their grade]
print(_____)   # Use f-string to show: Hobby: [their hobby]
print("=" * 30)

# Bonus: Add one more line that combines all info
print(_____)   # Create: "[name] is in grade [grade] and loves [
    hobby]!"
```

Expected Output Example:

```
===============================
      STUDENT ID CARD
===============================
Name: Sara
Grade: 7
Hobby: Reading
===============================
Sara is in grade 7 and loves Reading!
```

> 💡 **Tip:** Remember: In f-strings, put variables inside {curly braces} like this: f"Hello {name}"

8 Lab Summary

> ✅ **Checkpoint:** Final checkpoint - make sure you have:

- ☐ Completed all exercises with your partner

- ☐ Practiced using `input()` to get user data

- ☐ Converted strings to numbers with `int()` and `float()`

- ☐ Used at least two different string formatting methods

- ☐ Shown checkpoints to your teacher

Reflection (2 minutes)

Rate your understanding of today's concepts:

Concept	😐 Need Help	🙂 Getting It	😊 Got It!
Using `input()`	○	○	○
Type conversion	○	○	○
String formatting	○	○	○

One thing I learned today: _____

One thing I'm still confused about: _____

😊 Great work making interactive programs!