Project 1- Eldo hub Data Science

Project Structure (2 Hours)

1. **Introduction & Team Formation (5 min)**
2. **Challenge 1: “Secret Number Guessing Game” (40 min)**
3. **Challenge 2: “String Processor & Report” (40 min)**
4. **MCQ Quiz & Discussion (20 min)**

1. Introduction & Team Formation (5 min)

- **Break into teams** of 3–4 students.
- **Review objectives**: apply variables, input/output, branching, and string manipulation in real tasks.
- **Assign roles** within each team (e.g., coder, tester, presenter).

2. Challenge 1: Secret Number Guessing Game (40 min)

Task

Write a Python program that:

1. **Stores** a secret integer (hard-coded in code).
2. **Prompts** the user to guess the number.
3. **Compares** the guess to the secret and prints:
    a. "Too low" if the guess is less than the secret.
    b. "Too high" if the guess is greater.
    c. "Correct!" if the guess matches.
4. **Repeats** until the user guesses correctly.
5. **Counts** number of attempts and reports at the end.

Requirements

- Use **meaningful variable names** (`secret_number`, `guess`, `attempts`).
- Wrap input conversion in **try/except** to catch non-integer input.
- Apply **branching** (`if`/`elif`/`else`) and **loops** (`while`).
- Include **comments** explaining each block.
- Print an **f-string** summary:

```
Python F string summary example:
print(f"You got it in {attempts} attempts!")
```

3. Challenge 2: String Processor & Report (40 min)

Task

Build a program that:

1. **Prompts** the user to enter a full sentence.
2. **Computes** and displays:
    a. Number of **characters** (excluding spaces).
    b. Number of **words**.
    c. The sentence in **uppercase** and **lowercase**.
    d. The sentence **reversed**.
3. **Outputs** a formatted report using **f-strings** and aligned indentation.

Requirements

- Use string **methods** (`.replace()`, `.split()`, `.upper()`, `.lower()`, slicing).
- Demonstrate **operator precedence** in at least one expression (e.g., computing characters via `len(sentence.replace(" ", ""))`).
- Structure output with clear **indentation** and labels.
- Add **comments** for each major step.

4. MCQ Quiz & Discussion (20 min)

Each team answers these four multiple-choice questions on paper, then we discuss as a group.

#	Question	Choices

1 Which Python type holds textual data?

a) `int` b) `float` c) `str` d) `bool`

2 What does this expression return? `len("Hi") + len("Bye") * 2`

a) 8 b) 10 c) 6 d) Error

3 Which of these is correct branching syntax?

a) `if x == 1 then:`
b) `if x == 1:`
c) `if (x == 1) {`
d) `when x == 1:`

4 How do you convert user input into an integer safely?

a) `int(input())`
b) `float(input())`
c) `try: int(input()) except:`
d) `input().toInt()`