📝 Python Assessment – Set 2

✅ Part 1: Python Basics

🔸 Q1. Write a Python function `factorial(n)` using a loop.

Don't use `math.factorial()`.

🔸 Q2. Create a list of tuples like this:

`[("Aarav", 80), ("Sanya", 65), ("Meera", 92), ("Rohan", 55)]` Write code to:

- Print only names of students scoring above 75
- Calculate and print average score

✅ Part 2: Classes and Inheritance

🔸 Q3. Create a class `BankAccount` with:

- Attributes: `holder_name`, `balance`
- Method: `deposit(amount)` and `withdraw(amount)`
- Raise an exception if withdrawal amount exceeds balance

🔸 Q4. Inherit a `SavingsAccount` class from `BankAccount` that adds:

- Attribute: `interest_rate`
- Method: `apply_interest()` that updates the balance

✅ Part 3: CSV Task – Data Cleaning

Use this **CSV file**: orders.csv

```
OrderID,CustomerName,Item,Quantity,Price
101,Aarav,Notebook,2,50
102,Sanya,Pen,5,20
103,Rohan,,3,25
104,,Marker,4,
105,Meera,Eraser,,10
```

🔸 Q5. Write a Python script using Pandas to:

- Fill missing CustomerName with 'Unknown'
- Fill missing Quantity and Price with 0
- Add column TotalAmount = Quantity * Price
- Save cleaned data to orders_cleaned.csv

✅ Part 4: JSON Task – Data Manipulation

Use this JSON file: inventory.json

```
[
  {"item": "Pen", "stock": 120},
  {"item": "Notebook", "stock": 75},
  {"item": "Eraser", "stock": 0}
]
```

🔸 Q6. Write a script to:

- Read the JSON
- Add a new field status:
  - 'In Stock' if stock > 0
  - 'Out of Stock' otherwise
- Save as inventory_updated.json

✅ Part 5: Enrichment with NumPy

🔸 Q7. Generate an array of 20 random student scores between 35 and 100 using NumPy.

- Count how many students scored above 75
- Calculate mean and standard deviation
- Create a Pandas DataFrame and save as scores.csv