# 🐍 Python Assessment - Part 1: Basics

### 🔹Q1. Write a function `is_prime(n)` that returns `True` if `n` is a prime number, else `False`.

### 🔹Q2. Write a program that:

- Accepts a string
- Reverses it
- Checks if it's a palindrome

### 🔹Q3. Given a list of numbers, write code to:

- Remove duplicates
- Sort them
- Print the second largest number

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# 🧱 Part 2: Classes and Inheritance

### 🔹Q4. Create a base class `Person` with:

- Attributes: `name`, `age`
- Method: `display()`

Create a derived class `Employee`:

- Additional attributes: `employee_id`, `department`
- Override `display()` to include all attributes

### 🔹Q5. Demonstrate method overriding with another example:

- `Vehicle` → `Car`
- `drive()` method with custom message in child

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# 📂 Part 3: CSV & JSON Handling

Use the following sample `students.csv` for this section:

### 📄 `students.csv` (you may create it in the same directory):

```
ID,Name,Age,Score
1,Aarav,18,85
2,Sanya,17,90
3,Meera,19,NaN
4,Karthik,,78
5,Rohan,18,88
```

### 🔹Q6. Read the `students.csv` and:

- Fill missing `Age` with average age
- Fill missing `Score` with `0`
- Save the cleaned data as `students_cleaned.csv`

### 🔹Q7. Convert the cleaned CSV into JSON and save as `students.json`

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# 🧹 Part 4: Data Cleaning & Transformation

### 🔹Q8. Using Pandas and NumPy, perform the following on `students_cleaned.csv`:

- Add a column `Status` where:
    - If score ≥ 85 → `'Distinction'`

- 60 ≤ score < 85 → `'Passed'`
- Else → `'Failed'`

- Add another column `Tax_ID` with values like `'TAX-1'`, `'TAX-2'`, etc., using the `ID` column.

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## Part 5: JSON Manipulation with Python

Use the below sample JSON in a file `products.json`:

```
[
  {"id": 1, "name": "Pen", "price": 20},
  {"id": 2, "name": "Notebook", "price": 45},
  {"id": 3, "name": "Eraser", "price": 10}
]
```

### Q9. Write a script to:

- Read the JSON
- Increase all prices by 10%
- Save back to `products_updated.json`

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