Homework: Pokemon

CP020001 Computer Programming
Khon Kaen University

(10 Points) Basic Dataframe

Homework: Pokémon Dataset Analysis

Objective:

In this assignment, you will practice data analysis using a Pokémon dataset. The dataset contains information about 100 Pokémon, and your task is to perform various operations and answer questions using **Pandas**.

Dataset:

You can download the Pokémon dataset from the following link:
https://github.com/kaopanboonyuen/CP020001_ComputerProgramming_2024s2/raw/main/dataset/pokemon_data.csv

Dataset Features:

The dataset contains the following columns for each Pokémon:

- **Name**: The name of the Pokémon (e.g., Pikachu, Charizard, Bulbasaur, etc.)
- **Type**: The type of the Pokémon (e.g., Electric, Fire, Water, Grass, etc.)
- **Level**: The level of the Pokémon (a number between 1 and 100).
- **HP**: The Health Points (HP) of the Pokémon.
- **Attack**: The Attack stat of the Pokémon.
- **Defense**: The Defense stat of the Pokémon.
- **Speed**: The Speed stat of the Pokémon.
- **Region**: The region where the Pokémon is from (e.g., Kanto, Johto, Sinnoh, etc.).

Instructions:

1. **Load the dataset**:
   Download the dataset from the link above and load it into a Pandas DataFrame.
2. **Data Exploration**:
   Begin by exploring the dataset. Use basic functions to view the first few rows of the data, check for missing values, and examine the data types.
3. **Answer the following questions**:
   For each question, perform the necessary operations in **Pandas** to get the correct answer.

Questions:

Q1: Find the top 5 Pokémon with the highest attack values.

Q2: What is the average HP of Pokémon from the “Fire” type?

Q3: Find all Pokémon that have both Attack and Defense values greater than 100.

Q4: Which Pokémon has the highest speed in the “Water” type?

Q5: Calculate the sum of all Pokémon’s HP values for each region.

Q6: What is the median level of Pokémon with the “Electric” type?

Q7: Find the Pokémon with the highest sum of Attack and Defense.

Q8: Count the number of Pokémon in each region.

Q9: Find all Pokémon with a level between 50 and 80 that have a Speed greater than 100.

Q10: Add a new column ‘Attack_to_Defense_Ratio’ and find the top 3 Pokémon with the highest ratio.

Submission:

- Complete the data analysis in a **Python script** or **Jupyter Notebook**.
- Submit your script or notebook along with any findings and explanations to your GitHub repository or the provided submission platform.

Notes:

- The dataset provided is a mock dataset and is **not** representative of real Pokémon data.
- **Do not** include any code solutions in your report. Focus on presenting your findings and the steps taken to achieve the results.
- Ensure that your analysis is well-organized, with clear explanations of each step.