Pandas Assignment on IT Salary Survey

In this assignment, you are required to analyze a dataset using pandas. The dataset is related to the IT Salary Survey in Europe. You will use functions such as `loc`, `iloc`, `[]`, grouping, and merging to answer the questions. Each question will help you to get hands-on practice with pandas functions and perform real-world data analysis tasks.

Questions:

1. Basic Selection using `loc` and `iloc`:

   a) Find all entries where the respondents are from Germany and have more than 5 years of experience. Use the `loc` method.

   b) Select the first 10 entries in the dataset using `iloc`.

2. Filtering and Boolean Indexing:

   a) Filter out all the respondents who are working in Startups and have a yearly salary above €60,000.

   b) Find the details of respondents who have lost their job due to the coronavirus outbreak.

3. Column Operations and Transformation:

   a) Create a new column named `Experience Difference`, which shows the difference between `Total years of experience` and `Years of experience in Germany`.

   b) Calculate the average salary for each City.

4. Group By Operations:

   a) Group the data by City and calculate the average `Yearly brutto salary (without bonus and stocks) in EUR` for each city.

   b) Group the data by Position and calculate the count of respondents for each Seniority level within each position.

5. Aggregation:

a) Find the minimum, maximum, and average salaries of respondents for each Programming language (main technology).

b) Calculate the median and standard deviation of salaries for each Seniority level.

6. Merging (Bonus task if needed):

a) Assume you have another dataset with city population data. Merge the IT Salary Survey data with the city population dataset to calculate the average salary per capita for each city.

b) Merge the salary dataset with a bonus dataset (assume another dataset for bonuses), and calculate the total compensation (salary + bonus) for each respondent.

7. Exploratory Data Analysis:

a) How many respondents are Male and how many are Female?

b) What is the distribution of Seniority levels across different Cities?