Task 1 (3 points)

Complete the following:

**(1 point)**  
**A.**Read the dataset into a pandas dataframe and print the first and last 10 rows.   
**B.** Replace all column values which contain ‘?’, na or empty with NaN and write to update ‘Automobile\_data.csv’.

**(1 point)  
C.** Find the company name of the most expensive car.  
**D.** Print all bmw car details.  
**E.**For each company, count the total number of cars and then finds the car detail with the highest price.  
**F.**For each company, find the average mileage.

**(1 point)**  
**G.** Sort all cars by price and then by horsepower.

**Note:** Don’t forget to download and use the 'Lab5 Automobile\_data.csv' file provided to you. Some questions in this task are a little challenging, for example, questions C and E. We won't be giving you any hints but do take the time to explore the solution, that’s part of the learning.

Task 2 (1 point)

Create two different data frames as follows and concatenate them.

|  |  |  |
| --- | --- | --- |
| **rank** | **team** | **rating** |
| 1 | England | 126 |
| 2 | India | 121 |
| 3 | NewZealand | 112 |
| 4 | SouthAfrica | 111 |

|  |  |  |
| --- | --- | --- |
| **rank** | **team** | **rating** |
| 1 | Australia | 102 |
| 2 | SriLanka | 100 |
| 3 | Pakistan | 93 |
| 4 | WestIndies | 79 |

Remember, we are asking you to concatenate them, not join them.

Task 3 (2 points)

Create two different data frames as follows and perform outer, right, left and inner joins between them. Clearly explain the reasons of the results in the markdown texts.

Consider which column you should use to join them? Which one makes the most sense?

|  |  |  |
| --- | --- | --- |
| **rank** | **team** | **rating** |
| 1 | England | 126 |
| 2 | India | 121 |
| 3 | NewZealand | 112 |
| 4 | SouthAfrica | 111 |
| 5 | Pakistan | 102 |
| 6 | Australia | 100 |
| 7 | Bangladesh | 93 |
| 8 | SriLanka | 79 |

|  |  |  |
| --- | --- | --- |
| **rank** | **team** | **rating** |
| 1 | India | 126 |
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| 4 | NewZealand | 111 |
| 5 | Australia | 102 |
| 6 | SriLanka | 100 |
| 7 | Pakistan | 93 |
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