Beihang University
School of General Engineering

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Data Management and Artificial Intelligence
Lab Class 3

Task 1 ***Complex tasks with pandas (1)*** *(20 minutes)*

For each of the following subtasks, simply print the results and also count the total number of results.

1. Which airport (name) has the longest runway in the dataset?
2. Which airports (names) have at least one runway with a concrete surface?
3. Select all lighted runways in Hebei Province.

Task 2 ***Complex tasks with pandas (2)*** *(25 minutes)*

For each airport with frequency larger than 119 mhz and smaller than 121 mhz, print the results for the following subtasks,

1. What is the average length of the runways in each such airport?
2. What are the names of the region and the country for each such airport?

Task 3 ***Complex tasks with pandas (3)*** *(25 minutes)*

For each airport with more than one runways (> 1) in China, find out the closest navaid and the name of the region. Then save the results as Task6.csv. Each row should contain four entries: 1) the name of the airport, 2) the name of the closest navaid, 3) the name of the region of the airport, 4) the number of the runways. The closest navaid can be computed based on Haversine distance. Please find an appropriate Python package for computing the Haversine distance by yourself.

Task 4 ***Complex tasks with pandas (4)*** *(25 minutes)*

For each region in the dataset, print the number of small, medium and large airports, and the average runway length for all airports as a result table and save the results as Task4.csv .Each row should contain five entries: 1) the name of the region, 2) the number of small airports, 3) the number of medium airports, 4) the number of large airports, and 5) the average runway length over all small/medium/large airports in that region.