**Important Instructions:**

1. The data provided for the programs is just a sample of few records, but in reality, your program needs to handle many thousands of records.
2. The data inside the text files (for both programs) can be in any order, so do not assume that all the train records are ordered.
3. Write only one stand-alone main Class for one problem. You can place all in a project and send us the project or share the GitHub link.
4. You can use maven for your project and specify the required dependencies inside the pom.xml
5. Strictly follow the Object Oriented (OO) design principles and best practices.
6. Ensure that your code compiles & runs without any errors and produces the desired outputs.

**Programming problems:**

**(1)** Assume that you receive a feed in a “TrainDetails.txt” (you need to refer the flat file attached in the mail) from an external system and the file contains TrainType, Speed(KMPH), Energy(KWH). Note that each column/field is separated by delimiter ‘-’ as given in the file. Can you write a stand-alone java program to read the file and load/store the data in memory (do not use a database) and then display the below details when the user enters the train type as the input?

1. Print the lowest speed for the train type or print ‘No details found’ for invalid train type.
2. Print the highest energy consumption and the speed details or print ‘No details found’ for invalid train type.

**(2)** Assume that you receive a feed in a “DriverAndDelayDetails.txt” (you need to refer the flat file attached in the mail) format from an external system for every 30 minutes time period. The feed provides the journey details of various trains running (in the past 30 minutes) across the UK rail network and the status for each train (typically the status could be either in progress or completed). The file contains train id (unique for each journey), station, driver name, departure lateness and each column is delimited by ‘|‘. When the train reaches the destination stop, the departure lateness column will be indicated with ‘NA’ (not applicable), if you find a value other than ‘NA’, then the train journey is still in progress. A train can be driven by a single driver or sometimes by multiple drivers (like the train 1A99 below). Write a program to read the data from the file and then load it into two different tables i.e., train\_driver\_details and train\_delay\_details.

For train\_driver\_details table, save the details of all driver names with the start and end station (final station for the driver) details as shown below. You are free to use any of your favorite databases (for example, MySQL, PostgreSQL, MongoDB, etc..) and any API of your choice like an ORM framework or Spring or plain JDBC etc. to connect to the database. Also, note that, if you are using SQL database, you need to send us the DDL script to create the tables.

The sample data loaded into the tables look like below:

train\_driver\_details table/collection:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Journey Id (sequence) | Train Id | Start Station  (starting station for the driver) | End Station  (final station for the driver) | Driver Name | Journey Status |
| 1 | 1A99 | Newcastle | Carlisle | Matt Hudson | INPROGRESS |
| 2 | 1C76 | Carlisle | Metro Centre | Stephen Taylor | COMPLETED |
| 3 | 1A99 | Carlisle | Waterloo | John Warner | COMPLETED |

**Note:** Here, Journey Id is the auto generated sequence id. Also, the column “End Station” should only store the final station (not the ***intermediate*** station) for the driver for that train journey.

train\_delay\_details table/collection:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Journey Id (sequence) | Train Id | Station | Departure Time at station | Departure lateness in seconds |
| 1 | 1A61 | Waterloo | 2018-09-04T14:32:00 | 0 |
| 2 | 1B87 | Newcastle | 2018-09-04T15:05:00 | 30 |
| 3 | 1U61 | Guildford | 2018-09-05T10:20:00 | 15 |

**Note:** Journey Id is the auto generated sequence id.