**Train Problem statement**

**Context**

There are 2 super fast trains, Train A and Train B. Train A travels from Chennai to New Delhi. Train B travels from Trivandrum to Guwahati.

* Passengers can board these trains only at the source station.
* The trains have only reserved bogies and each bogie will only have passengers to a specific station.
* When the train arrives at a station, the entire bogie with passengers is detached from the train, and the train continues its journey.

The routes with station code and distances of each station from originating station are as follows: (STATION (CODE) - DISTANCE ):

|  |  |
| --- | --- |
| **Train A** | **Train B** |
| CHENNAI (CHN) - 0 | TRIVANDRUM (TVC) -0 |
| SALEM (SLM) - 350 | SHORANUR (SRR) - 300 |
| BANGALORE (BLR) - 550 | MANGALORE (MAQ) - 600 |
| KURNOOL (KRN) - 900 | MADGAON (MAO) - 1000 |
| HYDERABAD (HYB) - 1200 | PUNE (PNE) - 1400 |
| NAGPUR (NGP) - 1600 | HYDERABAD (HYB) - 2000 |
| ITARSI (ITJ) - 1900 | NAGPUR (NGP) - 2400 |
| BHOPAL (BPL) - 2000 | ITARSI (ITJ) - 2700 |
| AGRA (AGA) - 2500 | BHOPAL (BPL) - 2800 |
| NEW DELHI (NDL) - 2700 | PATNA (PTA) - 3800 |
|  | NEW JALPAIGURI (NJP) - 4200 |
|  | GUWAHATI (GHY) - 4700 |

**The Merger**

During a part of their journey, these trains follow the same route and travel as one train - Train AB.

* Trains start from their respective source stations and meet at Hyderabad.
* Trains travel as Train AB from Hyderabad till Bhopal as a single train.
* From Bhopal the trains travel again as two independent trains, Train A and Train B.
* Train A can have passengers in the route for Train B and vice versa. Eg: People can board from Chennai in Train A and travel to Guwahati.

**Merging Rules**

* First, both the engines are attached.
* The remaining bogies from Hyderabad are attached in the descending order of distances they have to travel further from Hyderabad.
* When the merged train reaches a station, the bogie for that station will be the last one and it can be detached quickly.

**Goal**

Given the initial bogie order of both trains, your program should print :

* The bogie order of arrival of Train A and Train B at Hyderabad
* Train AB's departure bogie order from Hyderabad

💡 Pro tip: Aim to get the Readability and Correctness (I/O) badges - your profile can go forward with most companies with those 2 badges. The rest can be improved upon later!

**Assumptions**

* The passengers board only from the source station.
* If there are no passenger bogies to travel from Hyderabad station, then train should stop there. In such a case it should print JOURNEY\_ENDED
* The distances are in kilometers.
* If there are multiple bogies with same station as its destination, then they can be arranged next to each other when the Train AB leaves Hyderabad.

**Input / Output**

**Input format**

**Your program should take as input the order of bogies of each train from the source station**

**TRAIN\_A  ENGINE BOGIE\_1 BOGIE\_2 BOGIE\_3 ... BOGIE\_N**

**TRAIN\_B  ENGINE BOGIE\_1 BOGIE\_2 BOGIE\_3 ... BOGIE\_N**

**Examples :**

**TRAIN\_A  ENGINE NDL NDL KRN GHY SLM NJP NGP BLR**

**TRAIN\_B  ENGINE NJP GHY AGA PNE MAO BPL PTA**

**Output format**

**The output should be**

* **The order of bogies for Train A while arriving at Hyderabad.**
* **The order of bogies for Train B while arriving at Hyderabad.**
* **The order of bogies for Train AB (merged train) while departing from Hyderabad.**

**Examples :**

**ARRIVAL  TRAIN\_A ENGINE NDL NDL GHY NJP NGP**

**ARRIVAL  TRAIN\_B ENGINE NJP GHY AGA BPL PTAP**

**DEPARTURE  TRAIN\_AB ENGINE ENGINE GHY GHY NJP NJP PTA NDL NDL AGA BPL NGP**

**Sample Input/Output 1**

|  |  |
| --- | --- |
| **INPUT** | **OUTPUT** |
| **TRAIN\_A ENGINE NDL NDL KRN GHY SLM NJP NGP BLR TRAIN\_B ENGINE NJP GHY AGA PNE MAO BPL PTA** | **ARRIVAL TRAIN\_A ENGINE NDL NDL GHY NJP NGP ARRIVAL TRAIN\_B ENGINE NJP GHY AGA BPL PTA DEPARTURE TRAIN\_AB ENGINE ENGINE GHY GHY NJP NJP PTA NDL NDL AGA BPL NGP** |

**Sample Input/Output 2**

|  |  |
| --- | --- |
| **INPUT** | **OUTPUT** |
| **TRAIN\_A ENGINE SLM BLR KRN HYB SLM NGP ITJ TRAIN\_B ENGINE SRR MAO NJP PNE PTA** | **ARRIVAL TRAIN\_A ENGINE HYB NGP ITJ ARRIVAL TRAIN\_B ENGINE NJP PTA DEPARTURE TRAIN\_AB ENGINE ENGINE NJP PTA ITJ NGP** |

**Build Instructions**

**📌 Quick tips:**

1. ***•* All input commands are to be read from a file, and output is to be printed to the console.**
2. ***•* Build a command line application with the location to the text file as parameter.**
3. ***•* No server, DB, UI or in-memory data store required.**
4. ***•* Avoid using third party libraries/frameworks for implementing core logic.**