# Problem Set 2 Elective Learning Journey Allocation Program

**Background**

Every year, Year 3 students will participate in Learning Journey trip to various organizations. It used to be that each class is allocated to the same venue, based on class voting. Starting 2016, the organizing committee decides to allow each student to choose for the venue they most preferred, and allocation will be done on a first come first serve basis. You are to help to write a Python program to help with doing the allocation.

**Data supplied**

You are given 2 files:

* choices.csv &
* venues.csv

In the venues.csv file, you have two columns of data relating to different venues available for the Learning Journey:

* Name of venue
* Maximum capacity

In the choices.csv file, you have few these fields:

* timestamp
* NRIC (unique hash of original data)
* name (unique hash of original data)
* Ranking of Venue 1
* Ranking of Venue 2
* Ranking of Venue …
* Ranking of Venue N

The ranking of the venues should be in this format: 1 (Most preferred) and N (Least preferred).

**Allocation rules**

* Students with earlier timestamp will have first priority in getting allocated to their top choices, as compared to students with later timestamp.
* All allocations to particular venue needs to adhere to maximum capacity of each venue, found in venues.csv. If the maximum capacity is reached, you will need to allocate other students to their next preferred venue.
* Some students may submit more than one entry, you should compare the timestamp of the duplicate entries and use the latest entry and ignore earlier entries
* Some students may use the same ranking for several / all venues. In this case, you can regard his options are having equal rank, and the allocation can based on the venue that is least filled.

**Output file**

1. Basic (Compulsory)

Your Python program should produce a csv file, allocation.csv, that contains the following information.

* NRIC (unique hash of original data)
* Name(unique hash of original data)
* Class
* Venue Allocated
* Choice Allocated (1 for 1st choice, 2 for 2nd choice and so on)

1. **Intermediate**
2. Allocation by Class: Your program can output the allocation for all the students in each class. For example, there are 13 classes, you will generate 13 csv files with the allocation data like NRIC, Name, Venue allocated and choice allocated.
3. Allocation by Venue: Your program can output the name list (NRIC, Name, Class, Choice Allocated) for each venue, in separate csv files, i.e. If there are a total of 13 venues, you will generate 13 csv file, one for each venue.
4. **Advanced**

On top of the files generated above, your program allows for interactive query of the allocation status of a particular student based on either NRIC or Name. Note that more points will be awarded if you can search for substring of Name.