1 Name your Jupyter Notebook as

`TASK1_<your name>_<class>_<exam no>.ipynb`

The file, `COURSE_INTAKE_BY_YEAR.csv`, holds details of the yearly intake numbers of each course in a local polytechnic for the years 2016 to 2021.

The first row of the file contains the header of each field. Each subsequent row contains data pertaining to the fields in the order listed below:

- `year` – year of admission
- `school` – name of the school offering a particular course in the polytechnic
- `course` – name of course offering
- `intake` – student intake for a particular course in a particular year of admission

The task is to extract information on the total intake of each course for the years 2016 to 2021.

For each of the sub-tasks, add a comment statement, at the beginning of the code using the hash symbol '#', to indicate the sub-task the program code belongs to, for example:

```
In [1]:  #Task 1.1
         Program code
```

Output:

Task 1.1

Write program code to:

- Read in the data from `COURSE_INTAKE_BY_YEAR.csv`.
- Place all the rows of data (without header) into a nested list of data, `intake_data`. [3]

Task 1.2
Write program code to:

- Display an array `course_offering`, which contains all of the different courses (without duplicates) offered by the polytechnic for the years 2016 to 2021.
- Display a second array `course_total`, which is an array of tuples `(course, total)`, where `course` is the name of course offering and `total` is the corresponding total intake of students for the course offering from years 2016 to 2021. [6]

Task 1.3

Write program code to implement a function `task1_3(array)`.

The function will:

- Use the quick sort algorithm to sort the data in the array `course_total` from **Task 1.2** in **descending** order of `total`.
- Return the sorted version of the array `course_total`. [7]

Output the data in the sorted version of the array `course_total` to the file `COURSE_INTAKE_TOTAL_<your name>_<class>_<exam no>.csv`. Use the following headers as the first row in the order listed below:

- `COURSE` – name of course offering
- `TOTAL` – total intake of students for a particular course in years 2016 to 2021. [3]

Task 1.4

Repeat Task 1.3 using bubble sort, merge sort and insertion sort

Save your Jupyter Notebook for Task 1.