**Data Analysis – Lab 5**

**Introduction:**

Download the 2016 pass fail count by centre .csv file from moodle. This file contains the details on pass and fail counts for NCTs on cars in Ireland broken down by test center.

The columns are as follows:

**Centre 2016**: This represent the name of the test center

**PASS (Initial Test):** The count of passed NCT tests on the first go.

**FAIL (Initial Test):** The count of failed NCT tests on the first go.

**PASS (Re-test):** The count of passed NCT tests on a re-test.

**FAIL (Re-test):** The count of failed NCT tests on a re-test

**Total Passes:** The total passes for this test center.

You have been asked to analyse this data for the Government in particular you are required to do the following:

1. Using Python read in the .csv file and process it so it is sorted in a 2D list.
2. Using Python show the following
   1. The maximum initial pass counts.
   2. The maximum initial fail counts.
   3. The minimum overall pass counts.
   4. The name of the centers with the highest pass and fail counts.
   5. The average initial pass counts for Leinster. You will need to figure out what test centers are in Leinster. Put these in their own list. For the test you can do something like this:

*for instance in output2D:*

*if instance[0] in LeinseterTestCenters:*

Where *LeinseterTestCenters* is a list of all the test centers in Leinster.

* 1. The average initial fail counts for Leinster. As above you will need to use the Leinster list again.
  2. Compare the average initial pass count for Leinster and Munster. Discuss your findings.

1. Using Python graph the following:
   1. The re-test pass counts for all Dublin centers.
   2. The re-test fail count for all Dublin centers.
   3. The initial pass count for all test centers in Leinster against the initial pass count for all test centers in Munster. Display both of these on the same chart.
2. Discuss the generated charts. Giving at least one paragraph on the first two and two paragraphs on the last chart.

Use any libraries you need to complete these tasks.

Provide a HTML document (generated in Jupyter notebook) as your upload to include all code, charts and text.