# Homework 6

Due date: Monday, Dec 9th, 2024, 11:59PM

A CSV file (car_info.csv) has been provided which contains information about different cars manufactured between 1970 and 1982. Write a python program that:

1. Reads the csv file into a Pandas DataFrame object. Print the shape of that dataframe.
2. Print the names of the japanese cars having v6 engines
3. Print the car names for which the horsepower data is missing.
4. Print the number of cars having mpg >= 20.
5. Print the name of the car which have the highest mpg.
6. Print the maximum, minimum, and average of the car weights.
7. Drop the rows from the dataframe which have any missing value. Print the shape of the resulting dataframe.
8. Create a pie chart showing proportion of cars manufactured in different countries.
9. Create a plot containing two subplots placed vertically. Each subplot should include separate xlabels, ylabels, and legends.
    i. a scatter plot showing mpg vs. weight.
    ii. a line plot showing mpg vs displacement.

**Grading Breakdown**

| Description | Points |
|---|---|
| Task 1 to 8 | 80 |
| Task 9 | 20 |

## Submission Instructions

**Regular Submission**

- Name your source code file as "FULL_NAME_HW6.py"
- Submit this file in iCollege folder '**Homework6**'
- Due date: Monday, 12/09/2024 11:59 PM

**Late Submission**

Late submission window is 1 day for this homework.

The late submissions penalty will be determined based on the following formula:

```
PENALTY = 0.4 * NUMBER_OF_HOURS_LATE
```

Examples:

If your submission is 2 hours late, PENALTY = 0.8%
If your submission is 24 hours late, PENALTY = 9.6%

**Expected Output:**

If your implementation is correct, the output should be similar to the following-

1. Shape of the dataframe: (398, 9)
2. Japanese v6 cars: ['toyota mark ii', 'toyota mark ii', 'datsun 810', 'datsun 280-zx', 'toyota cressida', 'datsun 810 maxima']
3. Cars with missing horsepower data: ['ford pinto', 'ford maverick', 'renault lecar deluxe', 'ford mustang cobra', 'renault 18i', 'amc concord dl']
4. Number of cars having mpg >= 20: 247
5. Most fuel-efficient car: ['mazda glc']
6. minimum weight: 1613, maximum weight: 5140, average weight: 2970.42
7. Shape after removing the missing values: (392, 9)
8. A pie chart should be displayed as described.
9. The corresponding subplots should be displayed within a single figure.