HW3: Regression

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HW3 Submission

- Follow the description of HW3-1 and HW3-2 to finish "HW3-Regression.ipynb" and upload.

- Deadline: 10/30 23:30

HW 3-1: Simple Linear Regression (1/2)

- Import library

```python
#Import data analysis Library
import numpy as np
import numpy.random as random
import scipy as sp
from pandas import Series, DataFrame
import pandas as pd

# Visualization Library
import matplotlib.pyplot as plt
import matplotlib as mpl
import seaborn as sns
%matplotlib inline

# Machine Learning Library
import sklearn

# Three digits after decimal point
%precision 3
```
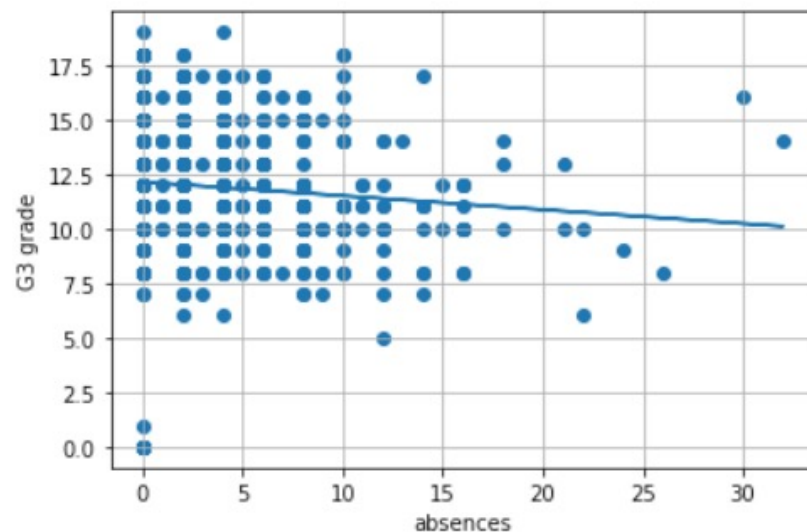
HW 3-1: Simple Linear Regression (2/2)

- Use the grade data of Portuguese (student-por.csv).

- G3 is target variable and absences(缺席次數) is explanatory variable to train a simple linear regression model.

- Calculate regression coefficient, intercept and coefficient of determination.

- Draw a scatter plot and regression line.

```
Regression Cofficient: [-0.064]
Intercept: 12.138800862687443
Coefficient of Determination: 0.008350131955637385
```

HW3-2: Multiple Linear Regression

- Using car selling data.
- Use Price as target variable and width and engine-size as explanatory variables to build multiple linear regression model.
  - Use "train_test_split" to split data to trainset and testset. Build the model and use testset to evalute the model.
    - The random_state of train_test_split sets as 0。

```
Coefficient of Determination (train):0.783
Coefficient of Determination (test):0.778
```