CS3101: ASSIGNMENT 3

DEADLINE: 8 MAR AT 17:00

Description: Create two different Jupyter notebooks (`ipynb` files). These should be self-contained, and all computations done exclusively in these notebooks.

Notebook 1: Download some data you find interesting (more than one is fine). Some example websites include:
- `data.gov.ie`,
- `cso.ie`,
- `data.un.org`.

Load the data directly into Python (e.g. you can use pandas). Plot the data using matplotlib, and write just a few sentences about it. Compute some statistical information—for example, the sample mean, median, standard deviation, minimum, or maximum. You should use data set(s) with at least 10 points. Include the data file(s) in your submission.

Notebook 2: Solve the following three tasks.

(1) Write a function called `abs` that takes a real number and returns its absolute value. For example, `abs(1.3)` should return `1.3`, and `abs(-3.14)` should return `3.14`.

(2) Write some code that loops through the integers from 1 to 100 and
- prints the word 'fizz' if the number is divisible by 3 but not by 5,
- prints 'buzz' if the number is divisible by 5,
- prints out the number if it is not divisible by 5 or by 3.

(3) Write a function called `binom` that takes two nonnegative integers `n` and `k` and returns the *integer*

$$\binom{n}{k} = \frac{n!}{k!(n-k)!}.$$

Note the output much be an integer and not a float.

Submission: Submit only two `ipynb` files together with the data file for the first notebook. This can be done by uploading each file separately, or by putting the files into a `zip` file, which is then uploaded.

Grading: Some important points about the grading of this assignment.
- If the Python code raises errors, marks will be deducted.
- Marks will be deducted for omitting meaningful computations.

Date: February 25, 2024.