Algorithm Analysis

Before you come to the lab

1. Read this document carefully to properly prepare for the lab and turn in your lab solution (i.e., your lab report as per the instructions presented here).
2. Read Chapter 2 of the textbook.

Prelude

You are required to type in and format your lab report using Jupyter Notebook. The Jupyter Notebook file `Lab-template.ipynb` available in the Lab01 web page in D2L is the Lab Report template you should use for all your In-Lab Assignment reports.

If you feel you need to, take some time now to get more familiarity Jupyter Notebook. Be sure that you can construct and display Python programs in Jupyter Notebook. Also make sure that you can export your `.ipynb` Jupyter Notebook file to HTML. Ultimately, you will have to also submit the HTML version of your `ipynb` Lab Report alongside the `ipynb` file and any required data files.

Before you start Exercise 1, create a separate file folder for this lab, and download to that folder any data files available in the lab website in D2L.

Exercise 1

Devise an experiment to verify that `get` item and `update` item are $O(1)$ for dictionaries.

In your Jupyter Notebook Report, include cells displaying

- your Python code
- a graph displaying the timings of those operators
- a brief discussion of the results you have obtained

Exercise 2

Devise an experiment that compares the performance of the `del` operator on lists and dictionaries.

In your Jupyter Notebook Report, include cells displaying

- your Python code
- a graph displaying the timings of those operators
- a brief discussion of the results you have obtained

Preparing to submit your report

Create a zip file containing the following:

- your `ipynb` lab report.
- all data files required by your `ipynb` lab report
- the HTML version of your `ipynb` lab report (use 'Download as' in Jupyter Notebook)

What to submit

At the Lab web page in D2L, click on `Lab Solution Submission`, then attach and submit **only the zip** file you have created as per the instructions above.