DSC3214
Introduction to Optimization
Setting up your Python

Python Basics

- Python is an interpreted high-level programming language for general-purpose programming.
- Created by Guido van Rossum and first released in 1991.
- Python has a design philosophy that emphasizes code readability, notably using significant whitespace.
- It supports multiple programming paradigms, including object-oriented, imperative, functional and procedural, and has a large and comprehensive standard library.
- Python interpreters are available for many operating systems.
- More tutorials can be found here:
  - https://docs.python.org/3.6/tutorial/index.html
  - https://www.tutorialspoint.com/python3/index.htm
  - http://cs231n.github.io/python-numpy-tutorial/

Install Anaconda (for Python) and Gurobi

- Anaconda
  - It includes over 330 Python and R packages such as an Integrated Development Environment (Spyder) and the leading web interactive notebook for data science (Jupyter).
- Gurobi
  - A commercial optimization solver for linear programming (LP), quadratic programming (QP), quadratically constrained programming (QCP), mixed integer linear programming (MILP), mixed-integer quadratic programming (MIQP), and mixed-integer quadratically constrained programming (MIQCP).

Install Anaconda (for Python) and Gurobi

- Step1
  - Go to http://www.gurobi.com/downloads/get-anaconda and select your system (WIN 32bit or WIN 64bit or Mac) and Python version 3.6.
- Step 2
  - Follow the instruction in the above link to install Gurobi into Anaconda
- Step 3
  - Install a Gurobi License.

Gurobi Free Academic License

- Request at https://user.gurobi.com/download/licenses/free-academic using your NUS email.
- Windows: follow the link
  - http://www.gurobi.com/documentation/8.0/quickstart_windows/retrieving_a_free_academic.html#subsection:academiclicense.
- Mac: follow the link
  - http://www.gurobi.com/documentation/8.0/quickstart_mac/retrieving_a_free_academic.html#subsection:academiclicense.
- Optional
  - In case you cannot find "grbgetkey", you may download Gurobi Optimizer at http://www.gurobi.com/downloads/gurobi-optimizer. And try Step 3 again.

Setting up Python

- Command Line
  - More flexible, for example, you can add additional arguments when executing the code file.
- Jupyter Notebook
  - Available in Anaconda
  - More convenient interactive environment
  - Better illustration and readability by combining code with Markdown