Getting Started with Python

Anaconda website: www.anaconda.com (choose Individual Edition, Python 3.7)

Using Jupyter Notebook

Keyboard shortcut

- Run a command use either Ctrl+Enter or Shift+Enter
- Toggle between edit and command mode with `Esc` and `Enter`, respectively.
- Once in command mode:
    - Scroll up and down your cells with your `Up` and `Down` keys.
    - Press `A` or `B` to insert a new cell above or below the active cell.
    - `M` will transform the active cell to a Markdown cell.
    - `Y` will set the active cell to a code cell.
    - `D + D` (`D` twice) will delete the active cell.
    - `Z` will undo cell deletion.
    - Hold `Shift` and press `Up` or `Down` to select multiple cells at once.
        - With multiple cells selected, `Shift + M` will merge your selection.
- `Ctrl + Shift + -`, in edit mode, will split the active cell at the cursor.

- You can also click and `Shift + Click` in the margin to the left of your cells to select them.

Part 2

Python Collections

Collections of *heterogeneous objects.*

- List
- Tuple
- Set
- Dictionary (will be covered in Practical 3)

Table 1: Comparisons of list, tuple and set

Characteristics	List	Tuple	Set

Syntax	list = [1,2,3]	tuple = (1,2,3)	set1 = set(list)
			set2 = set(tuple)

Items can be edited?	Mutable (can)	Immutable (cannot)	Mutable, but the items inside the set must be immutable type
Items are ordered?	Ordered. Can be accessed by sequential index start from 0	Ordered	Unordered. Not able to access the items with index
Allow duplication?	duplicate item is allowed	duplicate item is allowed	No duplicate item is allowed

Part 3

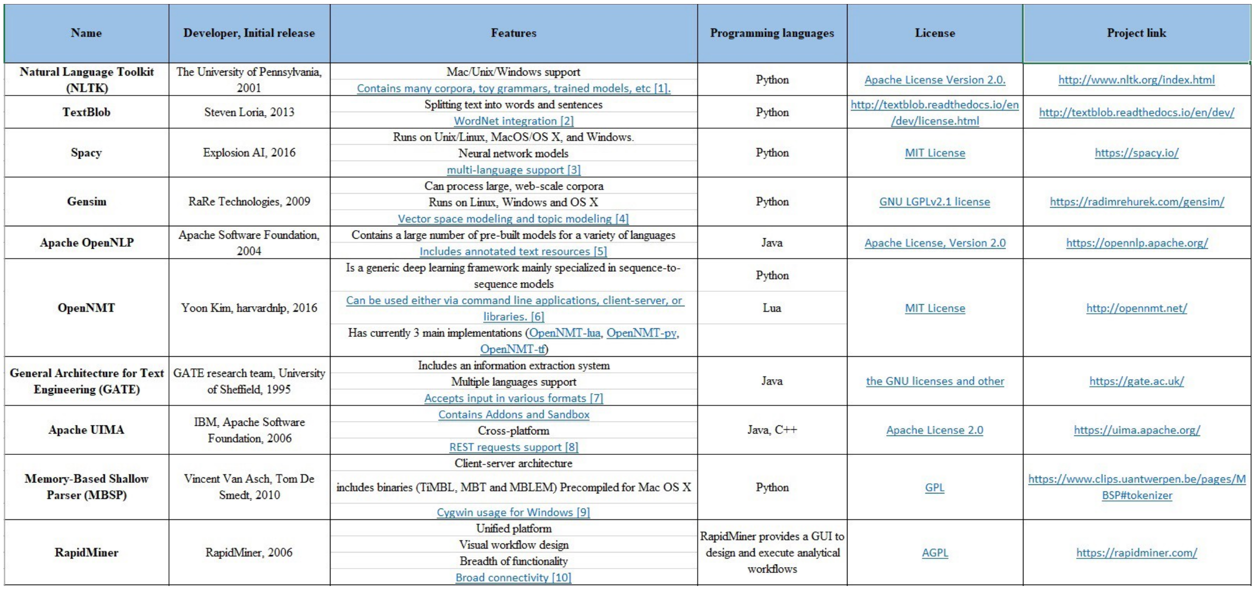
Text Processing is needed for transferring text from human language to machine-readable format for further processing. When a text is obtained, we start with text normalization. Text normalization includes:

- converting all letters to lower or upper case
- converting numbers into words or removing numbers
- removing punctuations, accent marks and other diacritics

- removing white spaces
- expanding abbreviations
- removing stop words, sparse terms, and particular words

Tokenization

Tokenization is the process of splitting the given text into smaller pieces called tokens. Words, numbers, punctuation marks, and others can be considered as tokens.



Name	Developer, Initial release	Features	Programming languages	License	Project link
Natural Language Toolkit (NLTK)	The University of Pennsylvania, 2001	Mac/Unix/Windows support Contains many corpora, toy grammars, trained models, etc [1].	Python	Apache License Version 2.0.	http://www.nltk.org/index.html
TextBlob	Steven Loria, 2013	Splitting text into words and sentences WordNet integration [2]	Python	http://textblob.readthedocs.io/en/dev/license.html	http://textblob.readthedocs.io/en/dev/
Spacy	Explosion AI, 2016	Runs on Unix/Linux, MacOS/OS X, and Windows. Neural network models multi-language support [3]	Python	MIT License	https://spacy.io/
Gensim	RaRe Technologies, 2009	Can process large, web-scale corpora Runs on Linux, Windows and OS X Vector space modeling and topic modeling [4]	Python	GNU LGPLv2.1 license	https://radimrehurek.com/gensim/
Apache OpenNLP	Apache Software Foundation, 2004	Contains a large number of pre-built models for a variety of languages Includes annotated text resources [5]	Java	Apache License, Version 2.0	https://opennlp.apache.org/
OpenNMT	Yoon Kim, harvardnlp, 2016	Is a generic deep learning framework mainly specialized in sequence-to-sequence models Can be used either via command line applications, client-server, or libraries. [6] Has currently 3 main implementations (OpenNMT-lua, OpenNMT-py, OpenNMT-tf)	Python Lua	MIT License	http://opennmt.net/
General Architecture for Text Engineering (GATE)	GATE research team, University of Sheffield, 1995	Includes an information extraction system Multiple languages support Accepts input in various formats [7]	Java	the GNU licenses and other	https://gate.ac.uk/
Apache UIMA	IBM, Apache Software Foundation, 2006	Contains Addons and Sandbox Cross-platform REST requests support [8]	Java, C++	Apache License 2.0	https://uima.apache.org/
Memory-Based Shallow Parser (MBSP)	Vincent Van Asch, Tom De Smedt, 2010	Client-server architecture includes binaries (TiMBL, MBT and MBLEM) Precompiled for Mac OS X Cygwin usage for Windows [9]	Python	GPL	https://www.clips.uantwerpen.be/pages/MBSP#tokenizer
RapidMiner	RapidMiner, 2006	Unified platform Visual workflow design Breadth of functionality Broad connectivity [10]	RapidMiner provides a GUI to design and execute analytical workflows	AGPL	https://rapidminer.com/

Remove Stop Words

“Stop words” are the most common words in a language like “the”, “a”, “on”, “is”, “all”. These words do not carry important meaning and are usually removed from texts. It is possible to remove stop words using Natural Language Toolkit (NLTK), a suite of libraries and programs for symbolic and statistical natural language processing.

Stemming

Stemming is a process of reducing words to their word stem, base or root form (for example, books — book, looked — look).

Lemmatization

The aim of lemmatization, like stemming, is to reduce inflectional forms to a common base form. As opposed to stemming, lemmatization does not simply chop off inflections. Instead it uses lexical knowledge bases to get the correct base forms of words.