INFO370 Lab: Base python

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Instructions

This lab is about base python, in particular lists and dicts. Consult python notes Ch 2: python and Lubanovic' book.

- You should answer the questions (type the code) in a jupyter notebook, in *code cells*. Please also mark which question you are answering (you may copy-paste text to the notebook). If you want to explain and comment something, do this in a *markdown cell*. The solution might look something like this:

  ### info 370 lab

  Name: Ott Toomet

  Collaborators: Dan Kryger

  #### 1. create alphabet

  ```
  In [1]: alphabet = ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']
          alphabet
  Out[1]: ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']
  ```

  #### 2. why 370

  I chose info370 because I like working with computers, statistics, data, analysis, and solve real world problems. It also fit perfectly to my schedule.

  I am most lookinf forward to understand linear regression as I know it is a widely used technique in business analysis.

- Please submit your solutions in two forms:

  - the notebook: the `.ipynb` file (this can be run)
  - html. You can get html from jupyter notebook file menu: *File – Export Notebook As... – HTML* if you are using jupyterlab, and *File – download as – HTML* if you are using jupyter notebook.

- Working together is fun and useful but you have to submit your own work. Discussing the solutions and problems with your classmates is all right but do not copy-paste their solution! First understand, and thereafter create your own solution. Please list all your collaborators on the solution.

- Don't be scared. We are here to help you learn. :)

1 Lists

1. Create a list `alphabet` of lower case letters (minimum 10 letters). Print your list.

2. use *list comprehension* to convert your alphabet into upper case.

   Hint: find out yourself how to convert python strings to upper case.

3. One can create repeat elements in a list by the repeat operator *, e.g. `["a"]*5` will give `['a', 'a', 'a', 'a', 'a']`. Use the repeat operator and list comprehension to create a nested list

   `[[1], [2, 2], [3, 3, 3], [4, 4, 4, 4], [5, 5, 5, 5, 5]]`

2 Text Question

In this basic coding lab there is little to explain and comment. But to give you a chance to *write text, not code*, please answer the following question (at least 2 sentences). Please do it in a *markdown cell*.

1. Why did you choose to take info370? What are the most valuable skills you hope to learn here?

   We can use your answers to adjust the topics a little bit.

3 Dicts

1. Create a dict of country-capital (at least 5 countries/capitals), e.g. *Kenya*: *Nairobi*, *Cameroon*: *Yaoundé*, ...

2. Extract all countries from your dict and make list of those.

   Hint: check out method *keys*, and the function *list*

3. Transform your dict into a capital-country one, e.g. *Nairobi*: *Kenya*, *Yanoundé*: *Cameroon*, ...

   Print this dict to show it is good.

4. Make a function that achieves all the above: it takes country-capital list as an argument, and returns capital-country list. Demonstrate that it works correctly using the list you did above.