Due date: 9/17/2020, Thursday 5 pm

Programming assignment 0

Blood Glucose Analysis

(get familiar with python)

# Introduction to python

Video tutorial for beginners: <https://www.youtube.com/watch?v=rfscVS0vtbw>

Official tutorial: <https://docs.python.org/3/tutorial/index.html>

(Following highlighted sections are optional. If you have an IDE like PyCharm installed on your machine, then you would need to install the packages separately. If you have Jupyter notebooks and would like to use that, you do not need to install packages separately. However, the advantage of having an IDE is that it lets you inspect the variables of your code easily. If you have a code that says *data = pandas.read\_csv(‘a.csv’),* doing it on PyCharm lets you click and open up ‘*data’* and see its contents, whereas in a Jupyter notebook you would need to print it explicitly. )

# (Optional) python installation installation guide: <https://wiki.python.org/moin/BeginnersGuide/Download>

# PACKAGE installation

## Introduction of packages

### **Pip**: package installer. (<https://pypi.org/project/pip/>)

### **Numpy**: fundamental package for scientific computing. (<https://numpy.org>)

### **Pandas**: data analysis package, especially useful for large tables. (https://pandas.pydata.org)

### **Arrow**: date, time and timestamp tool. (https://arrow.readthedocs.io/en/stable/ https://matplotlib.org)

### **Matplotlib**: visualization tool. (https://matplotlib.org)

## Installation

### **Pip**: Your system may already have ‘pip’ pre-installed. To verify, you can type pip freeze in command window. ‘pip freeze’ will list all the packages installed through ‘pip’. If ‘pip’ is not installed yet, follow the instruction on <https://pip.pypa.io/en/stable/installing/> to install.

### **Numpy**: If ‘numpy’ is not pre-installed in your system, use sudo pip install numpy to install numpy.

### **Pandas**: Use sudo pip install pandas to install pandas.

### **Arrow:** Use sudo pip install arrow to install arrow.

### **Matplotlib:** Use sudo pip install matplotlib to install matplotlib.

# Background

Company A developed a product to help patients control blood glucose. They recorded the blood glucose of their patients across a year. The data is stored in the file ‘a.csv’. The headers of this file are:

* + - data\_utc: data in universal time coordinated
    - bg\_checks: the times that the patient checks blood glucose
    - avg\_bg\_value: average blood glucose
    - count\_hyper\_reading: not important in this assignment
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# assigment

The task for the assignment is given in the comments of the file *bg\_analysis.py* and is split up into steps. This file contains the skeleton of the code with some blanks left for you to fill up (marked as “*###### Your Code Here ######”*).

Note that there are multiple ways to solve this question and the hints to use packages like *pandas* and *arrow* are just suggestions. You can choose to do it differently.