# Software Dev. & Problem Solving I

**GCIS-123** 

Due Date: Monday Oct. 7, 2021 At 23:30

Assignment 1

### Goals of the Assignment

This assignment provides an opportunity to practice all of the materials learned including Git, TDD, conditionals.

#### Instructions:

- You will be using a specific repo for this assignment.
- You are required to commit after each step.
- A file header and doc strings for each function is required.

## Assignment Problem:

Health Monitoring System (**HMS**) is a sophisticated technology, consists of a wearable wireless device like a bracelet with sensors that are paired with an application for a doctor to access the medical information. Among these important measurements are: pulse, oxygen levels, CO2 levels, thermometer, blood pressure...

# A. Write python script for each of the following program skeleton functionalities:

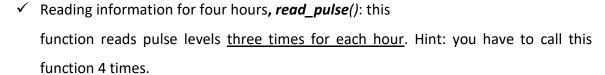




Figure 1: https://www.informationweek.com/mobile/ remote-patient-monitoring-market-to-double-by-2016

- ✓ Measuring pulse levels, measure\_pulse(): this function accepts three pulse values for each hour then calculate and return their average.
- ✓ Detecting abnormal levels, *abnormal()*: this function accepts averages for the four hours and return the hour number in which the average is less than *min\_level* or greater than *max\_level*. (in this assignment we will assume that only one hour is abnormal) or return *None* for all normal levels.
- ✓ Warning doctors, *warning\_doctor()*: this function print on screen warning messages about the hour number that has abnormal levels detection
- ✓ Drawing column chart, *draw\_chart()*: (using turtle) to show pulse averages during the four hours.
- ✓ main function.

#### B. Remember to use TDD:

- a. Write test
- b. Stub out function
- c. Run test (fail)
- d. Implement the solution from problem solving
- e. Run test (pass)

Since we are following the TDD process, start by creating the following test functions

- 1. test\_measure\_pulse(). The test should assert all of the following conditions after the measure\_pulse function has been called.
  - All three pulse values are positive.
- 2. test\_abnormal(). The test should assert all of the following conditions after the abnormal() function has been called.
  - Return None when all values within the interval [min\_value,max\_value].

- 3. Stub out the new measure\_pulse()function and use pytest to verify the test fails. **Don't forget to commit/push your code.**
- 4. Complete the measure\_pulse()function. Upon completion, run the tests again and verify it passes.
- 5. Commit/push your code.
- 6. Add a call to measure\_pulse()to HMS.py's main function. Visually verify it returns the correct answers. **Commit/push your code.**

## Submission Instructions & Grading

Be sure that you have submitted the following two item:

- committed all your solution files to your GIT repository **before** the deadline.
- Submit the following sheet on MyCourses' respective assignment <u>before</u> the deadline. it includes the rubrics that will be used for grading the assignment.

| GCIS123 - Software Dev. & Problem Solving I        |  |  |  |   |   |  |  |  |
|--|--|--|--|---|---|--|--|--|
| Exceptional Performance Performance                | Competent<br>Performance                                 | Acceptable<br>Performance                          | Developing<br>Performance                          | Beginning<br>Performance                              | Unacceptable<br>Performance                     |  |  |  |
| 5 (100%)   | 4 (95%)  | 3 (88%)  | 2 (75%)  | 1 (50%)   | 0 (0%)  |  |  |  |
| The solution is complete and correct. Instructions | The solution is functionally complete other than a small | The solution includes at least 80% of the required | The solution includes at least 50% of the required | The student<br>began the<br>solution, and<br>there is | Little or no<br>effort.<br>Almost all<br>of the |  |  |  |

| were followed completely. | number of functional           | functionality<br>and all  | functionality<br>and all | obvious effort,<br>but more than | required<br>functionality |
|---------------------------|--------------------------------|---------------------------|--------------------------|----------------------------------|---------------------------|
| or                        | errors.                        | instructions              | instructions             | 50% of the                       | is missing.               |
| The student               | Instructions                   | have been                 | have been                | required                         | The commit                |
| made a small              | were followed                  | followed.                 | followed. The            | functionality is                 | history                   |
| number of                 | completely.                    | or                        | student's effort         | missing or                       | shows very                |
| minor errors for          | or                             | The student's             | based on                 | broken. This                     | little activity           |
| the first time,           | The solution is                | effort is                 | volume of work           | may include                      | on behalf of              |
| e.g. wrongly              | completely                     | obvious                   | and commit               | code that                        | the student.              |
| named files,              | correct but the                | based on the              | history is               | exists but                       |                           |
| output that               | student made a                 | volume of                 | obvious. There           | does not                         |                           |
| does not match            | small number of                | work and                  | is at least some         | compile and                      |                           |
| specifications,           | errors that they               | commit                    | attempt to               | run, but could                   |                           |
| etc. A warning            | have made at                   | history, but              | implement the            | be fixed with                    |                           |
| should be                 | least once                     | there are a               | missing                  | significant                      |                           |
| issued                    | before, e.g.                   | modest                    | functionality.           | effort.                          |                           |
| regarding any             | wrongly named                  | number of                 | Errors can be            |                                  |                           |
| errors.                   | files, output that             | errors that               | easily fixed by          |                                  |                           |
|                           | does not match                 | range from                | a member of              |                                  |                           |
|                           | specifications,                | relatively                | the course staff         |                                  |                           |
|                           | etc. An                        | minor to                  | in a short               |                                  |                           |
|                           | explanation<br>should be       | significant               | amount of time.          |                                  |                           |
|                           |                                | that can be               |                          |                                  |                           |
|                           | issued                         | easily fixed              |                          |                                  |                           |
|                           | regarding any of these errors. | by a member of the course |                          |                                  |                           |
|                           | Instructions                   | staff with                |                          |                                  |                           |
|                           | were followed                  | minimal                   |                          |                                  |                           |
|                           | completely.                    | effort.                   |                          |                                  |                           |
|                           | completely.                    | GIIOI L.                  |                          |                                  |                           |