The University of the West Indies, St. Augustine
COMP 3607 Object Oriented Programming II
2020/2021 Semester 1
Lab Tutorial - Week 7

This tutorial focuses on design patterns and code refactoring.

Learning Objectives:

- Write code to implement the following design pattern:
  - **Observer**
  - Refactor code to implement a particular design pattern.

1. A patient's vital signs are being monitored based on heart rate, breathing rate and kidney output. The system outputs a patient's statistics as shown in Figure 1 (see video for more detail) based on the ranges of values in Table 1.

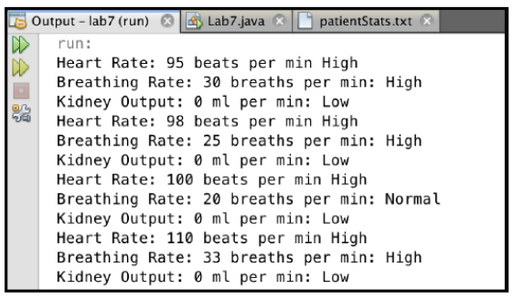
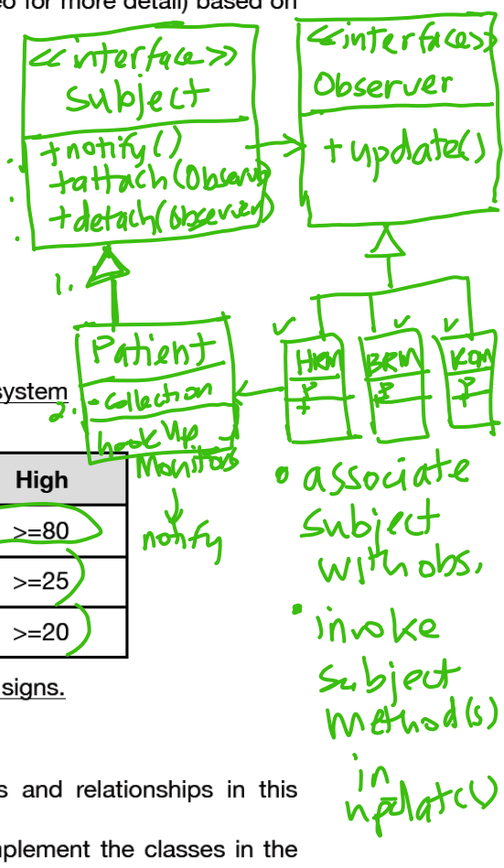


Figure 1. Sample output produced by the monitoring system



	Low	High
Heart Rate (beats per min)	<=60	>=80
Breathing Rate (breaths per min)	<=12	>=25
Kidney Output (ml per min)	<=10	>=20

Table 1. Range of high and low values for patient vital signs.

Using the Observer design pattern:

(a) Draw a UML class diagram to model the classes, interfaces and relationships in this scenario.

(b) Refactor the Patient.java class and write additional code to implement the classes in the monitoring system.