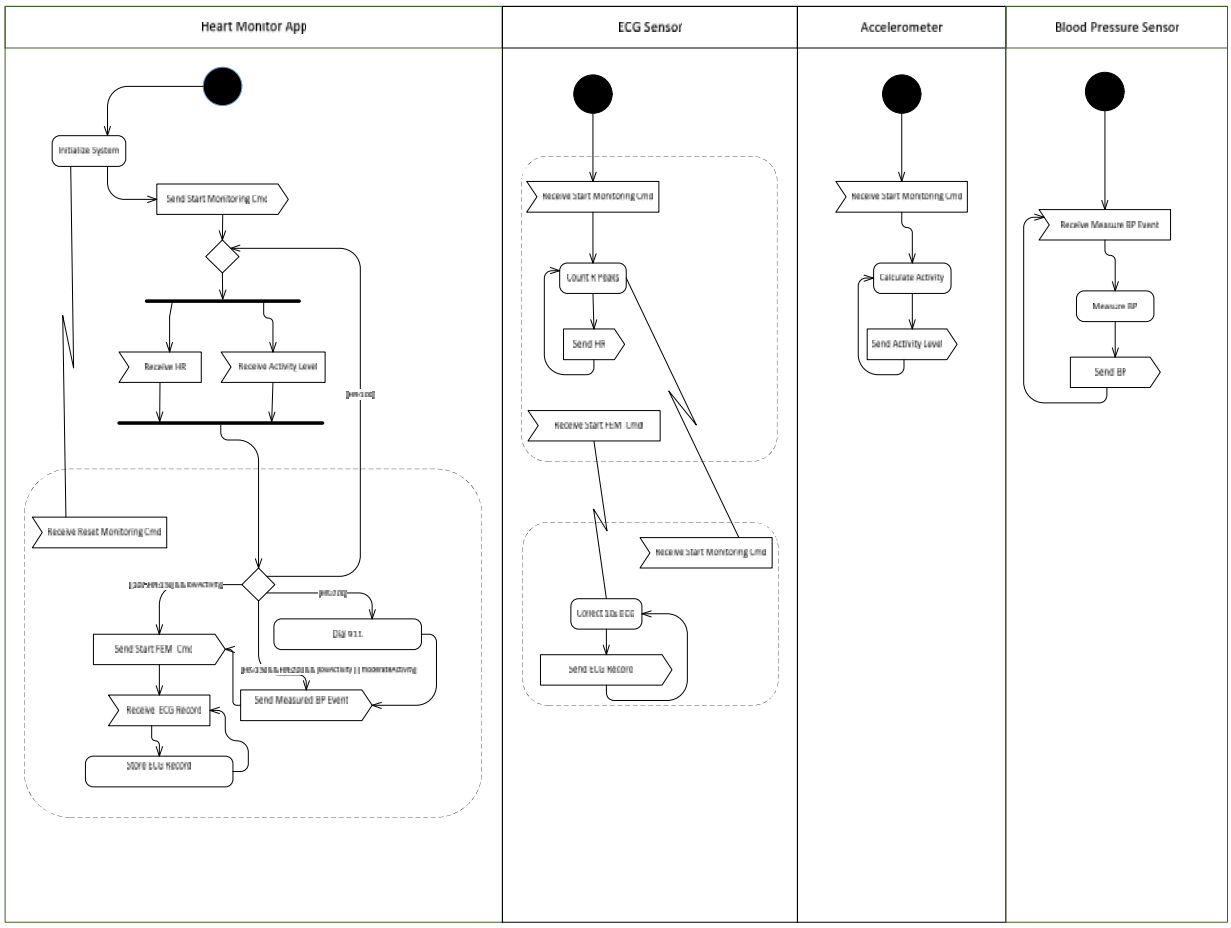
Assignment 1 Solution – SEG2106

Part 1 – Behavioral Modeling of Health Monitoring System

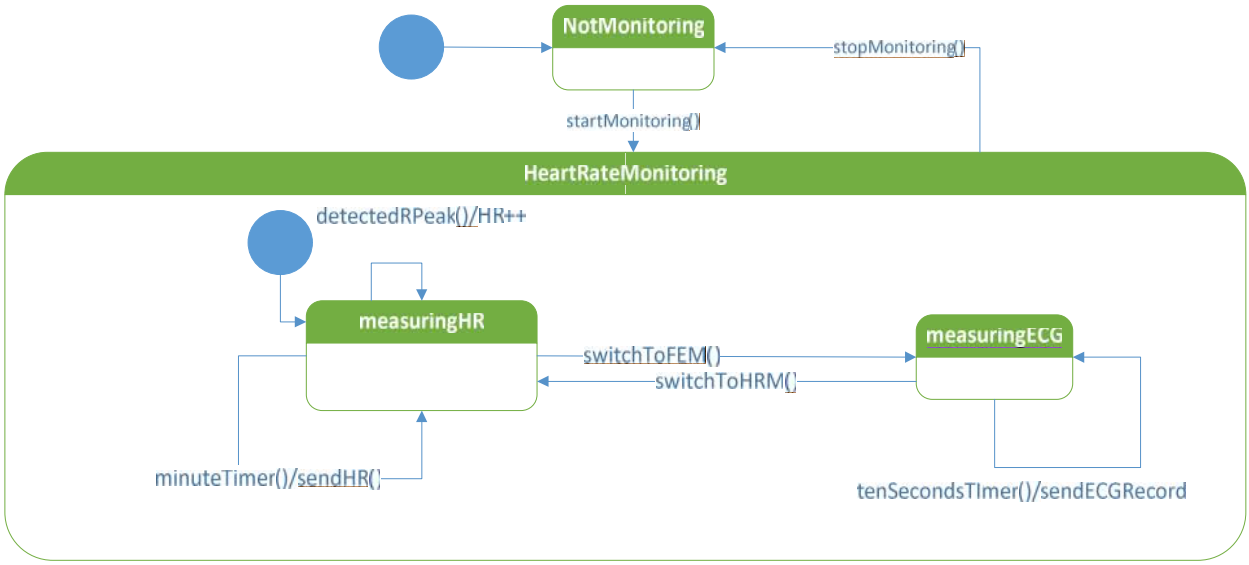
Activity Diagram (45 points)

Below is one possible activity diagram.



UML State Diagram (25 points)

Below is one possible UML state machine diagram.



Part 2 – Petri Nets

When solving overflow and deadlock problems, the capacity of places should be disregarded.

First Petri Net (15 points)

This Petri net is 2-bounded. There will never be more than two tokens in one place.

Deadlock is not possible as t1, t2 and t3 will always be possible.

Second Petri Net (15 points)

This Petri net is not 2-bounded:

Given the following scenario : M0(1,0,0)→t2→M1(0,0,1)→t5→M2(0,1,1)→t5→M3(0,2,1)
t5→M3(0,3,1)…The number of tokens in P2 is not 2-Bounded and can keep increasing infinitely.

Deadlock is not possible as t3, t4, and t5 will always be possible.