Software Methods and Tools
Spring 2017

Assignment 3
Due on 11:59PM, Monday, February 20, 2017

1. (50 points) Create a sequence diagram for the Snake video game. The diagram should define the main logic of the game in each clock cycle (e.g. clock tick), and the whole game can be seen as a repetition of the logic. Your sequence diagram must include the instances of the following three classes: Clock, GameBoard, and GameControl. Note that you may need to add more participants to have a complete logic.

In addition, your sequence diagram must reflect the following activities. You need to figure out how they should be organized (e.g. the occurrence condition and order), and represent them as interactions between participating instances of the sequence diagram. Note that each activity below does not necessarily correspond to one interaction message.

- Moving the snake (updating the snake's position)
- Checking if the snake eats the item
- Checking if the snake hits the wall or itself
- Regenerating a new item at a different position
- Updating the screen display
- Updating the game’s information (e.g. status, score, time elapsed).
2. (30 points) Create a state diagram for the `GameControl` class. It must include at least three states: `GameOver`, `GamePaused`, and `NewGame`. For each state, include state name and activity when applicable. For each transition, include event, guard, and activity when applicable.

Add the screenshots of your sequence diagram and state diagram in a pdf document. Briefly describe the design of each diagram in your document. Please make sure that the included pictures are clear to read.