Computer Science Building Lift Simulator (COMP2007 Part II _Individual_ Coursework worth 5%)

Submit via Moodle by Wednesday 20th Jan. 2010.

Background

The computer science lifts are broken again and the department has fallen out with the contractors. They have asked you to write a new lift controller for the lifts in Java. They will provide you with a 'lift simulator' to test your controller.

Programming Task

The complete system consists of three types of classes: People, Lifts and the Lift Controller itself. Both the People and the Lift are seen as active objects, whereas the Lift Controller is a passive object. There are 9 floors to the building that are identified from 0 (Ground Floor) to 8 (Top Floor). The simulator framework can be found on Moodle as a zip file, this **should not** be changed! You only need to implement the MyLiftController class according to the specification given for the LiftController interface.

Lifts

The simulator has only a single lift that goes between floors. It starts at the ground floor and goes to the 8th floor, and then it goes back to the group floor. While doing this it tells the lift controller what floor it is currently on and asks whether it should open it's doors for people to enter/exit. The lift announces what floor it is currently on and whether the doors are opening or closing.

People

The simulator allows any number of people to be simulated. Each person randomly appears on a particular floor and chooses to go to another floor. They call the lift using the call lift button (either up or down direction). They have to wait for the lift to appear and open its doors. Once inside the lift they then select the floor that they wish. The people announce what floor they are on, where they wish to go to, and what they are doing in terms of pressing buttons.

Lift Controller

This is what you need to write – it has to satisfy the specification given internally for the LiftController interface. The LiftController **should not** print anything to the output – all the printing is done via the People and Lift classes.

An example 'trace' of the output is given over the page.

Example Trace of Lift Simulator

```
Main thread creating Lift and 2 people.
Main thread starting 2 people and Lift.
Application threads have all been started.
Main thread done it's work - terminating.
Started Lift
Lift on floor 0, going UP
Started Person 0
Started Person 1
Lift on floor 1, going UP
Person 0 wants to go from floor 5 to floor 8
Person 0 selecting UP
Person 1 wants to go from floor 1 to floor 6
Person 1 selecting UP
Lift on floor 2, going UP
Lift on floor 3, going UP
Lift on floor 4, going UP
Lift on floor 5, going UP
Lift has opened doors at floor 5
Person 0 has entered lift.
Person 0 selecting floor 8
Lift closing doors at floor 5
Lift on floor 6, going UP
Lift on floor 7, going UP
Lift on floor 8, going DOWN
Lift has opened doors at floor 8
Person 0 getting out of lift.
Lift closing doors at floor 8
Person 0 wants to go from floor 1 to floor 5
Person 0 selecting UP
Lift on floor 7, going DOWN
Lift on floor 6, going DOWN
Lift on floor 5, going DOWN
Lift on floor 4, going DOWN
Lift on floor 3, going DOWN
Lift on floor 2, going DOWN
Lift on floor 1, going DOWN
Lift on floor 0, going UP
Lift on floor 1, going UP
Lift has opened doors at floor 1
Person 0 has entered lift.
Person 0 selecting floor 5
Person 1 has entered lift.
Person 1 selecting floor 6
Lift closing doors at floor 1
Lift on floor 2, going UP
Lift on floor 3, going UP
Lift on floor 4, going UP
Lift on floor 5, going UP
Lift has opened doors at floor 5
Person 0 getting out of lift.
Lift closing doors at floor 5
Person 0 wants to go from floor 3 to floor 0
Person 0 selecting DOWN
```