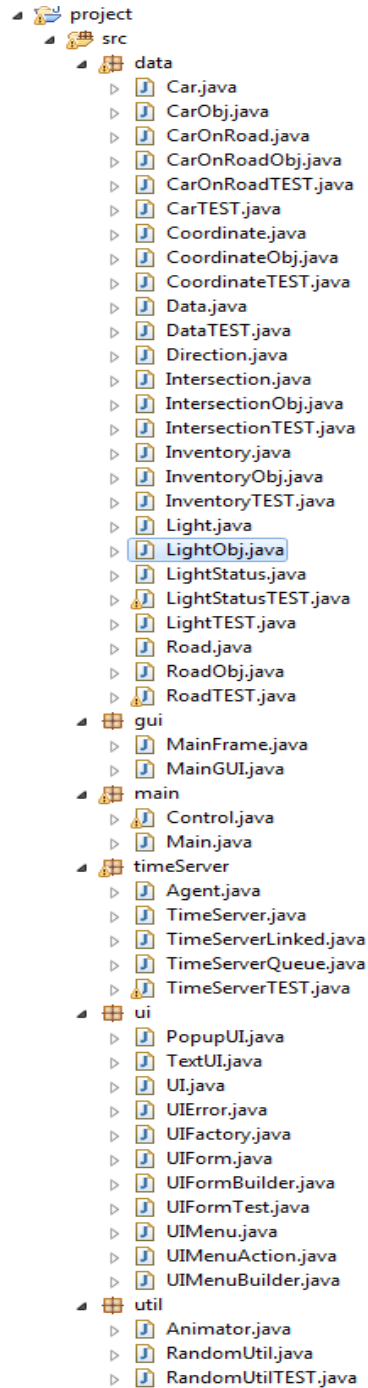


SE450 FinalProject Report

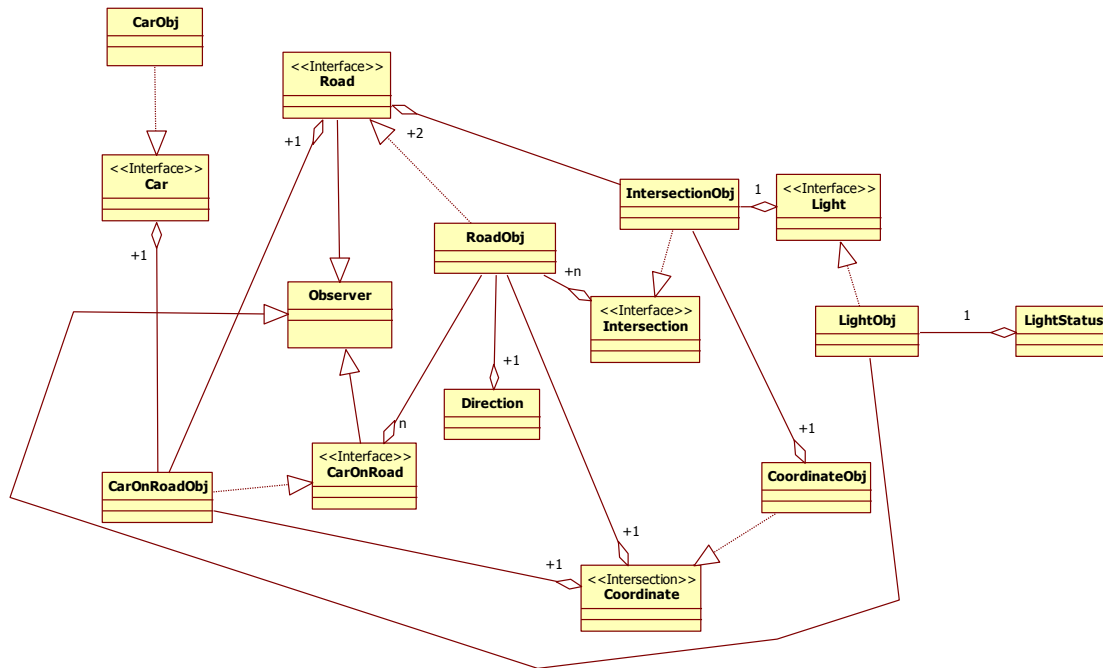
Qingkui Wang

1. Class diagrams



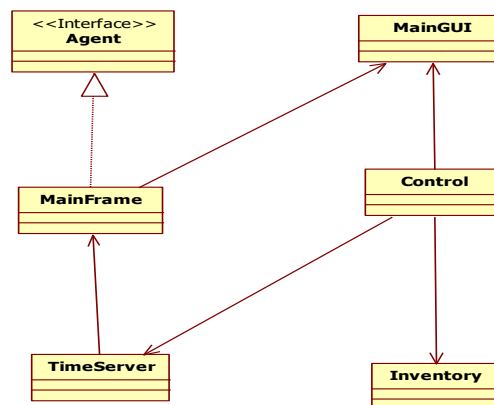
There are 6 packages in my project, as the picture above. Package data is the core.

In package data:



To simulate the traffic, I used Observer pattern. Class Road, Light, CarOnRoad extend and implement the Observer method “update()”. And timeserver is Observable.

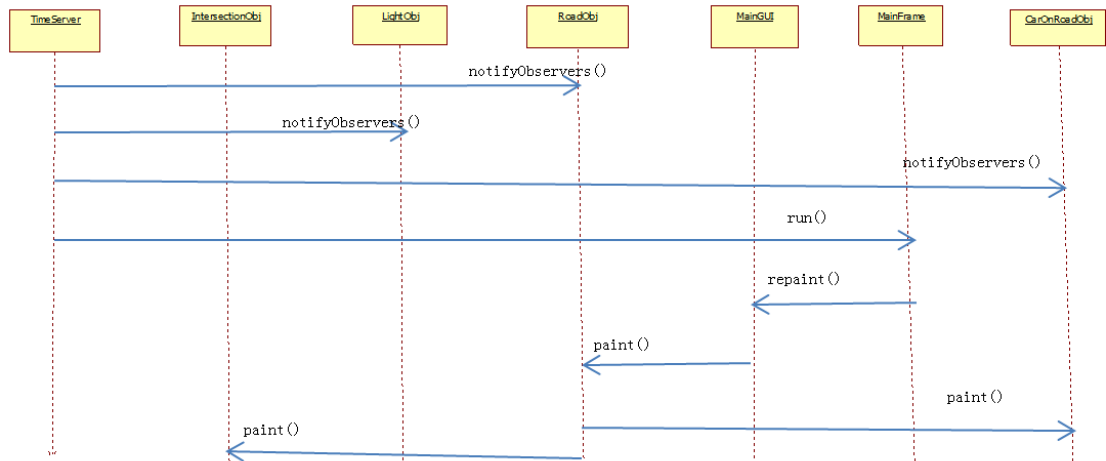
In gui, main and timeserver packages:



Class Inventory is the core. It can initialize all the data and add all these objects to observable object (timeserver). As a result, all the objects automatically updates themselves by time step.

Class MainFrame implements Interface Agent. It repaints by time step.

2. Sequence Diagram



As time step, the observers updates status and then the frame repaints the roads, intersections and cars.

3. Time summary

| Week | 1 | 2 | 3 | 4 | Total |
|--------|-----|---|-----|----|-------|
| Design | 1.5 | 2 | 3 | 15 | 21.5 |
| Code | 0.5 | 1 | 1.5 | 40 | 42 |
| BigBug | 0 | 0 | 0 | 5 | 5 |

4. Notes on patterns

1) Static factory pattern:

In class "Data", there are all the static factory methods to new the objects, such as new a car or new a road. We can decide to new which subject by some input parameter but I don't create this centralized method yet. I will add it later.

2) Observer pattern

Class RoadObj, LightObj, CarOnRoadObj are observers. They can automatically update their status. And timeServer is Observable.

3) Command pattern

Class Agent, MainFrame, MainGUI, Control

4) State pattern

The light has 4 states. So I use State pattern in class LightObj.

5. Successes and Failures

First, if there is another two or three days to spend on the project, I can make a much better. There are some features I don't realize, Such as the truth of considering the intersection as an obstacle. I am still debugging these two features:

1) The light state in the car's direction is Yellow and the light is at least brake Distance away.

2) The light state in the car's direction is Green, but the intersection is occupied by cars travelling in the other direction.

Also, I have not considered the gridlock yet.

I should start the project much earlier. There was a lot of time then.

But I will continue to finish these features for my own.

By working on this project, I found I am still not familiar enough with the design patterns.

Coding with design patterns is the most useful way to master design patterns.

And great thanks to my classmate. He gave me some important help in the design of the project.