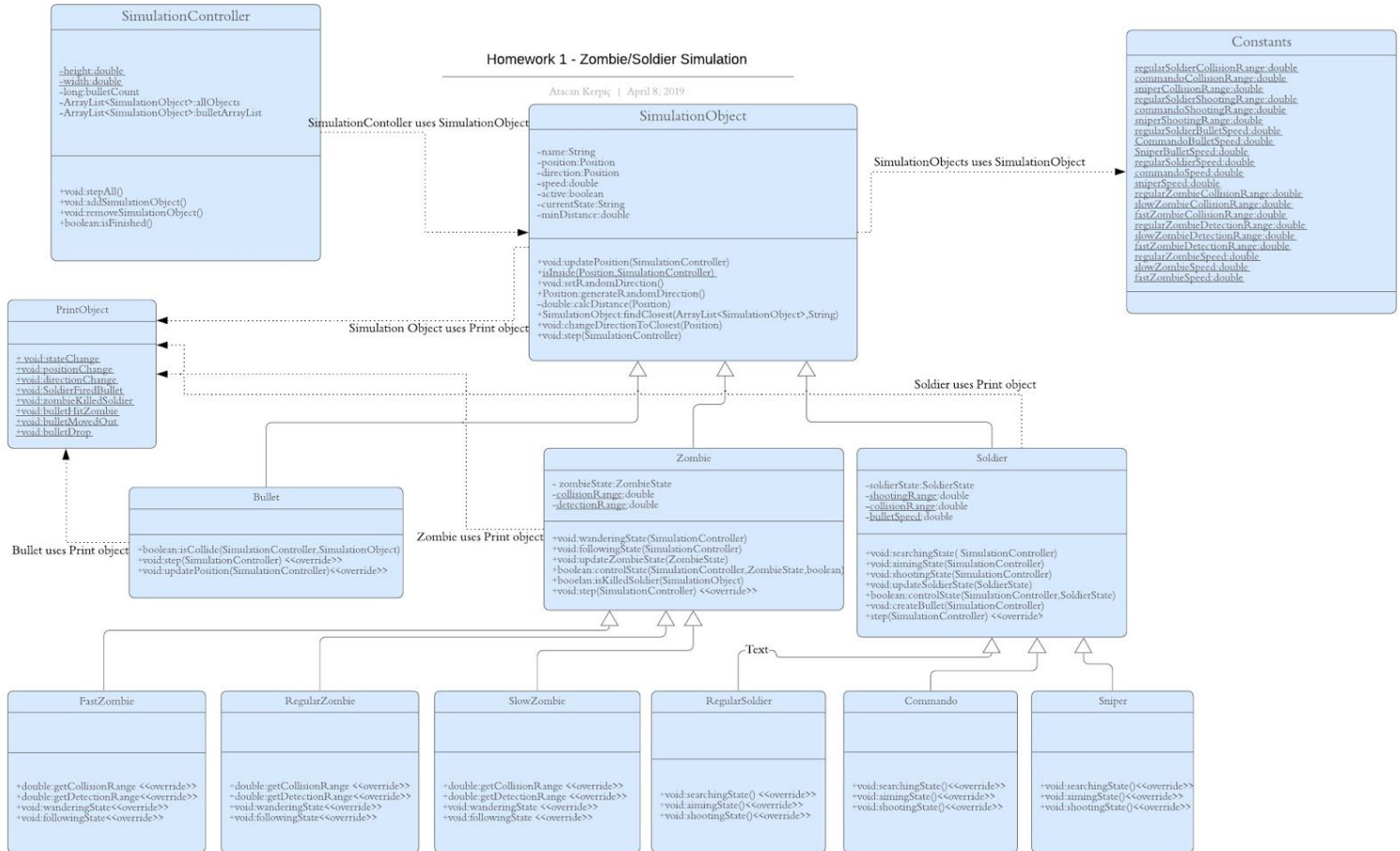


DESIGN DOCUMENT of HW1

Class Diagram:



Design Choices:

Before implementing the project, I thought how to write the code in accordance with the open/closed principle. I decided to use reflection when doing this instead of using separate lists for simulation objects. Furthermore, while implementing addSimulationObject method I did not use any if block ,and add all simulation objects to allObjects arraylist. Then, in the stepAll method, I executed step function by iterating over allObjects arraylist.

While Implementing some methods such as findClosest,isCollide I needed to know type of some classes. In order to determine type of the class and methods of the class, I used Reflection.

- In order to reuse code and make an object-oriented structure, I created Soldier, Bullet and Zombie classes which are inherited from Simulation object. In the Simulation Object, along with the step method, I create following methods:

```
+void:updatePosition(SimulationController)
+isInside(Position,SimulationController)
+void:setRandomDirection()
+Position:generateRandomDirection()
-double:calcDistance(Position)
+SimulationObject:findClosest(ArrayList<SimulationObject>,String)
+void:changeDirectionToClosest(Position)
```

These methods are reused by Soldier and Zombie classes.

- I created RegularSoldier, Sniper, Commando classes that are inherited from Soldier. I created 3 abstract methods (searchingState(), aimingState(), shootingState()) which are implemented in RegularSoldier, Sniper, Commando classes.
- I created RegularZombie, FastZombie, SlowZombie classes that are inherited from Zombie. I created 2 abstract methods (followingState(), wanderingState()) which are implemented in RegularZombie, FastZombie, SlowZombie classes.
- I collected all static variables that are public at Constant class.
- I wrote a PrintObject Class whose entire methods are static and public in order to print objects easily whenever I need to print.