****City groundline****

****User requirements specification****

Functional requirements

### Must:

1. User must be able to place buildings and roads on the map.

2. Buildings and vehicles must not overlap each other. (collision detection)

3. User must be able to remove buildings. (reset building or road back to empty spot)

4. User saving and loading the simulation map.

5. User must be able to select a building.

6. User configure and overview the information of an object.

7. User changing the weather setting.

8. User setting time frame.

9. Vehicle movement must be done by AI.

10. Traffic light will affect the behavior of the vehicle (vehicles will stop if the traffic light is red).

11. buildings will spawn vehicles

12. Weather will affect the behavior of the vehicle(speed).

13. Random events in the city (Fire, Ambulance etc.)

14. Random events can be generated by user

15. Saving current simulation map.

16. Load saved simulation map.

17. City hall.

18. Vehicles will go back to its parent building at night time.

### May:

1. Functional buildings (power plant, water factory) will somehow affect nearby buildings. (happiness, security …).
2. Resume saved simulation.
3. Visualization of different hours and weathers.
4. User can stop and resume simulation(pause menu).

Non-functional requirements

### Must

1. The vehicle spawned by a building must be corresponding to that building (For example, police station spawns police cars ).
2. The possibility of triggering a random event by system is 0.001 per frame.
3. The day and night cycle should be performed within 3 minutes.

GUI





