**Term Project #1 Battle City**

**Due Date: 05/06/2016 11:59PM**

**Introduction**

Design an agent as the player in Battle City Game. Your agent is expected to have the following capabilities.

1. To move your tank and destroy the enemy tanks.
2. To finish a stage in five minutes.
3. To survive at least 3 stages.
4. Do not make the game crashed.
5. Do not slow down the game pace.

**Specification**

1. Implement your agent in ai.py using Python. You need to install pygame library. Use “python tanks.py” to run the game.
2. The array variable “mapinfo” in tanks.py describes the current status of the game.
   * 1. mapinfo[0], mapinfo[1] and mapinfo[3] are the information of the existing bullets, enemies and players respectively. The element in the array contains dimensional information <top, left, width, height>, moving direction, moving speed and type.
     2. mapinfo[2] is the information of the map objects (brick, grass, steel and water). The element in mapinfo[2] contains < <top, left, width, height>, type>
3. The “operations” function in ai.py is used to determine the moving direction of the tank and whether it will fire a bullet or not. You can add or modify the functions and variables in ai.py. Just make sure the “operations” function returns the variable “control” when your calculation is done.
4. In each iteration of the while loop in nextLevel function, the game system will check self.agent.control[2] returned by your agent. If the variable has been changed, the game system will use the new operation to control your tank, otherwise; the tank will be controlled by the same operation.
5. Testing stages are in the “Levels” folder.
6. If you want to install other libraries, please contact TA.
7. System call functions are forbidden.
8. Your agent will be tested on a Linux server with a 4 core CPU and 8GB memory. The version of Python is 2.7.
9. Submit a zip file which contains ai.py and a report on e3 before 2016-05-06 23:59:59.
   * 1. The file name should be XXX.zip where XXX is your student id. You will lose 10% of your score if the format is not correct.
     2. Briefly describe the strategy and the techniques you used in the report (less than 3 pages).

**Scoring**

* + - 1. Report : 10%
      2. Agent capability: 90%

basic: 60% (survive 3 stages)

advanced : 30% (depend on how many more stages your agent survives)

* + - 1. An agent which operates the tank randomly will not be graded.