**Intro. to CS - assignment #2**

**Game programming using Python**

1. **Introduction**

The game***Marischan ganbatt*e** is one variant of the famoussnake game. If you are not familiar with the snake game, visit https://playsnake.org/ and play on. In this game, Kirisame Marisa (<https://en.touhouwiki.net/wiki/Marisa_Kirisame>) gathers apple. She has a mushroom allergy. When she touches a mushroom, she will become sick and should go home and should have rest. It means the game is over when the character touches a mushroom. The objective of this game is to make her gather as many apples as possible while avoiding mushrooms.

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Figure 1. Play capture

1. **How to run**

The game uses numpy and pygame module. Install numpy and pygame first.

pip install numpy

pip install pygame

One of the purposes of this assignment is to make you be able to install appropriate frameworks that are needed.

Given project have three python scripts and the scripts are described below.

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| **File** | **Description** |
| **game.py** | The file contains the basic game code. You may modify it when you want to change the general event routine, such that e.g., when Marisa touches an mushrooms or apples and how the game reacts upon events. |
| **Gameobject.py** | The file contains the game object code. The game objects denote Marisa, Apple, and Mushroom. The code defines how each object in the game reacts on events. |
| **Util.py** | The file contains the constants and functions frequently used.  You are not encouraged to modify this file. |

**Problem description and grading policy**

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| **Goal** | **Description** | **Score(100)** |
| **Collision Detection** | This is about how to check a collision of two circles. If two objects collide, the sum of their radiuses is equal to or larger than the distance between their centers. Otherwise, they do not collide.  separated circlescolliding circles  Figure 2. No collision Figure 3. Collision  You implement the collision of two objects (this and other in the parameters) in the collide method. (line 52 in gameobject.py)  @staticmethod  def collide(this, other, r=None):  """  Change This method.  Return True if this, and other collides,  otherwise return False.  """  return False  You may find it helpful to consult: <https://happycoding.io/tutorials/processing/collision-detection> | 40pts |
| **Handling input events** | You can control the direction of Marisa in the following code.  As shown the video clip, Marisa can moves straight.  If key left/right arrow is down, Kirisame should change direction and starts to move left/right.  If key up/down arrow is down, Kirisame should change direction and starts to move up/down.  The speed of the Marisa object should be 1  Check  keyEventHandle(self, keyEvents, elapsed\_ms)  at line 122 in gameobject.py  if keyEvents.up is True:  pass  if keyEvents.down is True:  pass  if keyEvents.left is True:  pass  if keyEvents.right is True:  pass  You should update the property ‘self.velocity’.  self.velocity is two dimensional vector, representing velocity of Kirisame along with x and y axes.  For example, if Marisa is moving right, her velocity might be [1.0, 0.0]  For example, if Marisa is moving down, her velocity might be [0.0, 1.0]  You should not change her speed but only direction. | 30pts |
| **Code Lint** | It is important to write clean code. The scripts given are written cluttered intentionally. You need to fix them.  Inlstall flake8 using following script  pip install flake8  and run this command to see if there is any cluttered parts in the scripts. flake8 \*.py --max-line-length=100 --ignore=F405,F403  Clean the code without modifying the logics of the game.  If the code is clean without any warning, then ‘flake8’ shows nothing.  Please refer  [Pythonic은 무엇인가? (PEP 8 정리) (codechacha.com)](https://codechacha.com/ko/pythonic-and-pep8/)  [Flake8로 Python Code를 Lint 해보자 - 전지적 송윤섭시점 블로그 (songyunseop.com)](https://tech.songyunseop.com/post/2017/05/lint-with-flake8/) | 30pts |
| **(Optional) additional features** | This is optional, so please consider it only after you complete the implementation of the above three features.  Add your own feature that you think interesting. Some of last year are below. | 0pts |

* **Notes**
  + You can modify any part of the given code, if you want. However, you are not allowed to change the name of the given files.
  + Your submitted scripts must run on any valid python machine with python>=3.6. See [python - Platform-independent file paths? - Stack Overflow](https://stackoverflow.com/questions/6036129/platform-independent-file-paths)
  + Be aware that no running code won’t be scored at all. Do not ask for any partial points for no running code. Make sure that your code run when typing “python game.py” on the command line before submission. And you won’t be able to ask your TAs to configure your code or script manually when testing your code without any valid reason.
  + If any cheating, copy and paste, or plagiarism is found, you will get a zero. And more penalties might be applied under the university rules.

1. **Questions**

* You can post your questions about this assignment on ICampus (@문의게시판).
* If you have any questions that you don’t want others to know, you can send an email directly to TA, [iggy.ll@kakaocorp.com](mailto:iggy.ll@kakaocorp.com) but not encouraged to do, since what you find difficult might be difficult for others too.