**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 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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자동 생성된 설명

Figure 1. Play capture

1. **How to run**

The game exploits pygame module. Install pygame first.

pip install pygame

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

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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**

You can check the complete version of this game in the hand-in *playvideo.mp4*.

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| **Goal** | **Description** | **Score(100)** |
| **Detecting collision** | This is about how to check 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 circles  Figure 2. No collision  colliding circles  Figure 3. Collision  You implement the collision of two objects (this and other in the parameters) in the collide method.  @*staticmethod*  *def* collide(*this*, *other*, *r*=None):  # Return True when this and other collide. Otherwise, return False  pass  Refer to <https://happycoding.io/tutorials/processing/collision-detection> | 30pts |
| **Handling input events** | You can control the direction of Marisa in the following code.  NOTE: If key left arrow is down, Kirisame turns COUNTERCLOCKWISE; If key right arrow is down, she turns CLOCKWISE  *def* keyEventHandle(*self*, *keyEvents*, *elapsed\_ms*):  update = self.get\_elapsed\_tick(elapsed\_ms)  if update > 0:  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 can adjust to turn Marisa’s direction by calling  self.velocity = angular\_tranform(ANGLE\_UPDATE, self.velocity) | 30pts |
| **Mushroom** | Mushrooms will be able to chase Marisa.    Above, the direction vector from (3,2) to (7,8) is (7-3, 8-2) = (4, 6). Each mushroom moves along this direction to chase Marisa. If the velocity of mushrooms sets to be proportional to the direction vectors calculated as shown, you can make mushrooms chase Marisa.  Hint: Mushroom.location\_update() updates the position of a mushroom with its velocity property. You need to set an appropriate velocity in the following code of game.py**.**  for mushroom in self.mushrooms:  mushroom.velocity = SOMETHING  mushroom.location\_update() | 40pts |
| **(Optional) an additional feature** | 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 it could be interesting. e.g.,  - Some additional effects: you can show flying hearts when eating apples or skulls when touching mushrooms.  - Background music  - Kirisame beam, i.e.,  etc | Up to additional 20% of your score (depending on your implemented feature) |

* **Important notes**
  + You can modify any part of the given code, if you want. (Note that you are not encouraged to modify Util.py.). However, you are not allowed to change the name of the given files.
  + Be aware that no running code won’t be scored at all. Do not ask 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 discovered, you will get zero score. 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 question that you don’t want others to know, you can send email directly to your TA, ita9naiwa@gmail.com.