Algorithm and Programming Report

Final Project: TETRIS using Python

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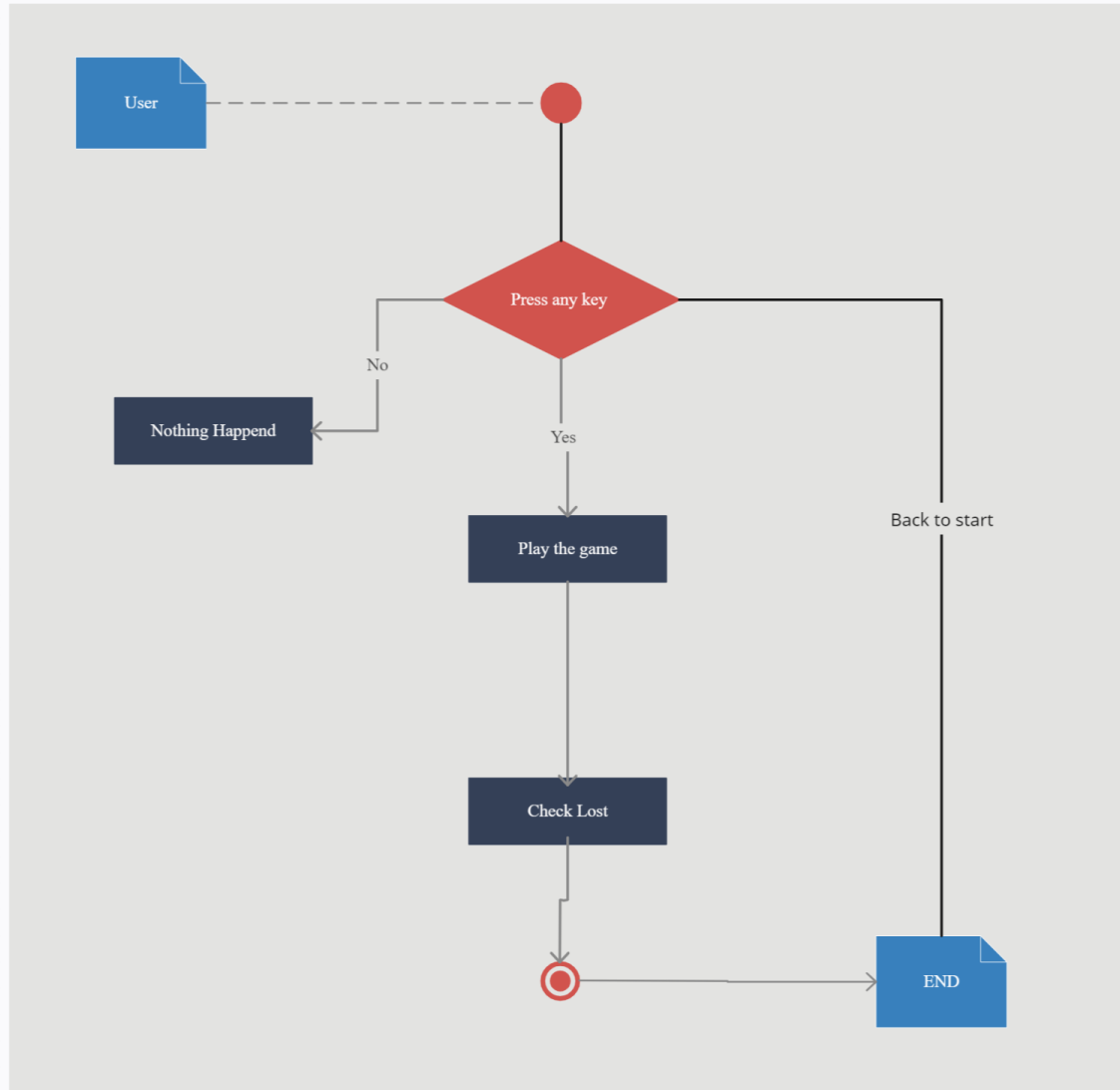**Binus University**
2023

Brief Description

In this project i am making Tetris game using python. My resources comes from pygame, Pygame is a cross-platform set of Python modules designed for writing video games. In pygame they include computer graphics and sound libraries designer to be used only for python language.
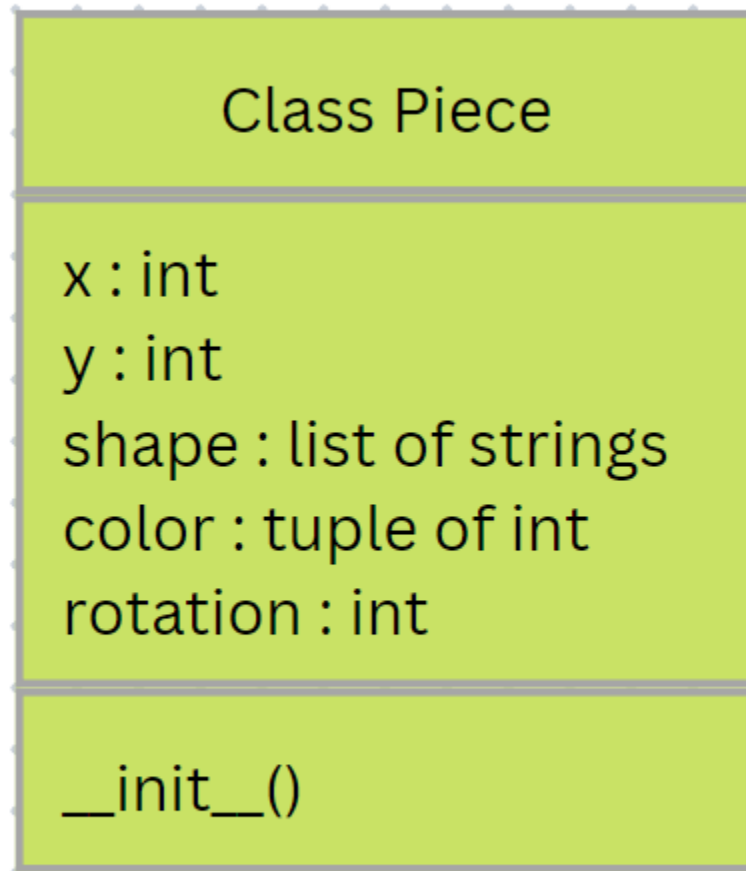
Use case Diagaram
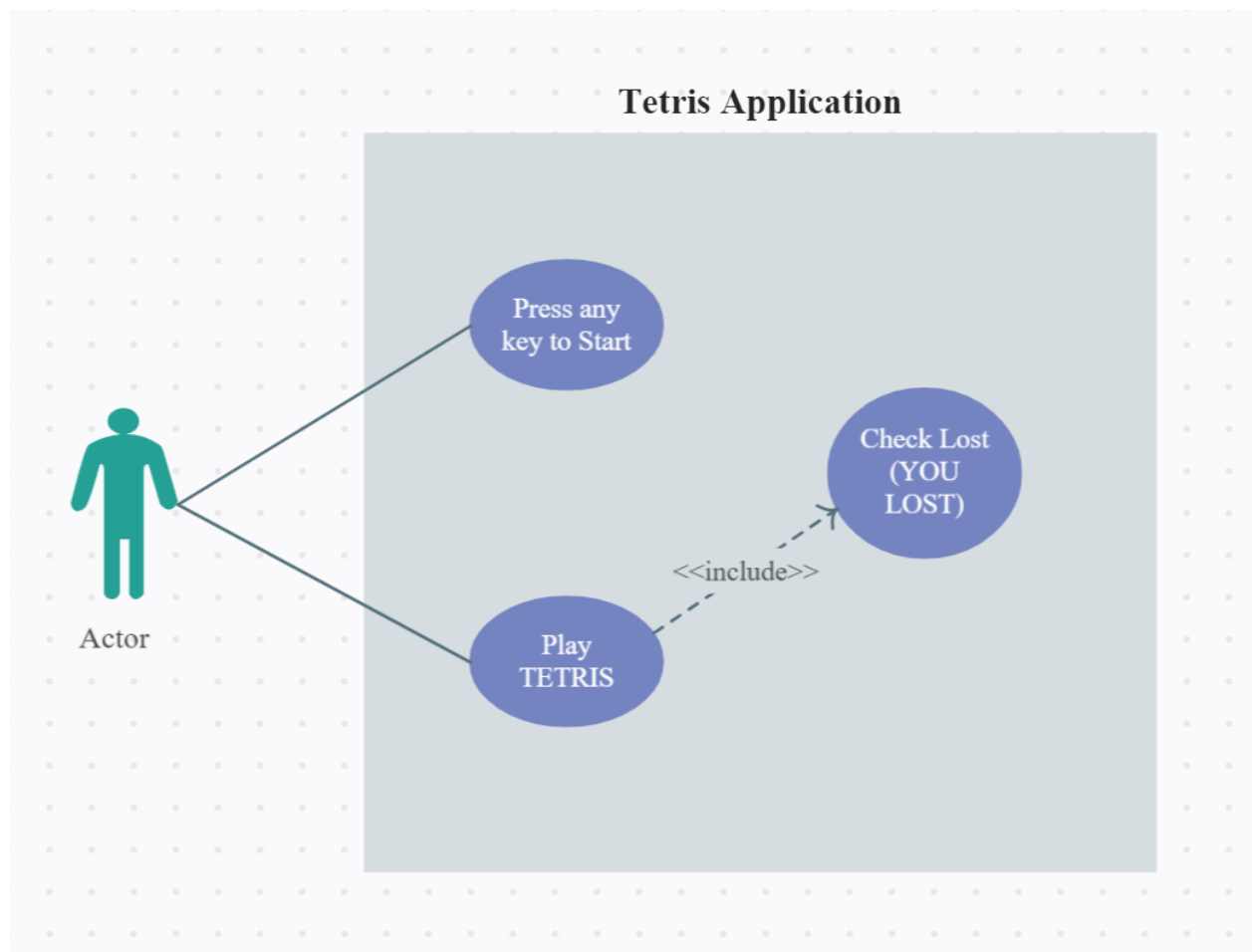
Activity Diagram

Tetris Activity Diagram

Class Diagram

Class Piece
x : int y : int shape : list of strings color : tuple of int rotation : int
__init__()

Essential Algorithms

Functions:
- **create_grid(locked_pos={}): creates the game grid.**
- **convert_shape_format(shape): converts the shape format.**
- **valid_space(shape, grid): check if a space is valid.**
- **check_lost(positions): check if the player has lost.**
- **get_shape(): get the shape.**
- **draw_text_middle(text, size, color, surface): draws text in the middle of the screen.**
- **draw_grid(surface, row, col): draws the game grid.**
- **clear_rows(grid, locked): clears full rows.**
- **draw_next_shape(shape, surface): draws the next shape.**
- **main(): runs the main game loop.**

Modules

The modules used are in the following:

```
1    import pygame
2    import random
```

- **"Pygame" is a free and open-source cross-platform library for the development of multimedia applications like video games using Python.**
- **"Random' is a Python module that defines a series of functions for generating or manipulating random integers.**

Lesson Learn / Reflection

From this project i learn alot of things from pygame. By using this module we can make simple games such as Snake and RPG games. And also implement all the math we learn from class such as matrix. I learn alot in the making of this project that in tetris i learn to use enumerate and used lambda to clear the rows of the tetris board. Then shifted the rows from up to bottom so it creates a clearing effect.

Resources

- https://www.techwithtim.net/tutorials/game-development-with-python/tetris-pygame/tutorial-1/
- https://www.techwithtim.net/tutorials/game-development-with-python/tetris-pygame/tutorial-2/
- https://www.techwithtim.net/tutorials/game-development-with-python/tetris-pygame/tutorial-3/
- https://www.techwithtim.net/tutorials/game-development-with-python/tetris-pygame/tutorial-4/

GitHub Link:

- https://github.com/WHEL154/Algorithm-and-Programming-FP