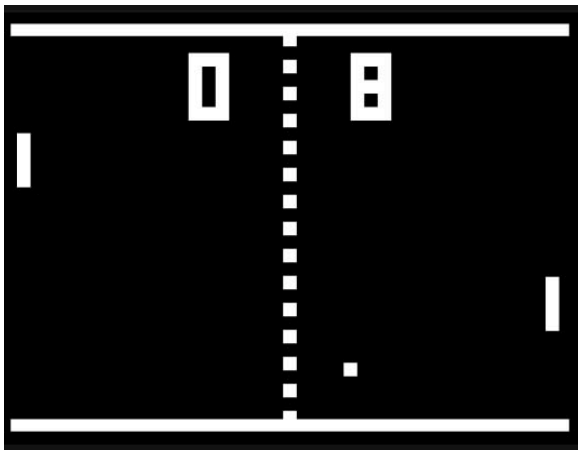
Compulsory Assignment 1

A Single-player Ping Game



This assignment is about one of the first computer games ever built: Pong. If you don't know Pong, the classic version looks like the image shown. Two players control a paddle each to bounce a ball back and forth. If you miss a ball, the other player gets a point.
The version of the game you must develop in this assignment uses the same idea, but look slightly different; the paddle will be at the bottom (moving sideways) and the ball will move around.

There is a *Greenfoot* scenario on Moddle named *Ping*. The scenario does not implement a game, but implements movement and bouncing of a ball together with a moving paddle. You may use this scenario as the starting point of your compulsory assignment.

The mandatory Tasks

The following MUST be completed in your solution:

1. Construct a single-player game, with the paddle at the floor and the ball will bounce off the ceiling and walls. The "left" and "right" keys should operate the paddle.
2. Add a self-moving paddle, which enters the world at a random position. The self-moving paddle moves horizontally. When the paddle moves out of a wall, a new paddle should show up at a random height on the other wall. Make sure the self-moving paddle is not created too near the gamers paddle.
3. When the ball hits a self-moving paddle from below it will bounce off the paddle. If the ball hits the self-moving paddle from above the ball will go right through the paddle.
4. Change the images of the game so it looks more nicely such as new images for the ball and the paddles.
5. Put sounds to the game for ball hitting the paddle, ceiling, walls, and the floor (game over).

6. Each time the ball has been hit by the paddle 10 times, the speed of the ball is increased slightly.
7. Include a text field with the text "Game Level: 1" in the upper right corner of the game. Each time the speed is increased, the game level is increased too. Make sure the ball can pass in front of the text.

Optional Tasks (not prioritized)

a) Use an opening screen with an image and maybe some instructions. Get the screen to be shown a certain amount of time, or until the player hits the "enter"-key.
b) Display a game-over image and play a sound when the game is over. Get the screen to be shown a certain amount of time, or until the player hits the "enter"-key, and then restart the game.
c) Add different sizes of self-moving paddles.
d) Include the second computer controlled paddle at the ceiling. Each time the player-controlled paddle is returning the ball, the computer controlled paddle should start moving towards the point of contact. When the computer-controlled paddle hits the ball, the paddle stays in position awaiting the returning ball from the player controlled paddle.
e) Include two score fields instead counting the number of games won by the player and the computer (see the image of the original game).
f) Make the computer controlled paddle better working. Let it seek back towards the middle position after it has returned a ball. If the player returns the ball before the middle point has been reach, the paddle is off course moving towards the point of ball contact.
g) And whatever crosses your mind to make the game more fun…

You must hand-in in groups of two or three students

NOT LATER THAN FRIDAY 15/9 at 14:00

The report must be written using a report template in PDF format. The report must describe the following:

1. The functionality of the game. Here you can refer to the mandatory and optional requirements listed above.
2. A UML class diagram showing the important classes of your program and how they are related.
3. Implementation details. Here you can describe special solutions in your game. It might be how to do fancy animation, advanced computations, etc.

When writing the report, you should write it to a fellow student who should continue working with the game. So, add any information that will make it easier to dig into the code. The report should be 5-10 pages.

Enjoy ☺