SIMULATION & PHYSICS – PRACTICAL 1

Write a report (pdf or word) in which you **explain** your solution to the assignments below.
For each assignment:

1. repeat the assignment you are implementing;
2. explain your approach;
3. describe your code;
4. show (relevant) code snippets;
5. include a screenshot of your program.

Once your report is finished, make sure your name and student number is on the title page, and upload it to the corresponding Assignment in your **VLO group** before May 14th, 23:00.

Assignments are graded with a V (sufficient) or O (insufficient).
You can work in pairs, but you each have to write your own explanations!
(Code snippets and screenshots may be identical.)

Download the source solution for "Bouncing" from the VLO. Make sure that the program runs, and you understand the code before you start implementing the assignments below.

Assignment 1: Drawing balls

Initialize three balls (`PlayingState`) and display them on the screen:

- A red ball halfway up on the left side of the screen;
- A pink ball in the lower left corner;
- A purple ball at the top of the screen in the center.

Assignment 2: Movement

Make:

- the red ball move horizontally from left to right;
- the pink ball move diagonally from lower left corner to upper right corner;
- the purple ball move vertically down from the top of the screen to the bottom.

Assignment 3: Bouncing

Make the three balls bounce against the screen boundaries.

Assignment 4: Gravity, Acceleration, Friction

Change (add) code so:

- The red ball starts with velocity `Vector2.Zero` and accelerates to the right and bounces on the side of the screen;
- The pink ball starts moving diagonally from lower left corner to upper right corner but because of gravity its path will be parabolic (it keeps bouncing indefinitely);
- The purple ball falls down vertically using gravity, bounces at the bottom but by use of friction it slows down and bounces less and less until it rests at the bottom.