## Homework 1. Immortal Flappy Bird

### Preparation

* Download the Flappy Bird game
* Install the ncurses library to compile it

$ sudo apt install ncurses\*

### Objectives

* You will make a Pin tool that can make the Flappy Bird immortal. There are two 'game over' conditions:
  1. The Flappy Bird hits the pipe
  2. The Flappy Bird hits the ground
* Basically, you will (1) find how the two conditions are detected and handled in the program and (2) modify the program execution so that the two conditions do not meet.
  1. There are multiple ways to achieve this.
     1. **DATA** Modify **values** of registers/memory in instructions.
     2. **CODE** Ignore/skip **instructions**/**functions**.
        + Pin supports APIs controlling function calls/returns without you going through the instructions.

### What to submit?

**(1)** your pin tool's **source code** (e.g., code everything in the icount.cpp, and upload it).  
**(2)** a **1-page description** as a **pdf** file (including how you locate the memory/variable and which code is added in the pin tool to modify values/code and so on).