TAIPEI TECH 國立臺北科技大學 National Taipei University of Technology

Department of Computer Science and Information Engineering

Object Oriented Programming Labs

Introduction to Game Framework

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F 09:10 - 12:00

Unified Modeling Language (UML) Notation

- Association X ⟶ Y (knows a)
- Dependency X - - -> Y (uses a)
- Composition X ◆⟶ Y (has a)
- Aggregation X ◇⟶ Y (has a)
- Inheritance 

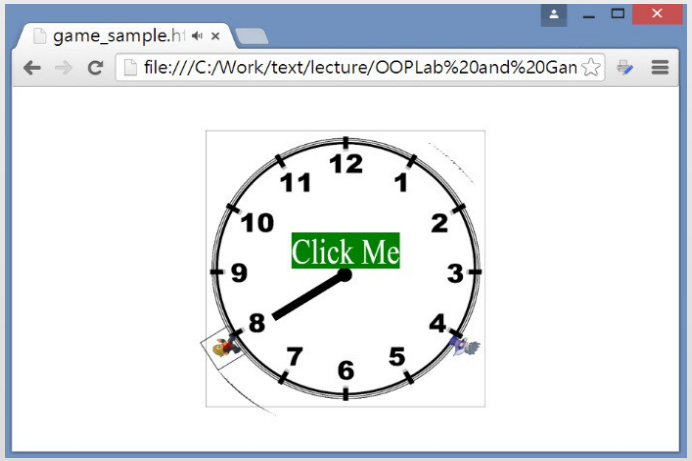
(is a)
- Class template 

Three options

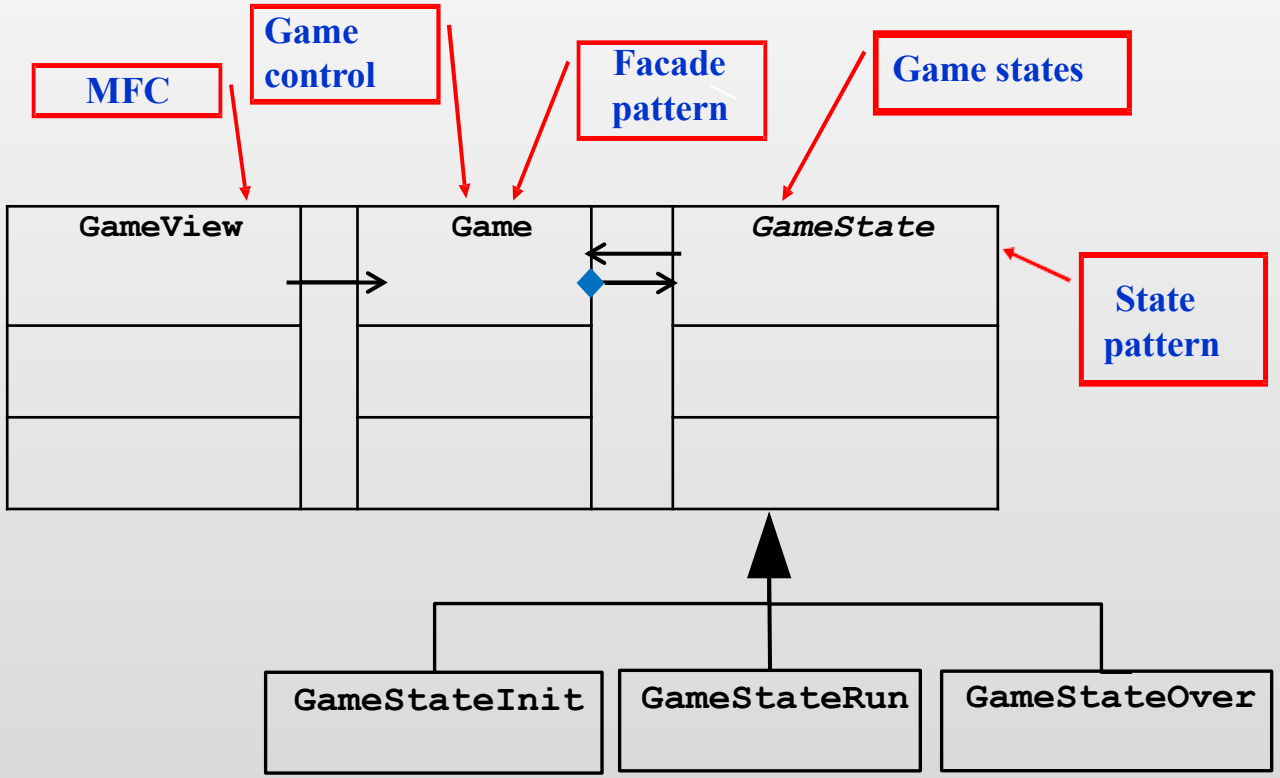
Windows

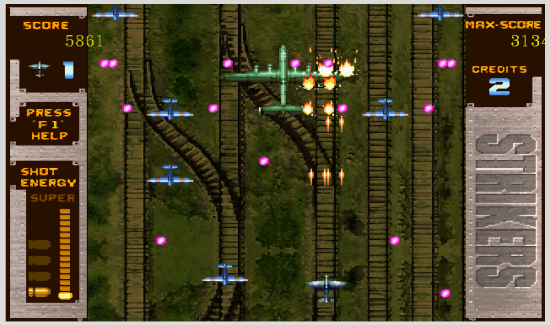
Android

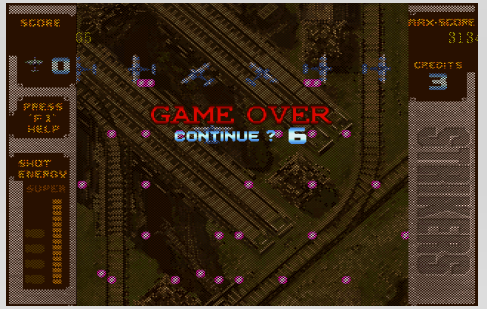
HTML5



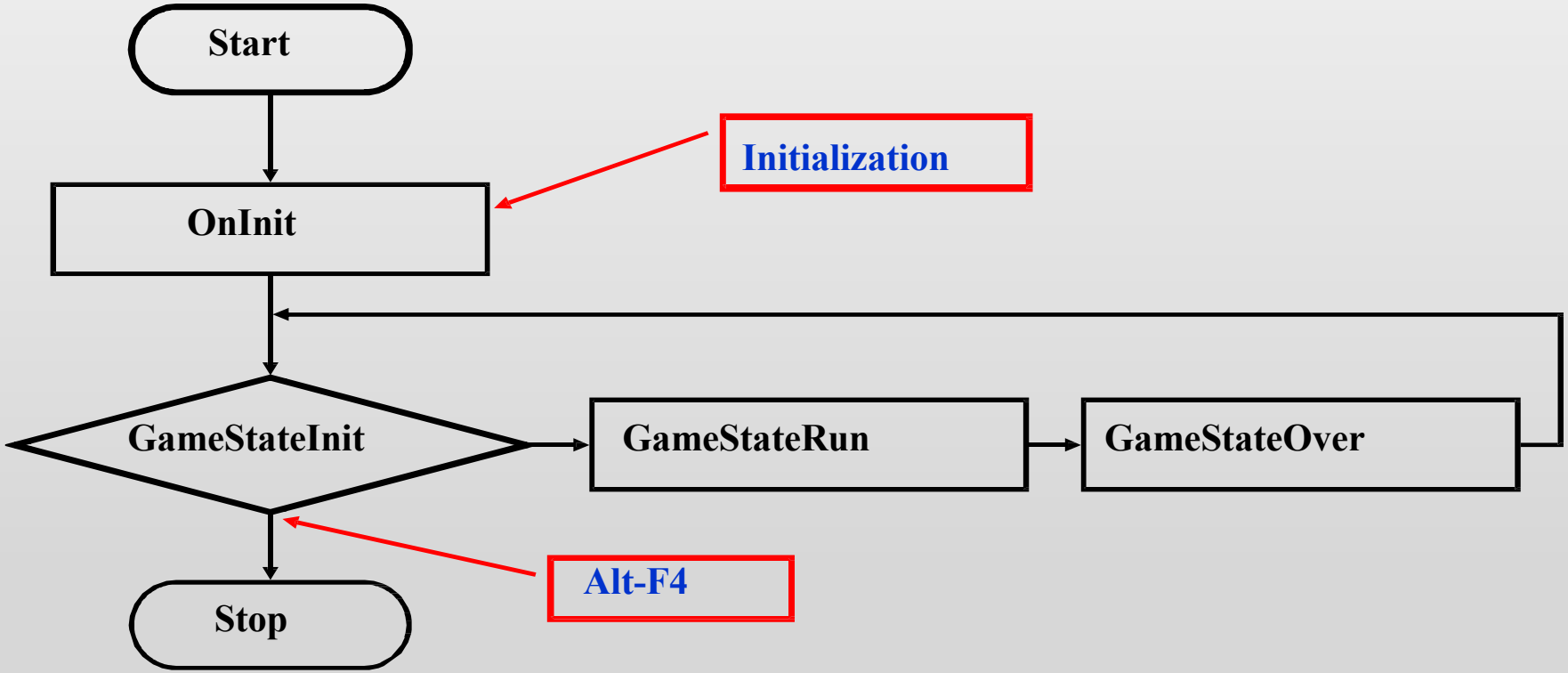
Game Framework : Game control



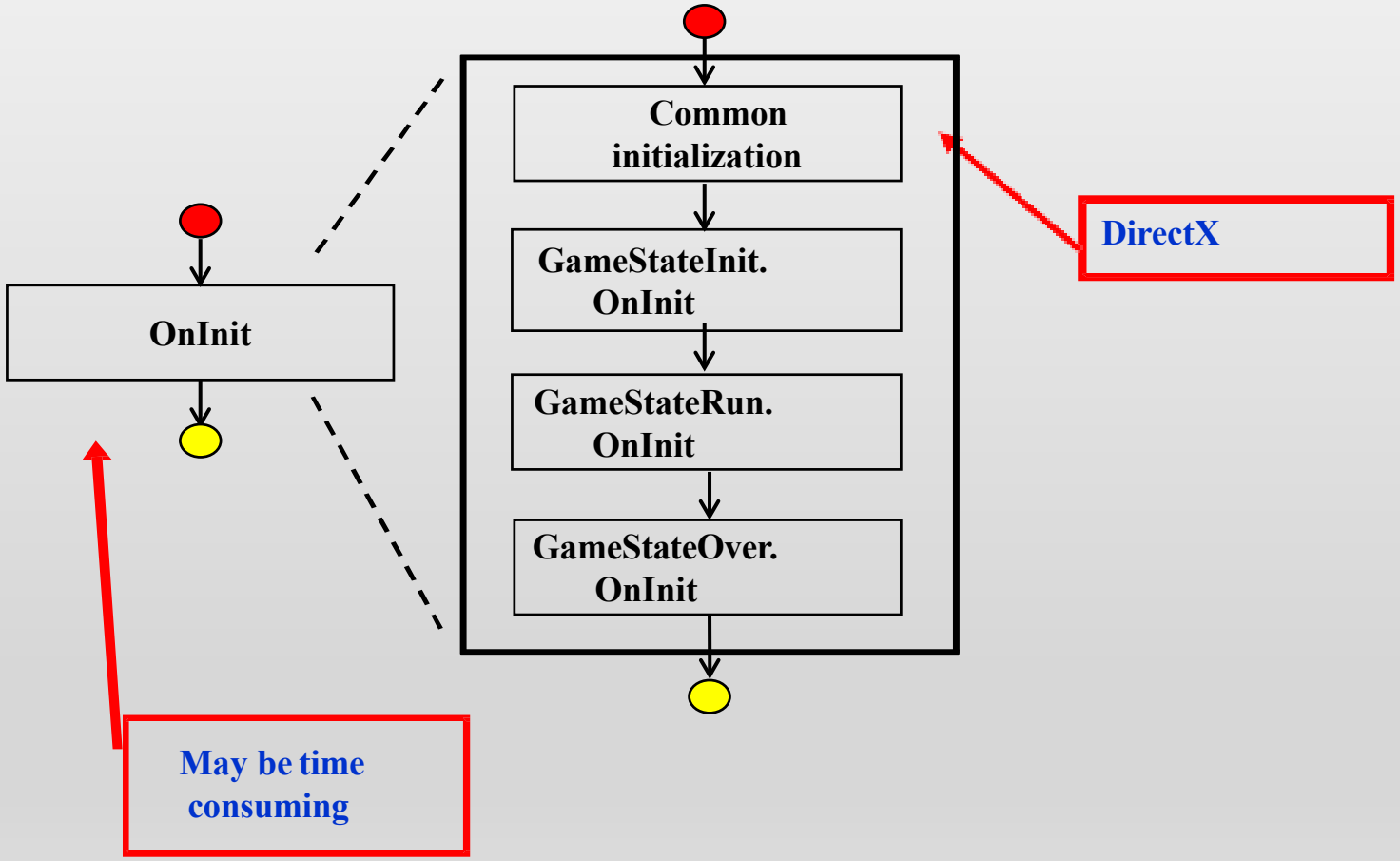




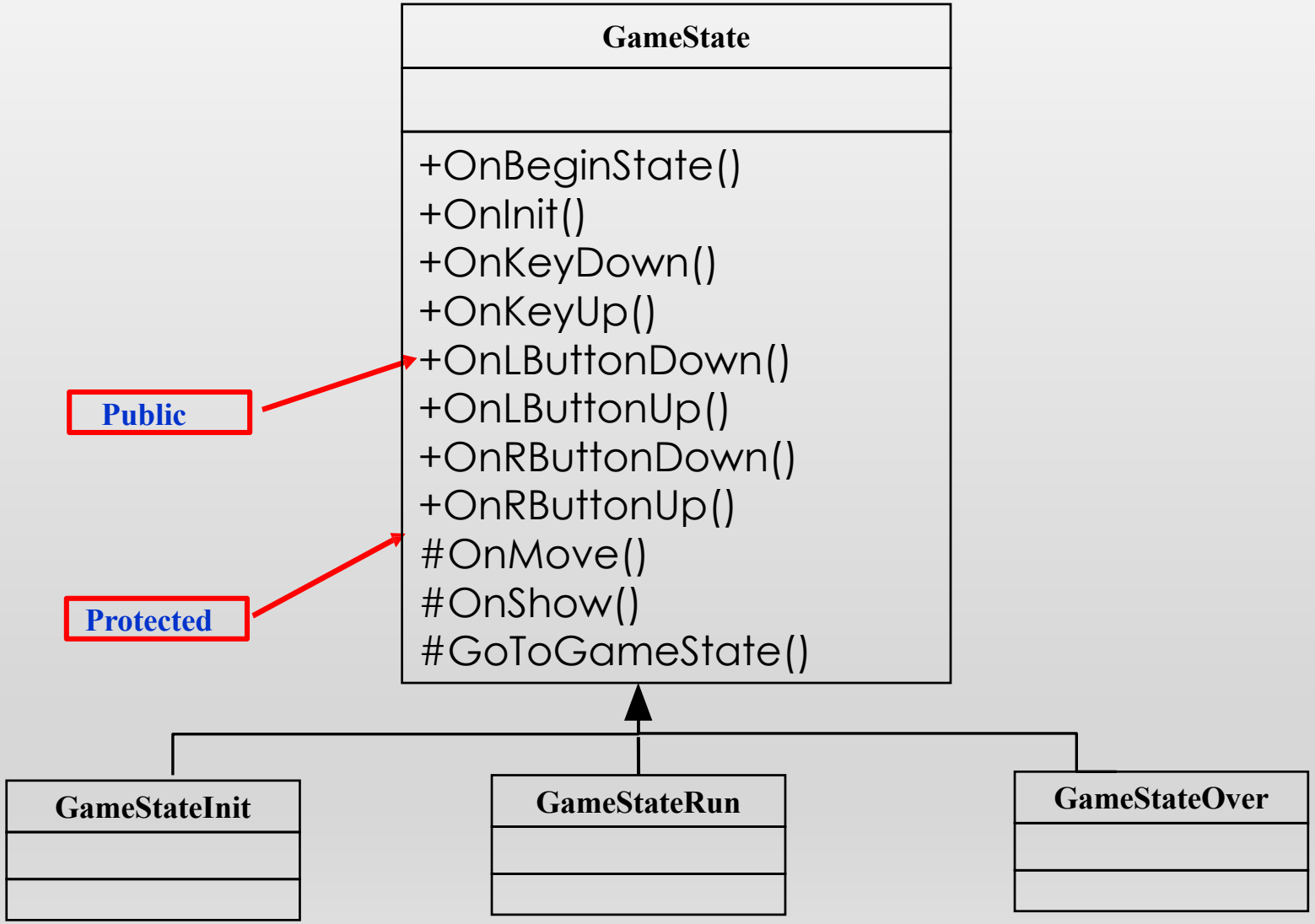
Game Framework : Program Flow



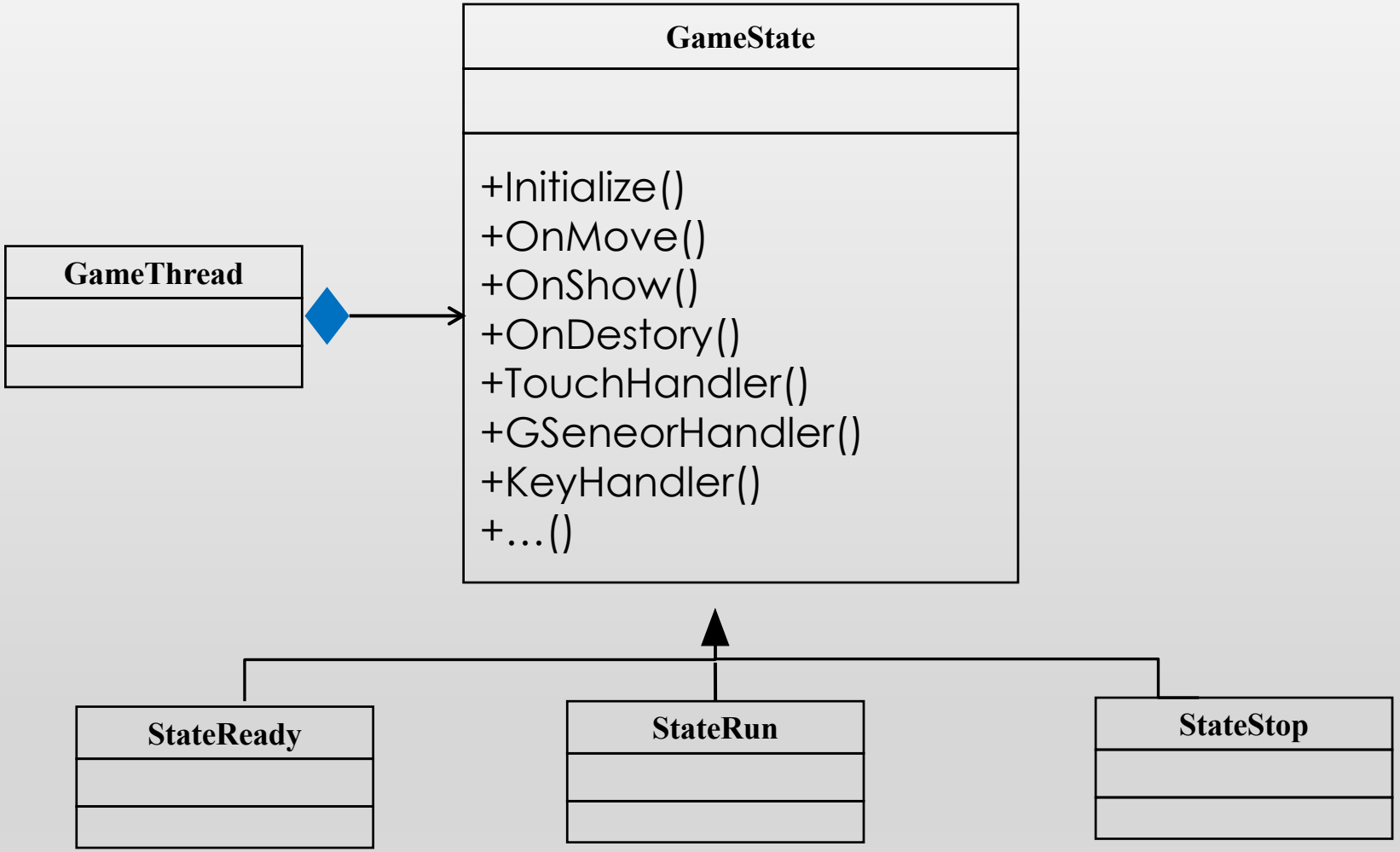
Game Framework : Initialization



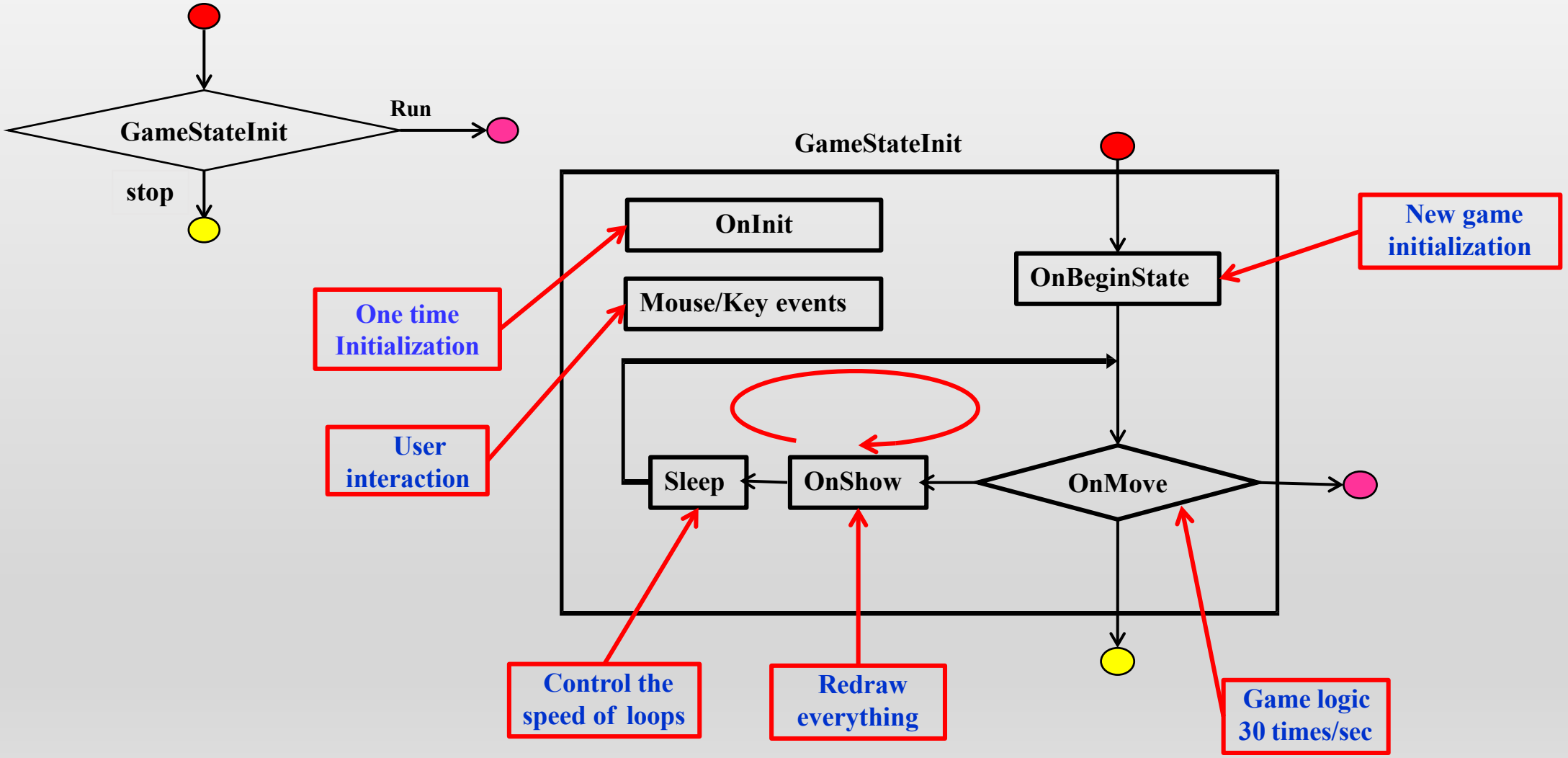
Game Framework : GameState



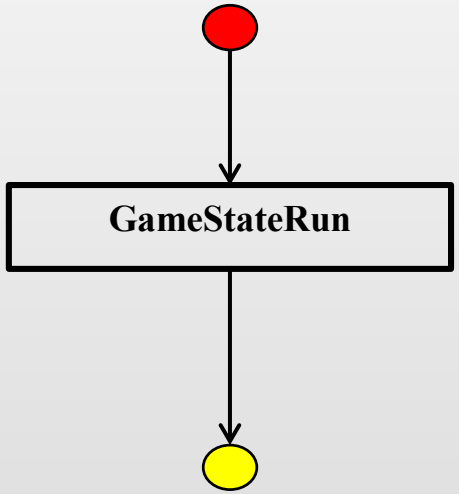
Android Game Framework : GameState

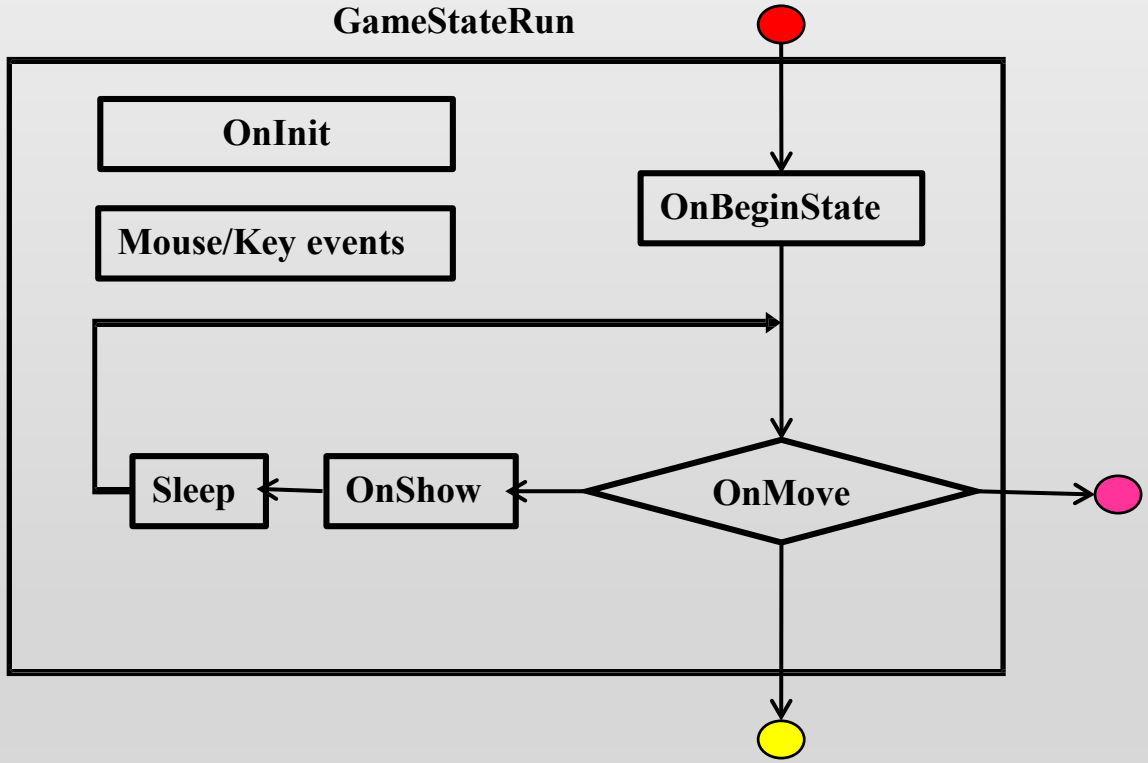


Game Framework : GameStateInit

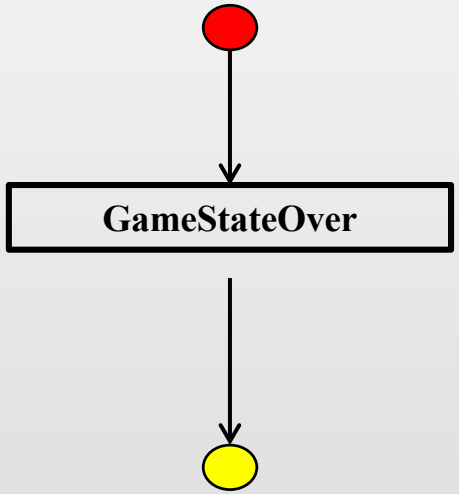


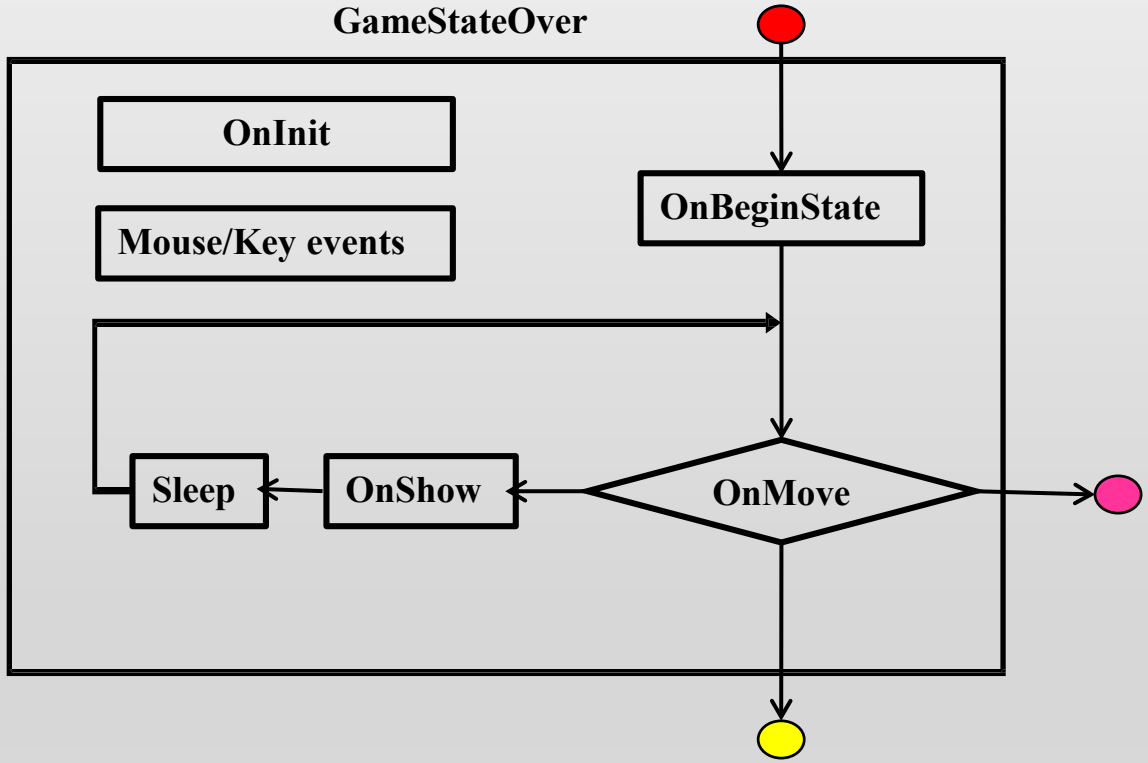
Game Framework : GameStateRun



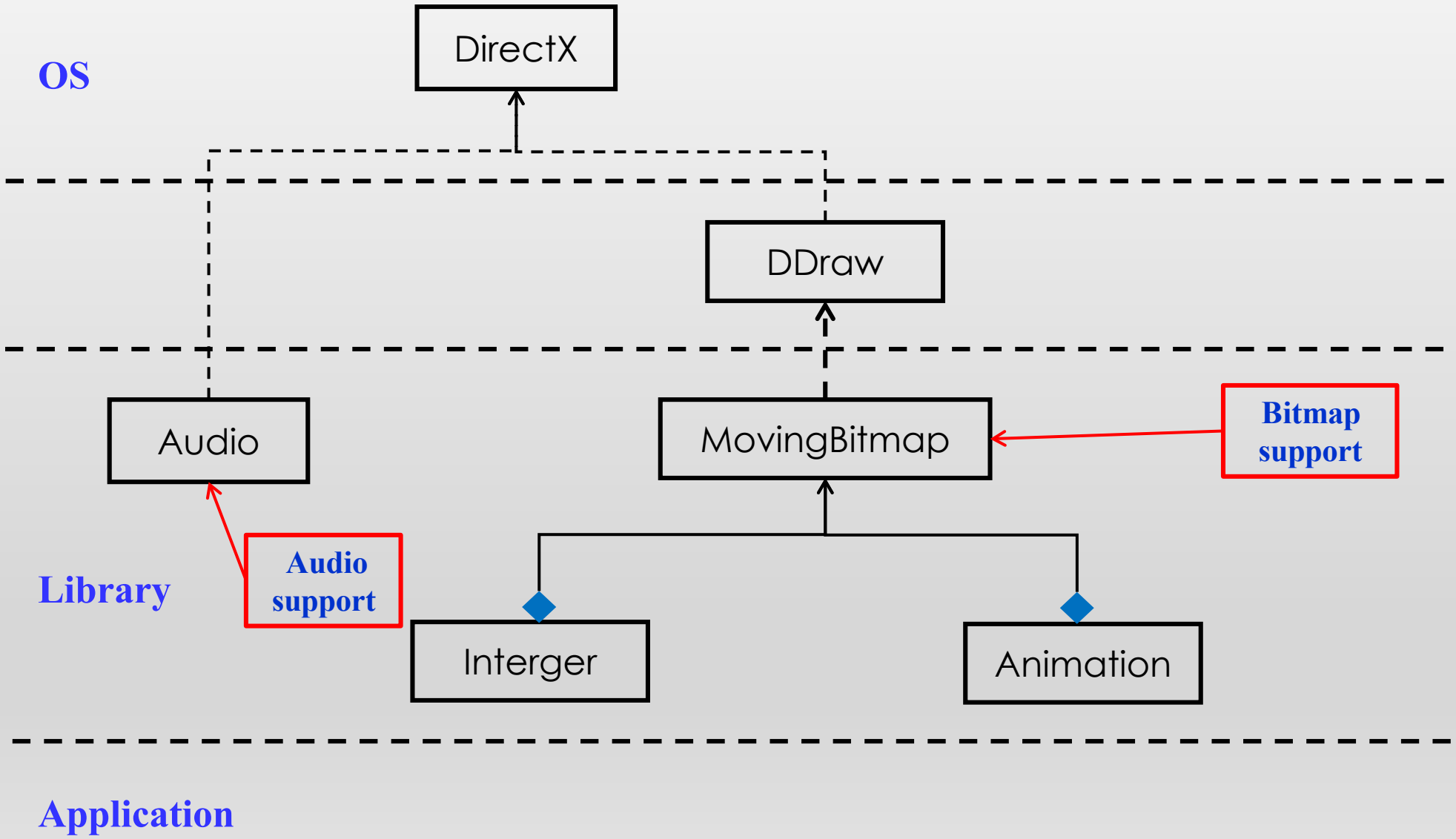


Game Framework : GameStateOver





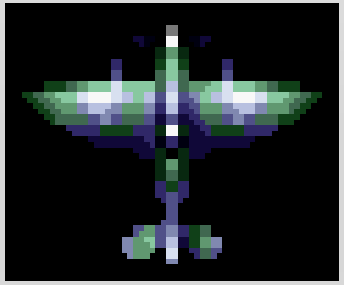
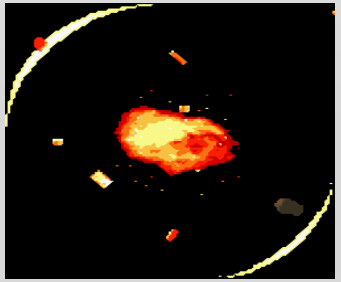
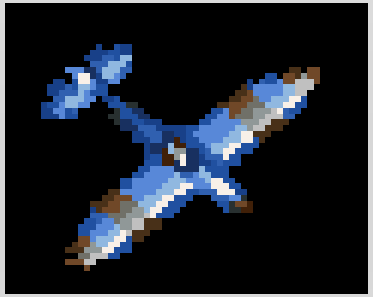
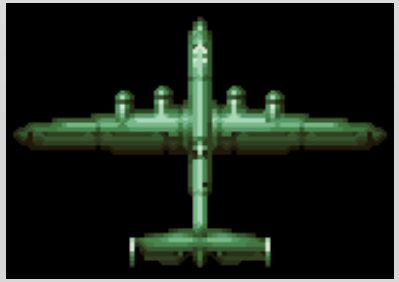
Game Framework : Bitmap and Audio



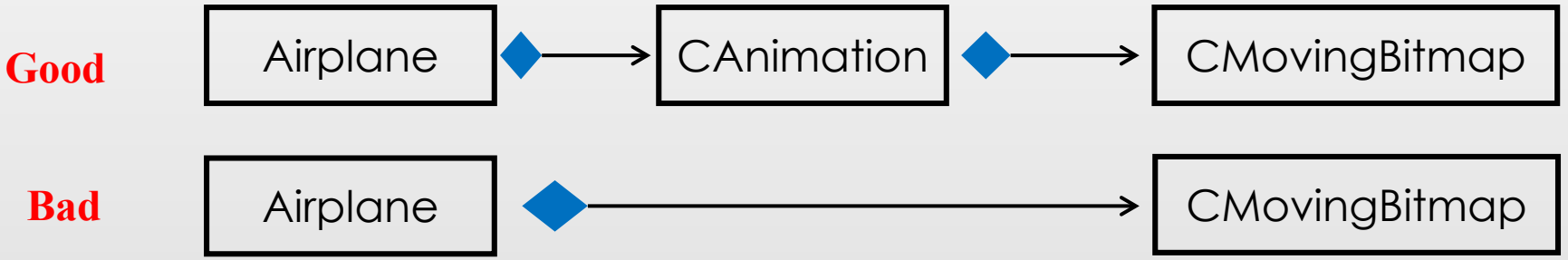
Game Framework : Bitmap and Audio

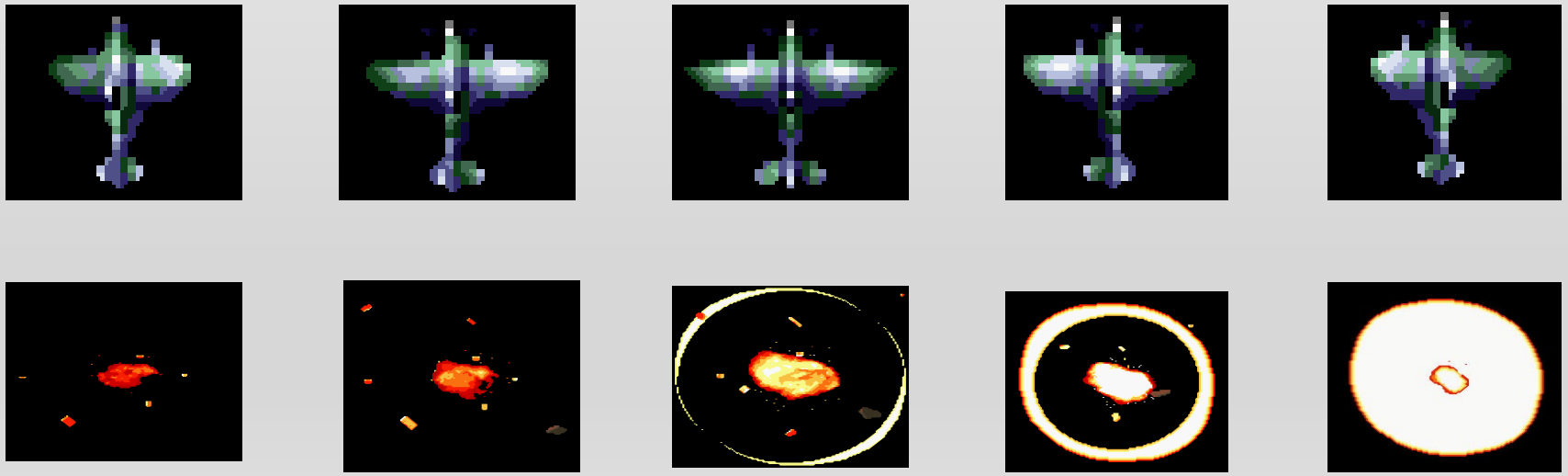
CMovingBitmap
+LoadBitmap() +SetTopLeft() +ShowBitmap() +…()

CAudio
+Instance()
+Load() +Play() +Pause() +Resume() +Stop()

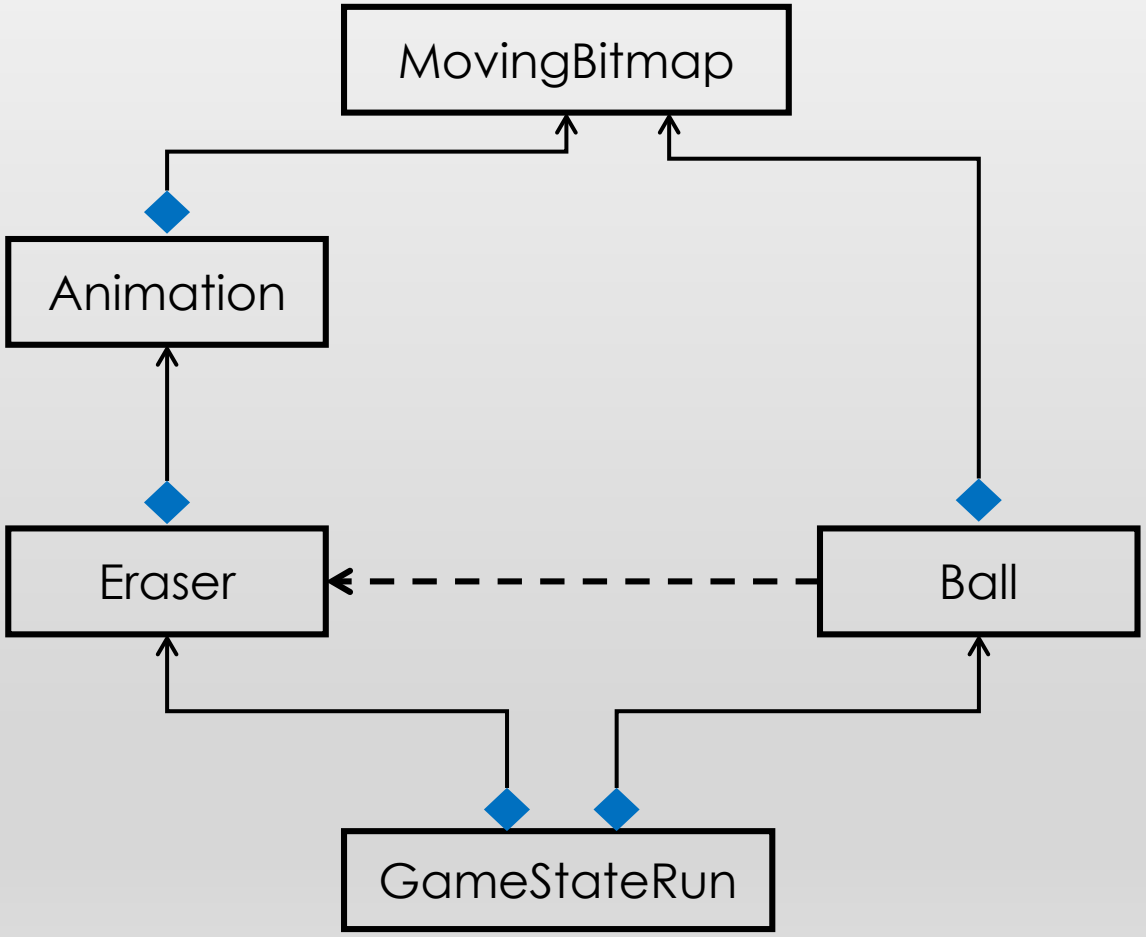





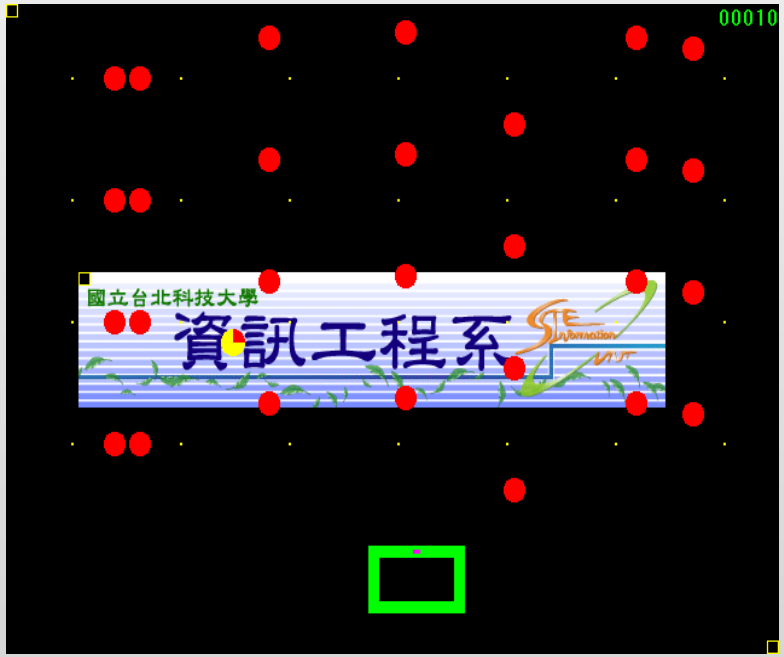
Game Framework : Animation



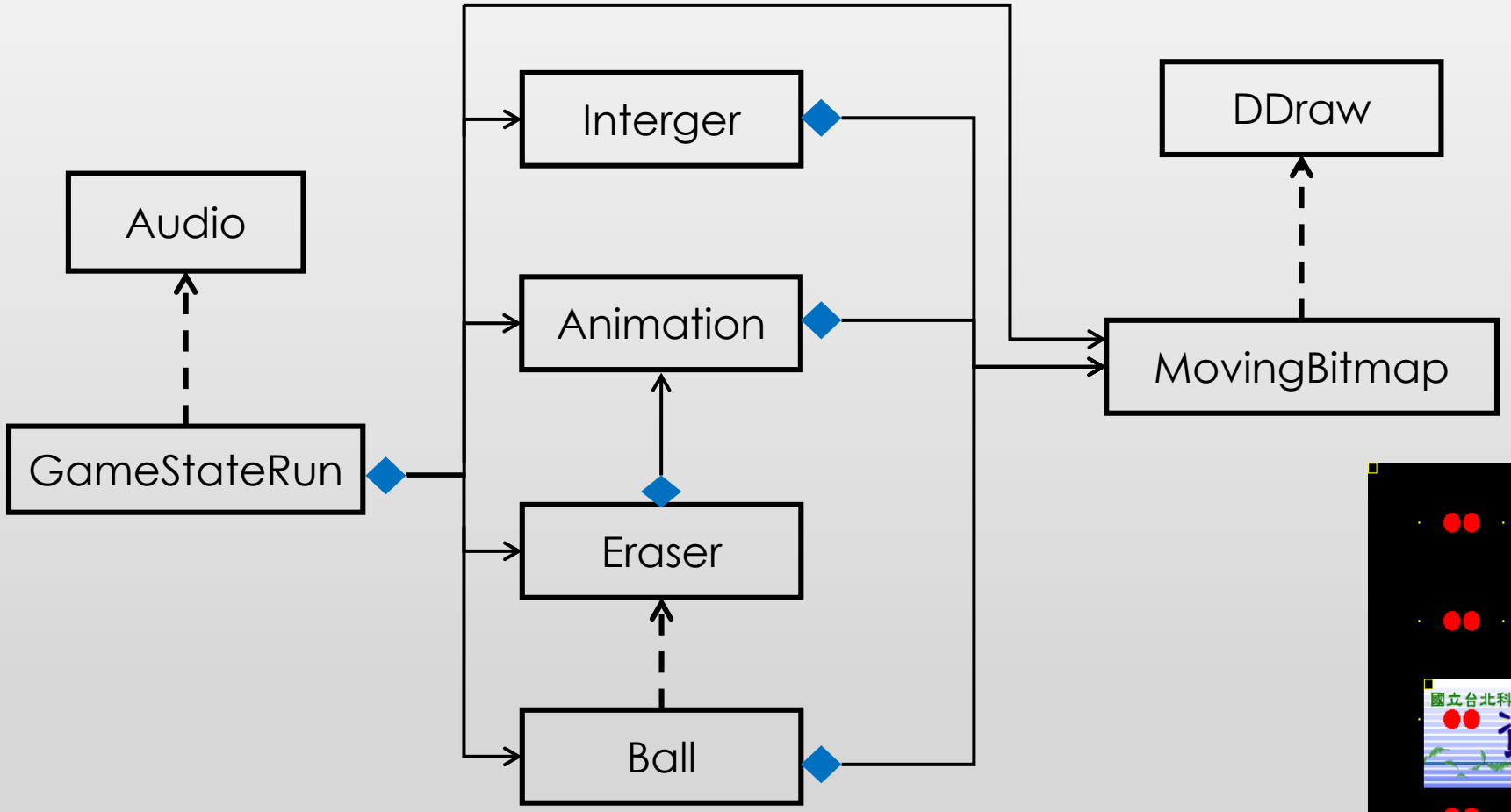


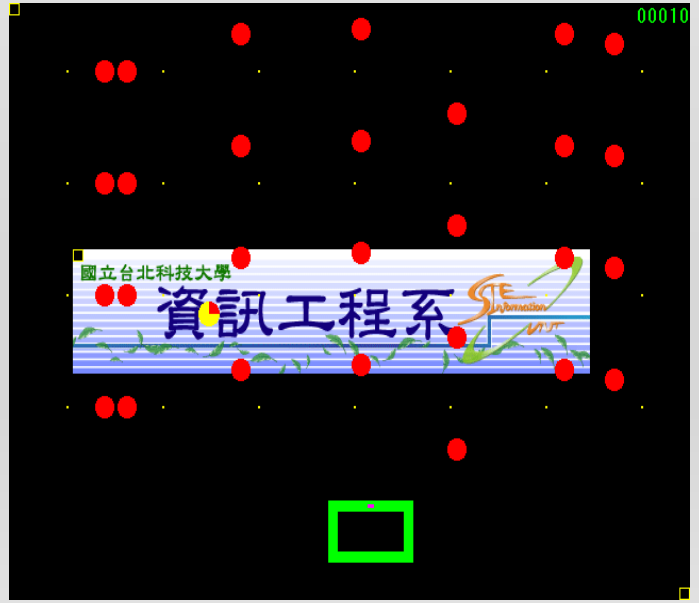
Game Framework : Sample program (1/2)





Game Framework : Sample program (2/2)





Game Framework : Options (gamelib.h)

- **Screen resolution and control**

OPEN_AS_FULLSCREEN	Default : false
SIZE_X	Default : 640
SIZE_Y	Default : 480
DEFAULT_BG_COLOR	Default : RGB(0,0,0)

- **Game control**

SHOW_LOAD_PROGRESS	Default : true
ENABLE_GAME_PAUSE	Default : true
GAME_CYCLE_TIME	Default : 33 (ms)

- **Audio**

AUDIO_ENABLE	Default : true

Game Framework : Tutorials

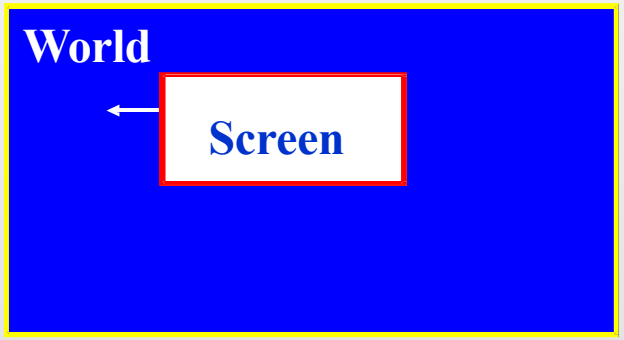
- Tutorial 1 (Prepare a Bitmap)
  - 1A: Create a bitmap Resource by using copy and paste
  - 1B: Import a bitmap Resource from a bmp file
  - 1C: Use a bitmap file (bmp file) directly
- Tutorial 2 (Display a Bitmap)
  - 2A: Display the bitmap created by 1A or 1B
  - 2B: Display the bitmap prepare by 1C
  - 2C: Display a bitmap with a transparent color
- Tutorial 3
  - Move the Bitmap

Game Framework : Tutorials

- Tutorial 4
  - Wrap the codes of tutorial 2 and 3 into a class
- Tutorial 5
  - Create a Map class that use an 2D array to represent the map of a game
- Deployment
  - Create a setup file for installation

Game Framework : Documents

- Introduction to game map and coordinate systems



- Teamwork
  - Overview
  - Checkout code from Subversion server
  - Commit code to Subversion server
  - Resolving Conflict

How to choose your game

- **Find a game and ask TA and/or instructors**
  - Show your game to TA and/or instructors

- **Windows: the following games are not recommended**

  飛行射擊遊戲、炸彈超人、雪人兄弟
  超級瑪莉、坦克大戰、泡泡龍
  打磚塊、守塔、2D絕對武力CS(小小CS)

Important Reminders

- Mimic a game, not creating a new game
- Programming first, art-work last
  - Minimize art-work as much as possible
- Read “遊戲地圖與座標系統概論” (if necessary)
- Programming
  - Keep your code clean
  - If you have a question related to design, ask the TA or instructor
- Teamwork
  - Split programming and art-work evenly
  - Try pair programming
  - Use SVN

Important Reminders

- **Keep bitmap size small**
  - Keep the size of any bitmaps less then twice the size of the screen resolution

  (e.g., for 640x480 resolution, a bitmap should not be larger than 1280x960)
- **Time log**
  - Self-management
- **Debug**
  - Learn to use a debugger
- **Let TA know when the followings are done**
  - One of the followings
    - Windows tutorial #7
    - Android tutotrail #6
    - HTML tutorial #5
  - Teamwork Copy-Modify-Merge

Important Reminders

- When you leave the computer room
  - If you use your own NB, please make sure you did not unplug anything – the computer should work as is
  - Turn off both computer and monitor