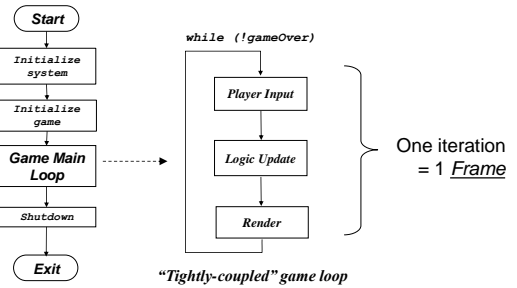


01 - Game Engines

Basic Game Structure



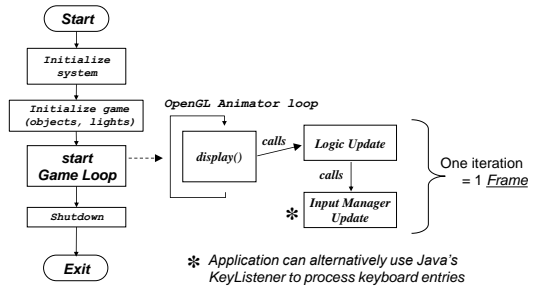
2

Basic Game Structure

- The **frame rate** is how often the screen is re-drawn
 - faster frame rate = smoother rendering and play
 - faster frame rate requires more processing power
 - frame rate can be "fixed" or "variable"
- The **game loop** manages the real-time game processes
 - input* – user pressing a key or moving a joystick
 - update* – game world is updated (objects moved, score updated, etc.)
 - render* – game world (graphics) is rendered on the screen
 - They each have their own timing issues, depending on the game
- A simple type of game loop is called "*tightly-coupled*"
 - input, update, and render are all processed each frame
 - every process is "coupled" to the frame rate
 - the TAGE game loop is tightly-coupled (mostly)
- There are many other game loop organizations
 - we will learn some others later in the semester

3

TAGE Variable Frame Rate (tightly-coupled) Game Loop

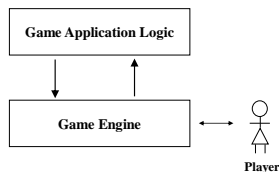


4

Game ENGINE

A reusable collection of modules

- Independent of any particular Game Logic
- Encapsulates platform dependencies
- Possible because all games have things in common



5

Typical Game Engine Functions

- Simulation of elapsed time
- Scene Management
 - Objects, geometry details
- Rendering
- Collision Detection/Handling
 - Physics simulation
- Lights, Shadows, Textures
- View (camera) control
- Input handling
- Sound generation
- Network communication
- Special effects
 - Explosions, fire, ...

6

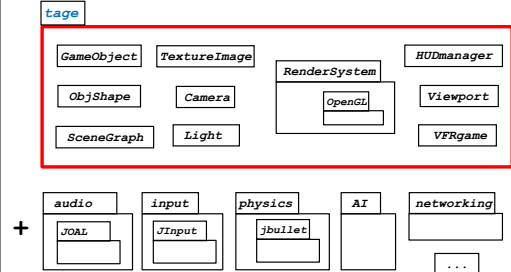
Some Game Engines

- o Unity
- o Unreal
- o Godot
- o CryEngine
- o Blender
- o Panda 3D
- o GameMaker
- o jMonkey
- o OGRE
- o Quake
- o Lumberyard (Amazon)
- o Torque 3D
- o Hero Engine

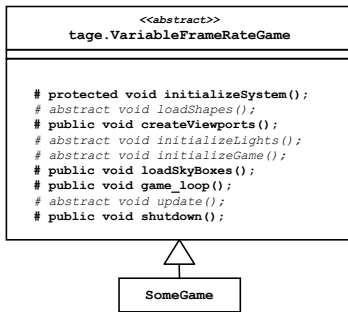
For an expanded list see:
http://en.wikipedia.org/wiki/List_of_game_engines

TAGE: "Tiny -- Game Engine" or: "Another Tiny Game Engine"

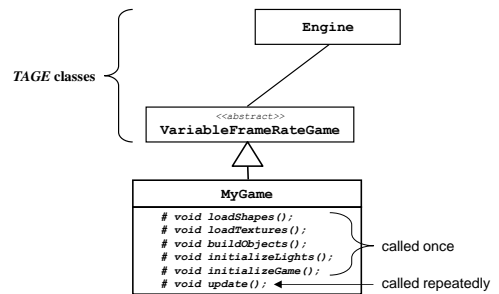
A collection of Java packages



Abstracting Game Structure



Creating A Simple Game



Note –
there is another game engine called "TAGE".
looks like a personal project...
by MagnusRunesson
(he worked on Angry Birds)

"Tiny Arcade Game Engine"