Game Programming

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Introduction

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☐ Web:
   ■ http://graphics.im.ntu.edu.tw/~robin/courses/game07/
   ■ all the materials / info. are announced ASAP
Introduction

- **Mailing list:**
  - game@cmlab.csie.ntu.edu.tw
  - via https://cmlmail.csie.ntu.edu.tw/mailman/listinfo/game/

- **Forum:**

- **TAs:** 翁明昉 & 李昆霖 & 施亮宇 & 戴士強
  - E-mail: mfueng@cmlab.csie.ntu.edu.tw
  - E-mail: holyo@cmlab.csie.ntu.edu.tw
  - E-mail: xdd@cmlab.csie.ntue.du.tw
  - E-mail: jeffrey@cmlab.csie.ntue.du.tw

- **LAB:** 資訊系館501室 & 管院教研館 305/307 室
Reference

A. Watt and F. Policarpo.  
Reference

Reference

Reference

Pre-requirements

☐ C/C++
☐ Data Structure
☐ Algorithm
☐ Graphics

■ better to have
Requirements

- Participants
- Home Work
  - Take Home (one week)
- Program Assignments
  - will be closely coupled with term project
- Term Project
Term Project

- There are four assignments which are closely coupled with this term project.
- Two ~ four students are in a team.
- Use TheFly3D 3D engine to code a real-time 3D FPS game.
- We will provide graphics materials and setup the game design.

- If you want to do alone or want to use your own materials or game engine, please come to discuss with us.
  - Before the discussion, please prepare your idea, game (art) designs, and the scope of the game.
Syllabus

- 9/17  Introduction & Rendering Pipeline
- 9/24  HOLIDAY
- 10/1  Game Mathematics
- 10/8  Game Geometry
- 10/15 Lighting & Texturing
- 10/22 Game System Analysis & Main Loop
- 10/29 3D Game Engine Training (1)
- 11/5 3D Game Engine Training (2)

Homework due
Syllabus

- 11/12 Character Motion
- Program Assignment #1 due
- 11/19 Terrain and Game Control System
- Program Assignment #2 due
- 11/26 Game AI (1)
- 12/3 Game AI (2)
- Program Assignment #3 due
- 12/10 Scene Management System
- 12/17 Game FX (1)
Syllabus

- 12/24 Game FX (2)
- Program Assignment #4 due
- 12/31 HOLIDAY?
- 1/7 Game Physics
- 1/14 or 1/21 Term Project Demo
Game Platform

- **PC**
  - Single player
  - Match Makings
  - MMOG (Massive Multi-player Online Game)
  - Web-based Games

- **Console**
  - Sony PS2 / PS3
  - Microsoft Xbox / Xbox 360
  - Nintendo GameCube / Wii

- **Arcade**
  - Coin up

- **Mobile**
  - Nintendo GBA
  - Nintendo DS
  - Sony PSP
  - Hand-held
Game Development on PC

- PC is designed for general office application.
- Not for entertainment purpose
- A virtual memory system
  - Unlimited system memory
- But video memory is limited.
  - For frame buffers, z buffers, textures, vertices, ...
- PCI / AGP might be a problem for performance.
- Open architecture
  - Hardware driver version issue
  - Different capabilities
  - Different performance
- Compatibility test is very important.
- Patches
  - Game shipping in CD/DVD Rom
  - Installed on hard disk
Game Development on PC

- **Input devices**
  - Mouse
  - Keyboard
    - Hotkeys
    - Typing
  - Mouse + keyboard

- **Network**
  - PC with networking is common.
  - Match-makings using game lobby
  - MMOG

- **Development is easy to setup.**
  - Visual C/C++ with DirectX
Game Types

- RPG (Role playing games)
- AVG (Adventure games)
- RTS (Real-time strategy games)
- FPS (First-person shooting games)
- Sports
- Action
- Puzzle games
- Table games
- MMORPG
  - Massive Multiple Player Online Role Playing Games
Game Team Members

- 開發團隊
  - 製作人
  - 執行製作人
  - 企劃團隊
  - 程式團隊
  - 美術團隊
- 行銷業務團隊
  - 產品經理 (PM)
- 測試團隊
- 遊戲審議委員會
  - Game project approval
- 遊戲經營團隊
  - 線上遊戲 game master (GM)
  - Customer services
  - MIS