PA199 Game Engine Develpoment 1: Introduction, Organization Notes

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Goal of the Course

Deepen knowledge and experience with game development:

- Advanced theory at lectures
- More "low level" approach to game programming
    - Individual term project

Organization

- Lectures – gamedev theory – engines, math, **physics**, etc.
- Seminars – consulations for projects

- Participation:
  - lectures – not mandatory, recorded
  - seminars – mandatory, allowed up to two unexcused absences

- Grading:

  - E: Pass the oral exam and implement base requirements for the project

  - A-D: Based on earned points:

    - Milestone: 0-1, Exam: 0-2, Project: 0-5

    - A: 4, B: 3, C: 2, D: 1

Lectures Topics

- Today
  - Organization, project intro (jch)
  - Templates metaprogramming (MT)
- Game Engine Architectures (jch)
- Rotations and quaternions (MT)
- Particle system dynamics (MT)
- Solving differential equations (MT)
- Unconstrained motion of rigid body (MT)
- Constrained motion of rigid body(MT)
- Forward and inverse kinematics (MT)
- Fluid simulation (MT)
- Virtual environments and interaction techniques (jch)
- Exam topics - preparation to the exam, consultations

Order can change…

Organization – Semestral Project

- Goal
  - implement your own game engine (stub of it) from the scratch
  - Implement simple game (Breakout) in your own engine

- Full semester project, individual work

- See assignment in IS for details.

Possible Seminars Outline

1. Setup of GIT repos and the template. Math if time...
2. Math
3. Camera
4. Camera 2

5. Building geometry 1
6. Building geometry 2
7. Texturing and lighting

Milestone

8. Physics 1 - basic motions, basic collisions
9. Physics 2 – collisions
10. Physics 3

11. Above minimum features
12. ...
13. ...

Assignment Introduction

- ➤ Previous year results – live demos, videos

- ➤ Git, framework, setup – during today's seminar

- ➤ In rest of time

  - ➤ read the assignment,

  - ➤ If anything is not clear, ask at seminar