Final programming project for CPE 476 – fall 2008

Your final programming project consists of a team project to be completed in ~9 weeks. This is your chance to make a portfolio quality game/virtual environment. You need to form teams of 4-8 people as soon as possible. Teams must be finalized by Thursday 9/25/08. <u>This project is worth 60% of your final grade in this class</u>. As a team, you get to decide what project you want to do -- after I review it. The main considerations are:

- Design a single level complete game (or interactive world) with nice graphics (see below for details on what the game must include),
- the project is a reasonable sized project that can be completed within given time,
- there's enough variation from other team's projects,
- there's enough graphics content in the project.
    - The project must include in some form or another a nice visual environment with characters that navigate and interact with that environment. Technical features that must be included are:
        - some form of animation and some form of collision detection
        - some kind of game play (simple logic, score keeping, text, etc.)
        - simple audio
        - pixel shader
        - level-of-detail model (either terrain or character models)
        - some performance enhancing data structure (i.e. bounding sphere hierarchy)
        - hierarchical view frustum culling
        - some game effect (e.g. particle system, lens flair, fog, billboarding, npr rendering etc.)
        - some bonus feature (graphics or otherwise)*

It is assumed that each team will pick a leader and that team participants will specialize. For example, one break down may include: a level of detail specialist, a performance specialist, a shader specialist, an animation/collision specialist, and project lead. Leaders must be approved by all team members. Leaders will decide who gets final credit for the game at the end of the class (unless a majority of team members object) and leaders will be held responsible for getting their team to meet deadlines (i.e. the leader will be my point person of harassment). Part of each of your grades depends on your mutual assessment of one another. Your project will need to be a fairly complete single level game, however, I encourage your team to think about focusing some of its energy on 'one cool thing' that will make your game stand out. This might be a very rich visual environment or particularly cool character movement/interaction, or a visually exciting effect, or a very particular look/feel to the game, etc. Again, you need to include all the features specified, but focusing your effort on one very nice aspect of the game is a good way to make a simple game stand out.

*Note that the above list of technologies does not include a lot of features common in many games (i.e. AI or networking for example) you are welcome to build in these features but they do not supersede/replace any of the graphics requirements. They can, however, count for your bonus feature. In addition, nice assets (i.e. characters, textures, environments, etc.) are important to the look and feel of many games but creating or importing them do not count towards any of the graphics requirements but can be applied as your bonus feature.

A note about using outside references and technology/code: You are welcome to use any outside resource/code/technology that will help your team meet its goals (including assets, modeling programs, game engines, tutorials, etc.). However, **all** of the required graphics technology must be implemented by one of your team members in a way that does not take advantage of other classmates (i.e. you copying code from a tutorial for view frustum culling *is* taking unfair advantage of your classmates). You or some member of your team must understand/master all of the required graphics technology required for your game. In addition, you are required to list all references you plan to use in your final project proposal and in your project report. Be very careful when considering the use of outside technology, sometimes it takes as long to learn someone else's code as it does to write it yourself.

To arrive at your final project, we go through an initial step of screening your project ideas. We will hold a "game market place" in lab on Thursday 9/25. This is where potential managers or team members can "pitch" their game idea(s) to the class and try to form teams. Ideas that collect enough team members can then proceed to discussing initial team logistics. A team manager needs to be selected and specialty areas can be roughly discussed. Next:

Preliminary Project Proposal:

Submit a paragraph long project idea for each team. Be sure to provide the team members names on the initial proposal, along with a designation of who the project manager will be! Provide enough detail to explain the general story/goal of your team project. You can submit the proposal to me by email or hardcopy (preferable only if you have drawings). I will respond to you by email or in lab, so be sure to include the team leader's email address in the hardcopy. Since teams should preferably work on different styles of projects, those getting the proposals in early and finalized get 1st pick on the topic. If your team has more then one idea, they can submit up to 3 ideas ranked in terms of preference. In general start thinking about the kind of environment, character and interactions you would like to model. Think about the 'look' and 'feel' of the game.
Due Friday September 26th, 2008

Formalized Game Proposal:

Each team must submit a 1-2 page write-up describing your final project and game design in more detail. Be sure to provide the team members names along with a designation of who the project manager is, on all submissions! Please include a break-down of who within the team will be working on which aspects of the game. Include your project goals (list of different project components/features) and a time line on when you plan to complete different pieces of the project. You will not be strictly held to this document but it serves as an initial contract between your team and I about what will be included in your project. This is an opportunity to start working on where you will get your assets (character models, world) what the look and feel will be, and what type of interactions you will support.

I strongly encourage you to include in the write up:

- a general description of the game
- a detailed description of the environment for the game (what it will look like and where you will get the models for the environment, e.g. terrain, etc.)
- a detailed description of the characters in the game (what they will look like and where you will get the models)
- a detailed description of the goal of the game (what is the character trying to do? what tools does the character have to achieve this goal?)
- a detailed description of the animations that will be used for moving the character (and any other moving aspects of the environment)
- a description of the general rules of the game
- a description of any special effects you will include in the game
- a description of the "one cool" thing that your team will emphasize in the game (i.e. the one thing you will make look really cool or interact in a sophisticated way, etc.)

This document can also serve as your 1st draft of the Project Report (which is just the final write-up/description of your project).
Due September 30th, 2008.

Progress demos:

You and all your team members are required to be present for 4 intermediary progress checks and the final demo of the project. **These demos are mandatory and will be graded.** At each demo, a portion of your grade will be awarded (i.e. the same portion of the project that should be done. In other words 25% of your grade for your final project will be assessed on 10/21.) If you miss a check off, you will automatically loose that

portion of your final project grade. These check-offs will happen in lab on the following dates:

- **25% done by 10/21/08 (First 25% of grade assessed)**
- **50% done by 11/4/08   (Additional 25% of grade assessed)**
- **75% done by 11/20/08 (Additional 25% of grade assessed)**
- **90% done by 12/2/08 (Additional 15% of grade assessed)**
- **100% done and demoed to entire class on 12/11/08 (final 10% of final project grade assessed)**

Final demo/report requirements held on 12/11 (final period):

- Project Demonstration. Each team will have 10-15 minutes to present their final project to the class.   In addition, we will have some in class playability testing, where each team should have a playable version of their game set-up for class mates to try and assess (see below information).
- Project Report -- this is in the form of a web page and should contain the following information. Also note that links should be relative (not absolute paths), and that you should submit the html and all necessary image and animation files in the same directory.
    o   brief description of your project,
    o   a mini user's guide,
    o   sample output i.e. images and *a short animation clip of your game is required*
    o   a project executable
    o   a list of all references used (e.g. tutorials, research papers, etc.)
    o   Project submission (likely thru handin) information will be provided later.
- Project Grading.
    o   No **late programs will** be accepted.
        ▪   Your final grade will be the culmination of your demos throughout the quarter as specified earlier in this document.

Playability Testing – final assessment: Note that in addition to the 60% of your final grade, which will be evaluated throughout the quarter for your final project, we will have some in class playability testing, during the final assessment time period the class. This will be a chance for everyone in the class to play everyone else's game. Your team will need to have your game installed and ready to play by others in the class. A strict rubric for grading one another's games will be provided and you will grade one another's game. This playability assessment, along with team members assessment of one another, will account for 5% of your final grade and will be a weighted summed total of the classes' assessment of your game and your team's assessment of its members.