Project Proposal

For your final project in this course you will work in teams of two on a project of your own design. We want you to come up with a project that you are excited to work on. Our expectations for a good project are:

- It should be approximately the same size as Assignment 1 we had you do in class. This should be something you can reasonably complete in approximately 3-4 weeks.
- It should demonstrate your command of the material covered in class. It should demonstrate your ability to write clean, efficient code using good style, and your ability to solve algorithmically challenging problems. You should be mindful of the time complexity of your code.
- It should be "demo-able".
- It must demonstrate your ability to work with Python in some capacity. You may choose to also use the Arduino; however, this is not a requirement.

Proposal Expectations

Each team must submit a project proposal. The instructors will provide you with feedback on the feasibility and appropriateness of your project ideas, based on the project proposal. Please be succinct and clear about what you intend to do. You must show that you have thoughtfully broken the task down into well-defined milestones with expected completion dates.

Each milestone should be up to a week worth of work. You should have something to demo at the end of each milestone. Note we do NOT want to see milestones that each implements a separate, non demonstrateable piece of code and the final milestone is to integrate them all together. This is bad planning and can leave you without a demo-able project if you fail to reach the integration milestone.

Your project proposal should contain the following:

- Project title
- Team members full names
- Brief description of what your project idea is and what the demonstration at the end will look like.
- Include 3-6 milestones for your project and an expected completion date for each one.
- Brief description (2-3 sentences) of what you expect to achieve by the end of each milestone and what needs to be done to achieve it. Be explicit about what the demo for each milestone would be.

If the instructors have concerns about your proposal (e.g., your idea is too big or too small, or your milestones are not appropriately defined etc.) they will provide you with feedback.

Proposal Examples

We provide two examples for your reference. Of course, you are not limited to a game and these are just examples of good proposal writeups:

1. Example 1
2. Example 2

Proposal Submission

We are asking you to submit a project proposal by **March 12, 11:55pm**. We will still provide feedback on late submissions, but submitting by March 12 is best as you will get early feedback. You must submit a document (plain text or pdf files only). Do NOT submit a .doc or .docx file. You will not be graded for your project proposal, but we do require that you submit a project proposal. This is your chance to elicit feedback.

Evaluation

Your project will be graded in two phases: the demo and the submitted code. First, you will be asked to demo your project for one of the instructors and/or a TA. After the demo, they will ask you questions about your project. You will be graded both on the quality of your presentation and on your ability to answer these questions. Second, you will be asked to submit your code so it can be graded for style, efficiency and quality.

Demo

The last two classes, **April 10 and 12**, will be devoted to demos. We will decide which groups will demonstrate their project on each day and your team only needs to show up for one of these days. We will have a few teams of instructors/TAs going around the lab to view your demo. At this time, you will give a short (usually 2-3 minute) demonstration of your project for the evaluators. We may ask some questions about certain features of your project right after the demo. Questions may range from code comprehension, object oriented design, to running time efficiency of the algorithms. These are typical questions, but of course we may ask you anything aspect of the project. Then we will conduct a brief "one-on-one" interview with each team member, asking about the student's individual contribution to the project, along with a quick code review of what the student views to be their most interesting contribution to the project.

The demo grade will be based on overall impressions of your project (how complete it appeared, did it go smoothly, did it meet our expectations in terms of appropriateness and challenge) and how well the questions were answered by each team member.

Code Submission

You must submit your code by **April 16, 11:55pm**. The code you submit will be graded based on organization, style, and correctness. It must run on the VM, so if you use any Python packages they must be included in your submission and you must give instructions for installing on the VM (e.g., using PIP). Anything that is required to build the physical components, run the code, and instructions on how to use the final program itself (i.e. a "user's manual") must be included in the README file. If you use the Arduino, your README should contain wiring instructions, a list of componets, etc.

The code may or may not be run by the grading TAs (how well it ran would have been evaluated in the demo), but if you use components not in the Arduino kit then a TA may request you bring a fully built project if it helps them complete the evaluation of the code.