Team Project Requirements
CMSC101/IS101Y – Fall 2013
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Overview

A major component of this course will be the execution of a team project. Each team will use Processing to create a game based on a college scenario where players try to win by creating the most effective balance of grades, happiness, and wealth. Ideally, one would want to maximize all three. Not surprisingly, these three outcomes tend to compete with one another, so maximizing all three is pretty much impossible in most cases.

Except under extraordinary circumstances, all members of a project team will receive the same grade on the project. However, team participation does figure into the final course grade through a separate peer evaluation (which evaluates your participation on all group activities, not just the project), and evaluations of each deliverable (explained more later). The project is graded based on five deliverables spaced throughout the rest of the semester. These deliverables are described later in this document.

This document gives some initial information about how the project is set up. We will further develop the details as we go along, through in-class exercises and discussion. This sort of successive refinement of requirements is common in the real world. This means that flexibility and easy modification should be built into all your deliverables.

The Game

The game will simulate a fifteen-week semester. During each week, the player will make choices about how to spend their time. Each choice has potential advantages and disadvantages, which are captured in the outcomes of each week. Most choices commit a certain amount of time to an activity. There are a total of 168 hours available in each week, so time spent on one choice is not available for another choice.

Outcomes

There are three outcomes that have to be calculated each week, based on the choices made by the player for that week. Grades potential starts each week with a value of 90% and is increased or decreased by the effects of choices. Happiness potential starts each week with a value of 50% and is increased or decreased by the effects of choices. The wealth outcome starts at a value of

$0 at the beginning of the game. During each week, information about choices, events, and potentially random factors are used to compute new values of each outcome. Grades and happiness potential cannot go below zero or above 100. At the end of the game, the grades and happiness outcomes for each week need to be averaged and the result reported out. The weekly wealth outcomes will be summed to create the final semester wealth outcome. The grades potential should be converted into a GPA (by rescaling 90% or above to a 4.0 GPA and 40% or below to a 0.0 GPA). Final happiness potential values should generate a response of your team's choice.

Choices

Students have the power to influence the outcome of their semester through the choices they make. These choices have been shown to be important through research, but the specific numerical impact is not usually known. For the purpose of this game, the specific impact of the different choices on resulting success will be governed by a set of rules.

Two choices that are made at the beginning of the semester must remain the same through the whole semester:

- number of credits of classes
- number of hours worked at a job.

Eight more choices are made each week:

- hours spent attending class,
- percentage of class spent actively participating (and not surfing, texting, sleeping, etc.),
- hours spent studying and working on assignments,
- hours spent participating in study groups,
- hours spent on visits to academic resources (professor/TA office hours, help center, LRC, etc),
- hours spent on taking care of yourself (sleeping, eating, exercising, etc),
- hours spent on solitary leisure activities, and
- hours spent on nonacademic activities with other people (time with family, church, clubs, etc.).

In order to define the game, we need to define an expected range for each of these choices, and what the impact of each choice will be on the outcomes. For example, we might define a rule that says that each hour spent on solitary leisure activities increases the happiness potential by 2%. We have an initial list of rules that we'll look at in class on September 24, and then we'll modify them with input from the class and post the final set of rules shortly after class on the 24th.

The Interactions and Displays

For each week, you should solicit input from the user about the allocation of time and attention and calculate the outcomes for the week. Display these outcomes in a visual form, showing the history of outcomes over the course of the semester. Design a display for the representation of semester final outcomes.

Project Phases and Deliverables

The project will be structured as a sequence of phases. Completion of one phase is not required to start on the next. In many cases, it will benefit you to be working on multiple phases at the same time. For instance, you might be working on the implementation of your project for the first demo concurrently with conducting preliminary evaluation.

Design (due Tuesday, October 22)

Describe your plans to meet these requirements in a proposal of approximately 1-2 pages. We'll be providing a template and example to help you organize this information. Your proposal should describe:

- Your basic code architecture design. What are the major functions you will need to implement and who will lead the team to develop each? What information will they pass to each other through parameters? Where will they be called?
- Your data design. What information will you need to keep track of in your program? How will it be organized and represented (include the major variables you will need, including any arrays you'll use)?
- Your anticipated "look and feel"—that is, what the game interface will look like to the user. Include a mockup of your user interface, using Excel and Powerpoint, showing how players will enter choices and how outcomes will be displayed.
- Planned extensions if time permits. Mark these clearly as extensions and prioritize them. *NOTE*: Extra credit can be granted for extensions that are successfully implemented. If you want to propose an extension, include it in the Design deliverable and the instructor will inform you how much extra credit it will be worth. You will not be penalized for not completing an extension that you propose. Also, no extra credit will be given unless the basic required functionality is implemented, even if the extension is implemented correctly.

First Demo (due Thursday, November 14)

Your team will present a demonstration of a complete "beta release" that includes all of the functionality that you have proposed. You will give a 10-minute demo of your project to the class, including a presentation and overview of the code. You will also need to submit the code itself, along with a 1-2 page written description of your system, how it differs from the original design (if it does), and any remaining bugs you plan to fix and enhancements you plan to make.

Your grade for this deliverable will be based on all three components (the presentation, the code itself, and the description you write).

Demo Evaluation (due Thursday, November 21)

Your evaluation will assess the performance of your game according to a rubric that we will develop together in class. You will also have to specify what methods (testing, etc.) that you used to evaluate your game. This evaluation must include input from a qualified user from outside the class. Further directions for evaluation will be distributed later.

Poster (due Tuesday, November 26)

The poster deliverable will be a full-sized poster that shows and tells specific information about your game, including design, implementation, interface, and evaluation. Your submission must include a PowerPoint document with the poster and a PDF version of the document. We will have these posters printed for your use the final presentation. (You do not need to print the poster yourself.) Further directions for poster construction will be distributed later.

Final Project and Presentation (due Tuesday, December 10)

You must prepare and present a poster-session presentation of your project. For this presentation, you will have to describe your game (using the poster you submitted for the Poster deliverable as a visual aid) and give a "live demo" of the system. You should dress appropriately for a job interview or technical conference. Be prepared to answer questions. You must also attend the poster presentations of all other groups and be prepared to ask questions. On the day that the presentations are given, you must also submit your final code. You may optionally submit an updated description of the system, if you wish to highlight changes that you made between the first demo and the final system.

Deadlines

Each phase of the project has a due date. In this way, as in others, this project mimics work in the real world. Deadlines are hard. Project phases will not be accepted late except under extraordinary circumstances.

Phase	Due Date
Design	Oct. 22
First Demo	Nov. 14
Demo Evaluation	Nov. 21
Poster	Nov. 26
Final Project and Presentation	Dec. 10

Contributions to Grade

Each phase of the project will make a contribution to your grade. If a phase is missed, that portion of the grade will be a zero. Your team should consider this a compelling reason to start your project early and work steadily throughout the semester, rather than making a grand push at the end of the semester.

Phase	Percent of Final Grade
Design	20
First Demo	20
Demo Evaluation	15
Poster	10
Final Project and Presentation	35
Total for Project	100
Extra credit	20 points max

Individual contribution to deliverables

It is assumed that all members of the team will make meaningful contributions to all project deliverables. To make sure that this happens, each deliverable submission will be followed by a Q&A session with the instructor or a teaching fellow in which all team members must be prepared to answer any question the instructor or TF has about the deliverable. For the first demo and the final presentation, these questions will happen in class during the team's presentation. For other deliverables, the team will meet with the instructor or teaching fellows outside of class to answer individual questions about the deliverable, as well as to get more specific feedback on the deliverable. If, after these Q&A sessions, the instructor determines that one team member knows very little about how the deliverable was produced, that team member may get a reduced score for that deliverable.

It is not expected that all team members will contribute equally to each deliverable, but it is expected that each team member's overall contribution to the project will be approximately equal. To make sure that overall contributions to the project are roughly equal, a peer evaluation will be conducted at the end of the semester in which each team member will be asked to assess the contributions of their teammates, not only on the project, but on other group activities. This peer evaluation constitutes a separate portion of the final grade (i.e. it's not part of the project grade). A "practice" peer evaluation will be conducted about halfway through the project, to provide an opportunity for team members to get some insight into how their contribution is being viewed by the rest of their team.