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15-112 Term Project Proposal

Updated: 4/16/2014

            For my term project, I plan to create a game similar to one in Sid Meyer’s Civilization series. The Civilization games are turn-based strategy games in which the player controls a nation (or multiple nations, I suppose). The object of the game is to build a nation that will, “stand the test of time”; that is, each of the nations in the game competes for dominance with each of the other nations. The nations do this in a number of ways: war, culture, and diplomacy, to name a few. The interactions between nations (as well as ‘domestic’ play) are governed by, what I have denominated as “engines”. As such, the real Civilization has a war engine, culture engine, diplomacy engine, etc. Scope-wise. My game would obviously have to be much smaller. I am currently planning to have, at least, a war engine and a culture engine and build incrementally from there. Additionally, after I have my minimum quota of engines working, I will address AI. Though, I have not substantively worked on AI, I was thinking of achieving AI through the use of “utility functions”. Utility functions, which are common in economics, are functions of several variables that model the total value of consumption, given certain budget constraints. The computer players could attempt to maximize these functions, to find a “desired” state, and make decisions to move themselves toward that state. Finally, the real Civilization plays on a hexagonal board, and I hope to do the same. At this point in time, I have created a model-in-progress using hexagonal tiles. I anticipate being able to use hexagonal tiles for the entire game, however, if they prove too difficult I an open to the possibility of using square tiles.

In terms of modules, I plan to mostly work out of Tkinter, as my game will function similarly to a board game, thus in 2-D. Additionally, I envision that heapq, random, and math will be useful, as they seem like they would have a place in a strategy game (especially heapq for strategy game AI). However, not having programmed my game yet, I do not know if I will use all of the aforementioned models, or whether I will need additional ones, as I have not yet programmed to a place where there is a need for additional modules. However, in terms of “big” modules (that require vastly different syntax and large understanding: like Tkinter (but unlike, math, for instance)), I expect Tkinter to be the only one I use. Moreover, the only “additional” modules that I anticipate needing are the modules/libraries that “ship” with python.

More information about Civilization can be found here: <http://en.wikipedia.org/wiki/Civilization_(series>)

Here is a potential timeline for my project (these dates are not binding, but can serve as a guide) :

* April 16, 2014
  + TP 1 finished
* April 20, 2014
  + Semi-working (likely somewhat buggy) demo
  + Start thinking about AI
* April 23, 2014
  + Working (possibly with some [but hopefully minimal] bugs) demo
  + TP 2 finished
  + Possible AI draft
* April 26/27, 2014
  + Coherent game (no [or very few] bugs)
  + If AI is feasible, quasi-working AI
* April 28/29, 2014
  + Finished game
  + Work on TP 3 peripherals (ie – Video, Readme, Design, etc)
  + Potentially: working AI
* April 30, 2014
  + Finished everything
* May 1, 2014
  + Refine elements and turn in (TP 3)