COMPUTER SYSTEMS RESEARCH
Project Experiment 1st quarter 2008-2009

1. Your name: _____Alexa Silverman_____, Period: __1__
2. Project title: *A Cellular Automata Approach to Population Modeling*
3. Language and/or software you are using: NetLogo, Java
4. 1st quarter experiment(s) for your program.
    - Problem definition, clear statement of the problem(s) or goal(s) that you will analyze/test. Be specific...what is about the current state of your program, what types of input data, what kinds of scenarios or modeling can test/graph/analyze with your program.

      The purpose of this program is to observe the effects of various factors on population growth and change using a cellular automata-based model of a population. Currently, the program correctly runs the cellular automata rule 14/3 (live cells with 1 or 4 neighbors survive the turn, dead cells with exactly 3 neighbors are born in the next turn) and allows the user to select the initial population density. It also graphs the percentage of live versus dead cells and provides population counts.

2nd Quarter Version

1. Looking ahead to 2nd quarter, what kind of experimenting can you think of to expand into? Again, be as specific as possible – kinds of input you may use (kinds of input data), algorithms and processes your program may use, and specific kinds of output(s) you will expect. For testing - how might you validate success or failure?

   Add other factors to population growth, such as food/water availability, climate, potential other populations which interact with the current populations. NetLogo's agent-based modeling could be useful in terms of creating a predator/prey situation. Graphs will be used to represent output. Success or failure may be validated using other NetLogo population models or comparison to real life data.

3rd and 4th Quarter Versions

2. How does all this fit into the larger scale, or longer term, problem or goal you may be trying to solve or investigate with your project or system. Estimate what your project can achieve, the state of your project could be, for 3rd and 4th quarters. (This may be difficult to estimate, but it's a good exercise to try)

   Ideally, this project would expand to provide a model for an ecosystem with environmental factors and predation. The overall goals of this project would be to predict behavior of populations in an ecosystem, and to show that cellular automata models are applicable to such a situation.