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|  | [[home](http://docs.google.com/index.htm)]  [[abstract](http://docs.google.com/abs.htm)]  [[introduction](http://docs.google.com/intro.htm)]  [[hypothesis](http://docs.google.com/hypo.htm)]  [[experiment](http://docs.google.com/exp.htm)]  [[data](http://docs.google.com/data.htm)]  [[conclusion](http://docs.google.com/conc.htm)]  [[we recommend](http://docs.google.com/rec.htm)]  [[daily log](http://docs.google.com/log.htm)]  [[other](http://docs.google.com/other.htm)]  [[bibliography](http://docs.google.com/bib.htm)] |  |  | For the benefit of future students, we will provide the following recommendations for those who would be willing to follow in our footsteps and create a computer simulation.  Hopefully a student proficient enough in Java or C++ can finish where we left off and create a more accurate model.  **Where we ran into some trouble:**   * **Equations**- In order to accurately simulate an ecosystem, equations are vital.  In order to find these equations, it took a lot of research. * **Be Reasonable-** Do not bite off more than you can chew.  It is not very feasible to find equations to predict how abiotic factors will interact with biotic factors.  We tried this.  We were forced to give up that idea.  Only do so if you are sure you can obtain the equations (before it's due...) and only if you understand how to implement them. * **Where to get started?** -  Pinpoint a very specific topic to model.  Do not try and model something that is very broad. * **Time is your friend** � Ultimately, manage your time.  Unless you want to be working until 5 AM the night before the project is due, you must remember time is of the essence.  The more time spent on the project, the better it will be. * **Accuracy** - Be accurate with your data and experiment.  Try to find accurate coefficients.  Also, when approximating populations, use the Runge-Kutta method, as it is more accurate than Euler's method. * **Control** - Try to also find a real live situation to compare your data with.  What would have aided our project immensely was an actual experimental population study of three species that we could have used to compare to our theoretical data.     **Some ideas about how to expand our experiment:**   * Simulating the creek: Unfortunately, we were not able to simulate the Arroyo Del Valle as we originally intended (A very basic simulation, of course.  We weren't going to actually SIMULATE the creek, because that is impossible) because of the difficulty of simulating abiotic factors.  However, it may be possible just looking at biotic factors. * Add more factors to the population model: The more organism interactions, the more realistic it is.  In addition, a model taking into account distribution of populations would increase the accuracy of the simulation.   **Two URLs to take a look at:**       [<http://www.mathstat.usouthal.edu/~hitt/courses/590/population/population.html>]       [<http://rulbii.leidenuniv.nl/wwwkim/popdyn.html>] |  |
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