

SMS 416, 2017: 2nd Scratch project (due Tue. Feb 14th).

Choose one of the following *simulations* projects to program:

1. Prey-predator interaction (some organisms may move randomly while other controlled by mouse and/or in response to organisms). You can have an organism multiply (e.g. cell division). For mathematics of such model see: http://www.scholarpedia.org/article/Predator-prey_model, for an example game see: <http://ccl.northwestern.edu/netlogo/models/WolfSheepPredation>. An example of a game of fish eating fish: <http://scratch.mit.edu/projects/DarthPickley/230875>.

2. Chemotactic behavior (randomly moving organisms stays longer in the direction where food concentration increase), eventually moving in direction of food. For more see: <http://en.wikipedia.org/wiki/Chemotaxis>, and for a model (game): <http://wormweb.org/bactriachemo>

3. Schooling behavior with or without a leader (e.g. organisms respond primarily to a single organism). More at: http://en.wikipedia.org/wiki/Schooling_and_schooling, for a model (game): <http://wormweb.org/bacteriachemo>

Rules:

Your project should include at least four sprites.

Use at least 5 different control blocks, 3 different sensing blocks, 2 variables and 2 operators.

Some objects detect when others are approaching and react to them. Sidewalls should be such that organisms leaving on the right re-enter to the left of the screen and vice-versa.

Simulations should be realistic and should last at least a whole minute.

Simulation should use a random number generator.

Simulation should provide instruction on how to use it.

Simulation should have a fun factor associated with it.

Bring the project to class (on a disk-on-key) on the day it is due and be ready to present it to the class.

Grading: late submissions, 1 full grade down (unless you asked for and received an extension).

Grading rubric:

A: All the above details are present, clear to the user, and working (A- if minor details missing).

B: Most of the above details are present, mostly clear to the user, and mostly working.

C: About half of the above details are present, or are clear to the user, or are working.

D: About a fourth of the above details are present, or are clear to the user, or are working.

E: One or a few of the above details are present, or are clear to the user, or are working.