COSC150 ICA3 (28 April 2022)

Name/Pledged no help on first take_____

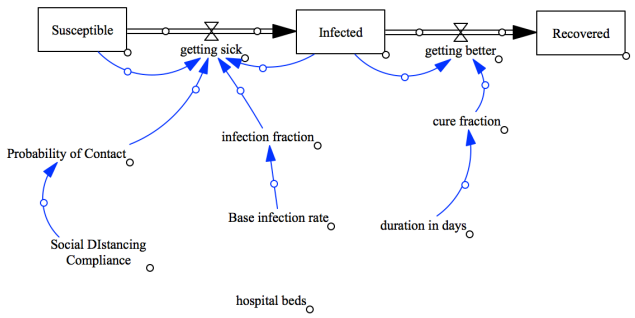
(Open Web/Notes allowed ONLY for rework)

We started this course by asserting that scientists communicate in two basic ways: drawing pictures and telling stories. We've spent several weeks doing that!

1. A model that has at least one element of randomness can be described as _____.

2. A model whose behavior depends solely on its parameter values and the initial conditions can be described as _____.

3. Consider the following simple ***system model*** of the spread of a communicable disease:



a. Identify the 4 basic components (building blocks) of system models and give an example of each:

b. Convert the above drawing of a system model to a story, consistent with the model of the spread of a disease. Be as complete as you can using the vocabulary of system models. Include a sketch a typical graph of the three S-I-R components.:

4. Models in a scientific investigation usually serve one or more of four main purposes. They are:

   a. S_____

   b. E_____

   c. P_____

   d. V_____

   e. A_____

5. In an agent-based model, we always start with a well-told story using sentences that are of the form: If . . . . . Then . . . . .Else

   a. What are the 4 basic components of the stories of most agent-based models?

   b. Tell me a good agent-based model story of the spread of a communicable disease, including movement, catching the disease, and one or more ways to recover:

6. List as many of the characteristics of System Models and Agent Models that you remember that distinguish one from another:

SYSTEM MODELS	AGENT MODELS

7. In terms of a process for building and testing an agent model, what are the three stages of model development:

a. First you determine which agents _____

b. Then you define how those agents _____

c. Then you define how those agents _____

8. What is the main characteristic of a model that would require time-synched updating of agents as opposed to sequential updating of agents? (Hint: think of the difference in the forest fire model vs. the "ususal" SIR.)