**CS108L Computer Science for All**

**Week 6: Computer Science Concepts**

**Assumptions:**  are what the modeler assumes when moving from the real world problem to a model. Assumptions are sometimes a simplification and sometimes a specification

**Local Variable**: A variable that can be used be used by any agent but only in the procedure or command block where it is declared

**Agent Variable:** A variable that can only be used by a specific agent

**Turtle Variables:** A turtle-specific variable. Each turtle has its **own** value for every turtle variable

**Patch Variables:** A patch-specific variable. Each patch has its **own** value for every patch variable

**Link Variables:** A link-specific variable. Each link has its **own** value for every link variable

**Global Variable:** A variable that can be used by any agent at any location in any procedure in the code. The is only one value of each global variable at any time

**Slider**: A NetLogo specific interface input device that sets a global variable to a number in a range of values to the maximum value.

**Switch**: A NetLogo specific interface input device that sets a global variable to a boolean value (On/Off).

**Input Box**: A NetLogo specific interface input device that sets a global variable to a string, number or color. The String can be a simple string or a command or reporter (checks syntax). The number can be any type of number. The color can be chosen from the NetLogo color table.

**Monitor:** A NetLogo specific interface output device that outputs the current value of a specific variable as the program is executed

**Graph:** A NetLogo specific interface output device that can output more than one variable at a time, drawing a line for each variable value, thus keeping a running history of the value of each variable. The variable output is updated as the program is executed.

**Model**: The program written that is the abstraction of the problem being evaluated. It captures the elements of the system and the behavior of the elements being modeled.

**Simulation**: Running the model developed to simulate the passage of time and exploring the behavior of the modeled system.

**Deterministic simulation models**: Provide single outputs for each set of inputs because no randomness is involved

**Stochastic simulation models:** Can produce different outputs for each set of inputsbecause **r**andomness IS involved. You want to look at the probability distribution of possible outcomes.

**Breeds:** NetLogo allows the programmer to define different “Breeds” of Turtles. A breed has all the properties that turtle has in addition to breed specific and is a subset of Turtles

**Populations**: A group living things such as ants, bees, turtles, and people.

**Population Dynamics:** The characteristic and changes in a given population. Affected by birth, death, immigration and emigration

**Feedback**

* **Positive Feedback** – speed up or enhances population growth
* **Negative feedback** – slows down or decreases population growth

**Random** – something that is random has no pattern and is not predictable

**Pseudo-Randomness** – computers are by their natures determinisitic, that is how they are designed. In order to generate random numbers on a computer, pseudo-randomness is used. Computers use algorithms to determine random numbers. The randomness is only as good as the algorithm used