Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CS112**

**Exam 2**

**1) [3 points each]** Match the term *or terms* from the list below to the following definitions. Note that not all terms will be used, some terms may be used more than once, and for some definitions more than one term may apply – include all terms that apply. The first one is done as an example.

\_\_a, b\_ Command(s) to move a sprite.

\_\_\_\_\_\_ The standard name for an agent in NetLogo

\_\_\_\_\_\_ The term for a programmer defined type of agent in NetLogo.

\_\_\_\_\_\_ A NetLogo command that creates a new turtle.

\_\_\_\_\_\_A general programming construct that allows a program to “make a decision”.

\_\_\_\_\_\_ A general programming construct that allows a piece of code to be named and then called by name.

\_\_\_\_\_\_ A general programming construct that allows a program to store a value.

1. go to
2. step
3. breed
4. sprout
5. conditional
6. loop
7. block (or function/module/procedure)
8. variable
9. operation
10. turtle
11. patch
12. hatch
13. sprout
14. input
15. games
16. multi-agent simulations
17. web applications
18. output

**2) [4 points each]** Multiple choice, put the letter of the correct answer in the blank to the left of the problem. The first one is done for you:

\_\_\_\_ Proper indenting of commands in NetLogo code is important because:

1. Otherwise the code won’t run
2. It makes it easier to read
3. The programmer is forced to indent properly by the code editing tab
4. All of the above

\_\_\_\_ What will the following NetLogo command do?

**ask humans [set heading towards max-one-of zombies [distance myself]]**

1. Make all zombies point toward the human that is nearest to them
2. Make all zombies point toward the human that is furthest from them
3. Make all humans point toward the zombie that is nearest to them
4. Make all humans point toward the zombie that is furthest from them

\_\_\_\_ Which of the following is not a variable that all NetLogo turtles have:

1. color
2. heading
3. sprite
4. shape

\_\_\_\_ Which of the following statements is true regarding the following block of NetLogo code:

**ask zombies [set heading towards min-one-of humans [distance myself]]**

1. It will make all zombies point toward the lowest numbered human
2. It will make zombies on the current patch point toward the nearest human not on the same patch
3. It will cause the program to crash (stop running) if there are no humans
4. It will cause the program to crash (stop running) if there are no zombies

\_\_\_\_ In NetLogo the location of a turtle is defined by:

1. It’s x,y position on a Cartesian plain
2. It’s angle and radius in cylindrical coordinates
3. The location of the mouse pointer
4. All of the above

\_\_\_\_ A control that can be pasted into a NetLogo program is a:

1. button
2. graph or plot window
3. slider
4. All of the above

\_\_\_\_ In NetLogo you get the error message:

Nothing named HEALTH has been defined

It means:

1. Turtles don’t have a variable named HEALTH
2. You forgot to use a **turtles-own health** command
3. You miss spelled a variable name somewhere in your program
4. Any of the above could be true

**3) [3 points each]** Mark each of the following statements as either True or False. You may explain your answers.

\_\_\_\_ In NetLogo the keyword **end** is used to denote the end of a named block of code.

\_\_\_\_ In NetLogo the keyword **to** is used to denote the beginning of a named block of code.

\_\_\_\_ In NetLogo each turtle, or breed of turtle, is always on its own patch.

\_\_\_\_ In NetLogo the keyword **set** is used to assign a variable a value.

\_\_\_\_ In NetLogo the programmer can’t put any comments in the code.

\_\_\_\_ Programming languages are often designed to be useful for creating a particular type of program.

**4) [6 points]** Assume a NetLogo program has two breeds defined: cats and dogs. I want to create a program where, when there are dogs and cats on the same patch, the cats turn green if they outnumber the dogs and the dogs turn green otherwise. To accomplish this all patches are asked to run the following code:

**ifelse (count dogs-here < count cats-here)**

**[**

**ask dogs-here[ set color green ]**

**]**

**[**

**ask cats-here [set color green]**

**]**

This code has two logical problems that will keep it from doing exactly what I want (i.e. the code will run, but the program won’t behave as desired). What are the two problems?

**6) [16 points]** Answer the questions below about this block of code to create a some turtles:

**create-turtles 10 [**

**setxy 15 random-ycor**

**set color blue**

**set health 5**

**]**

1. How many turtles are created?
2. Where do the turtles start?
3. What color are the turtles?
4. Do any variables need to be created by the programmer? If so, which ones?

**7) [6 points]** What are two ways to define a block of code in NetLogo?