**Reference Class: AmoebaColony**

Declare & encapsulate variables

private String colonyName

private String caretakerName

private int colonySize

private int newColonySize

private int daysFed

private int timesBreed

private int successBreed

private int numDead

private boolean vitamins

private boolean illness

JOptionPane for all dialog

Prompts user for caretaker name, colony name, size of colony

String, caretakerName, colonyName, colonySize

Explain what can be done with colony

Asks user how many days to feed

int daysFed = integer.parstInt(JOptionPane….)

Asks user how many times to breed

int timesBreed = Integer.parseInt(JOptionPane….)

How many successful breedings (setter & getter):

void setSuccessBreed()

if (timesBreed <= daysFed)

successBreed = timesBreed

else

successBreed = daysFed

int getSuccessBreed()

return successBreed

How to go about reproducing amoeba & result (int newColonySize) [setter/getter]

void setReproduceAmoeba()

if (timesBreed <= daysFed)

newColonySize = (int) (timesBreed \* Math.pow(2, colonySize)

else

newColonySize = (int)(daysFed \* Math.pow(2, colonySize)

JOptionPane for new population:

(null, "The total population of your " + colonyName + " colony is now " + getReproduceAmoeba() + " amoebas.")

int getReproduceAmoeba()

return newColonySize

Define what happens when choosing vitamins vs no vitamins. Random generator helps to provide a random result in terms of amoeba returning sick/dead or not.

public void vitaminSickness()

Random i = new Random ()

int ill = i.nextInt(100)

if (vitamins == true)

if (ill <= 20)

illness = true

else

else

if (vitamins == false)

if (ill <= 25)

illness = true

else

JOptionPane confirm dialog: (null, “Would you like to give your amoeba vitamins?", "\nChoose yes or no.", JOptionPane.YES\_NO\_OPTION)

Provide formula for number of dead amoeba & the new colony size as a result [get/set]

public void deathBySickness()

if (illness == true)

numDead = (int)(newColonySize \* 0.1)

newColonySize -= numDead

else

public int amoebaDead()

return numDead

End result output

public void endDialog()

JOptionPane Message Dialog: (null,"Colony Name: " + colonyName + "\nCaretaker Name: " + caretakerName + "\nStarting Size: " + colonySize

+ "\nTimes Fed: " + daysFed + "\nRequested amount to breed: " + timesBreed + "\nNumber of Successful Bred: " + successBreed

+"\nNumber sick and dead: " + numDead + "\nFinal Number of Amoebas: " + newColonySize)

**Tester Class: AmoebaTester**

Main method to test methods in reference class

Create yourColony object to test these all out

AmoebaColony yourColony = new AmoebaColony();

yourColony.startDialog();

yourColony.setSuccessBreed();

yourColony.getSuccessBreed();

yourColony.setReproduceAmoeba();

yourColony.getReproduceAmoeba();

yourColony.vitaminSickness();

yourColony.deathBySickness();

yourColony.amoebaDead();

yourColony.endDialog();