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\* Unit 3 Activity 8 Program/Question 4

\* This program will let the user can enter the initial animal population, the initial food supply and the amount of food added at the end of each hour. Then determine when the population will outgrow the food supply.

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import javax.swing.\*;

import javax.swing.table.DefaultTableModel;

public class LabAnimals

{

private static final Object[][] rowData = {};

private static final Object[] columnNames = {"Hour", "Amount in Account","Interest", "Total"};

public static void main(String[] args)

{

//Variable Declaration and Initializations

int popStart = 0, foodStart = 0, foodAdd = 0, foodEnd = 0, popEnd = 0;

DefaultTableModel listTableModel;

JTable listTable;

JFrame frame = new JFrame();

listTableModel = new DefaultTableModel(rowData, columnNames);

popStart = Integer.parseInt(JOptionPane.showInputDialog(null,"Lab Animals\n\nAt present there are x animals in a lab and enough food for y animals.\nAt the end of every hour the population doubles, and enough food is added to\nsupport z more animals. During and hour the animals will eat enough food for only themselves.\nThis program will determine when the population will outgrow the food supply.\n\nEnter the Initial Animal Population (x):", "NUMBER INPUT", JOptionPane.QUESTION\_MESSAGE));

foodStart = Integer.parseInt(JOptionPane.showInputDialog(null,"Enter initial food supply:", "NUMBER INPUT", JOptionPane.QUESTION\_MESSAGE));

foodAdd = Integer.parseInt(JOptionPane.showInputDialog(null,"Enter the amount of food entered each hour:", "NUMBER INPUT", JOptionPane.QUESTION\_MESSAGE));

System.out.println("Lab Animals\n===========\n");

listTableModel.addRow(new Object[]{"Hour", "Animals at Start", "Food at Start", "Food at End", "Animals at End"});

// Print it first before the everything because it will help with your first line being messed up

foodEnd = foodAdd - popStart + foodStart;

popEnd = popStart \* 2;

listTableModel.addRow(new Object[]{"1", popStart, foodStart, foodEnd, popEnd});

for (int i = 2; foodEnd >= popEnd; i++)

{

foodStart = foodEnd;

popStart = popEnd;

foodEnd = foodAdd - popStart + foodStart;

popEnd = popStart \* 2;

listTableModel.addRow(new Object[]{i, popStart, foodStart, foodEnd, popEnd});

if(foodEnd <= popEnd)

{

System.out.println("By hour " + i +", the population outgrows the food supply.\nTherefore, it's survival of the fittest by hour ");

}//end if

}//end loop

listTable = new JTable(listTableModel);

frame.add(listTable);

frame.setVisible(true);

frame.pack();

}//end main

}//end class