# Module 5: Drawing A State Machine From Rules

Version of 14 June 2015

We're going to draw the following program as a state machine. This program has something wrong with it. See if you can figure out what the problem is. First, read through the rules:

PAGE 1:
  [1] WHEN DO color me blue
  [2] WHEN see tree DO move toward
  [3] WHEN bump tree DO switch to page 2

PAGE 2:
  [1] WHEN DO color me pink
  [2] WHEN see apple DO move toward
  [3] WHEN bump apple DO eat it
    ↪ [4] WHEN DO play coin

PAGE 3:
  [1] WHEN DO color me green
  [2] WHEN see heart DO move toward
  [3] WHEN bump heart DO grab it
    ↪ [4] WHEN DO switch to page 2

Now follow the steps on the next page to draw your diagram here:

1. How many states are there? _____

2. Draw a circle for each state. Inside each circle write the page number at the top.

3. For each circle (state), write in the principal thing taking place on that page. See the earlier state machine diagrams for examples of how to describe what a page does.

4. For each page of rules, find the "switch to page" action, and in the diagram you're constructing, draw an arrow linking the two states. Label the arrow with the condition that causes the page switch to occur.

5. Which state is the start state? _____

6. Look at the diagram you drew. What does the kodu have to do to get to state 2?

   _____

7.  Can the kodu eat an apple before bumping a tree? _____ Why?

   _____

8.  Can the kodu eat two apples? _____ Explain your answer.

   _____

9. If it starts on page 1 (as it always does), when will the kodu grab a heart?

   _____

10. What is wrong with the program?

   _____