Making Choices

Conditionals questions –

- Does something happen differently at different times, or only happen sometimes?

  $\rightarrow$ **need conditionals**

- Imagine that you see only a snapshot of the sketch, frozen at a moment in time – can you determine what should happen next?
  - i.e. can you use the current values of the system variables and/or animation variables to make the decision?
  - yes $\rightarrow$ **on-the-spot decision**
  - no, it depends on prior events / what has been going on $\rightarrow$ **state machine**

State Machine

need to know what has been happening or what happened in the past to decide what to do

- $\rightarrow$ need a **state variable** to keep track of the current alternative
  - associate each alternative with a different value of the variable
  - a variable means declaration, initialization, usage, update

- How many alternatives are there for what happens? $\rightarrow$ variable type
  - two alternatives ("do nothing" may be one) $\rightarrow$ `boolean` type
  - more than two alternatives ("do nothing" may be one) $\rightarrow$ `int` type
- What are the alternatives for? $\rightarrow$ variable name
- What are the alternatives?
  - decide on which value of the state variable corresponds to which alternative $\rightarrow$ declaration comment
- Which alternative do we start with? $\rightarrow$ initialization
- usage
  - `if`/`else if`/.../`else` with a case for each alternative, using the state variable in the conditions
- For each state, what triggers a change to that state? $\rightarrow$ update
  - often an `if`/`else if`/.../`else` with the "what triggers" as the conditions