

today:

- iteration
- jumps
- loops

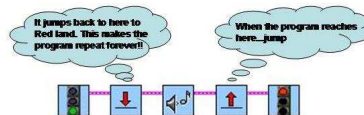
iteration

- *iteration* means doing something more than once, perhaps doing something over and over and over and ... and over again
- as you encountered in the last unit, there are times when you tell your robot to do something once, and you'd like to be able to tell it to do that thing more than once—without having to repeat the code again
- in RoboLab, there are several ways to do this: *jumps* and *loops*
- *jumps* provide a way to construct an *infinite loop*
- *loops* provide a way to construct a controlled, non-infinite loop

jumps

- a **jump** has two icons associated with it:

- **jump**  is placed before the first icon in the group of icons you want to repeat
- **land**  is placed after the last icon in the group of icons you want to repeat
- example:



- RoboLab has 5 colors of jumps: black, blue, green, red and yellow. you can use any color you want, but the jump and land have to match (i.e., they have to be the same color!)

loops

- controlled, non-infinite **loops** have an end (whereas **jumps** are a way of writing *infinite*, never-ending loops)
- loops end in two ways:
 - because they have run for a certain number of times; these are called *counter-controlled loops*
 - because a condition has changed that causes them to stop running; these are called *condition-controlled loops*

counter-controlled loops

- **start-of-loop**  is placed before the first icon in the group of icons you want to repeat
- **end-of-loop**  is placed after the last icon in the group of icons you want to repeat
- example:



condition-controlled loops

- **start-of-loop** is placed before the first icon in the group of icons you want to repeat; you have several choices depending on which *condition* you want to have changed in order to signal the end of the loop:

touch sensor pushed 

light sensor less than 

light sensor greater than 

- **end-of-loop**  is placed after the last icon in the group of icons you want to repeat

- these can be found on the "loops palette":

