Making Smart Decisions

NXT-G gives you the ability to program a robot that can evaluate conditions and values that are presented to it. It allows your robot to make choices based on these values; whether it makes smart choices is up to you. Using the tools that are available, you can program your robot to better navigate and solve tasks by “thinking” for itself instead of being hard-coded in what it will do when it hits the game field. Smart robots are winning robots.

**Switch Block**

The Switch block is found on the Flow palette and by default is set to evaluate the values of a Touch sensor, but it can be used for much more complex evaluations as well, including values of variables. Figure 6-1 shows the Switch block in its default state.
You can see that the Switch block contains a pair of sequence beams; one beam is followed if the condition is “true” and the other beam is followed if the condition is evaluated as “false.” You can add program blocks on these beams, and they will be run based on the state of the Switch block.

**Note**  A Switch block is a simple State machine. A *State machine* is a device that stores the status of a value and can run an event based on a change to that value. Some State machines are simple and have only values of True or False, while others can have a larger set of possible values.

**Basics**

A basic example of the Switch block would be a program that plays a tone and displays a smiley face on the NXT when the Touch sensor on port 1 is pressed. To start, move a Switch block to the sequence beam, as seen in Figure 6-2.