Activities for LEGO WeDo in Scratch 1.4+
Barb Ericson
ericson@cc.gatech.edu

Overview
You can use Scratch 1.4 with the LEGO WeDo tilt and distance sensors and motor. The motor blocks (tiles) are in the Motion category. The motor has power levels from 0 to 100. You can change the motor direction. The sensor blocks are in the Sensing category. The distance sensor returns a value from 0 (close) to 100 (far). The tilt sensor returns 0-4 with 0 meaning level, 1 meaning tilted down, 2 meaning tilted right, 3 meaning tilted up, and 4 meaning tilted to the left.

Top Spinner
Build time: 30 minutes to 45 minutes
Uses: motor and motion sensor

When the green flag is clicked turn on the motor. Also, when the green flag (you can use a second green flag) is clicked loop forever and if (use a forever-if) the motion sensor value is greater than 50 turn off the motor since the top spinning device has been lifted off the top. You can also use a variable to show the distance sensor value and set the value of the variable to the distance sensor value in a forever loop. You can also time how long the top spins. Just reset a timer when you turn the motor off and then when a space key is pressed set a variable (spin time) to the timer to show how long the top spun. You can also spin a ball sprite in Scratch while the top is spinning.
**Ball Kicker**

Build time: 10-20 minutes

Uses: motor and distance sensor

When the green flag is clicked set the motor direction to "that way" and turn the motor on for .2 seconds and then wait 0.5 seconds and set the motor direction to "this way" and turn on the motor for 0.2 seconds. Try different motor power values to see what effect this has on the distance the ball is kicked. Add a distance sensor to automatically kick the ball when it is in range (distance < 2). Use the balls from the LEGO NXT kit.

**Goal Keeper**

Build time: 45 minutes to 1 hour

Uses: motor

When the green flag is clicked start a forever loop. Turn on the motor one way, turn the motor on, and wait a random amount of time and then turn it the other way. Again, wait a random amount of time. Add when the space key is pressed to stop all scripts. Use this with the Ball Kicker to try and score goals and try to block goals.
Cheering Fans
Build time: 45 minutes to 1 hour
Uses: motor and distance sensor

When the green flag is clicked turn on the motor. When the space key is pressed turn off the motor and stop all scripts. You can also have the kids record a cheering sound and then play it until done in a loop with a wait after the play sound for 1-2 seconds. You can also use the distance sensor to turn it on or off.

Alligator Chomp
Build time: 45 minutes to 1 hour
Uses: motor and motion sensor

Program the alligator to close the jaws (turn motor direction one way and turn on motor for 0.5 seconds) and make a crunch sound and then open the jaws again (change the motor direction and turn it on for 0.7 seconds). You can trigger this behavior with the distance sensor (< 30) or when the green flag is clicked. You can use fish1-a and fish1-b in Scratch to also show the jaws of the fish in Scratch closing and opening.
**Bird Flap**
Build time: 40 minutes to 1 hour
Uses: tilt sensor and distance sensor

When the green flag is clicked loop forever and check if the tilt sensor is level (0). If it is then play a flap sound. Then wait for 0.3 seconds. You can also program the bat sprite to flap as well. You can show the tilt sensor value using a variable. You could use this to control a game where you have to keep the bird flapping to move forward or move up to avoid obstacles. You can add the distance sensor and detect when the head is down low and play a different sound then.

**Lion Roar**
Build time: 30 minutes
Uses: motor and distance sensor

When the green flag is clicked set the power level on the motor to 60 and make the motor go for .5 seconds to get the lion to sit up and roar (record a roar and play it). Then when a key is pressed make the lion lie down (power level 40 and .5 seconds) and sleep (record a sound). You could add the distance sensor and activate the roar when something is too close. Put it on the shoulder (under the head).
Monkey Drummer
Build time: 30 minutes to 45 minutes
Uses: motor

When the green flag is clicked turn the motor on. Give the monkey something to bang to make a noise. Change the cams to change the beat. Use Scratch to allow you to also make music by pressing keys for notes. Or by controlling the length and type of music being played. You can change the cams to change the beat of the drumming and also change the motor power level. You can add some Scratch sprites that dance to the music.