

CSCI 210 Homework 1

Assigned: Wednesday, February 1, 2012

Due Date: Friday, February 10, 2012

Due Time: 11:59 pm

Purpose

This assignment focuses on:

- Programming in Scratch.
- Understanding Sprite motion.
- Using variables to control Sprites.
- Understanding broadcasting and message passing.

This is an individual assignment. You **must** work on your own. You may contact the instructor if you have difficulty with the assignment. **Start early** so you may ask for help in class, if you run into any problems.

Assignment

Create a Scratch game, and implement the following components (it would be prudent to save a version of your game at each step):

1. Create a "Player" sprite. Add scripts so the sprite moves up, down, left and right when the corresponding key is pressed. You may use the event version of key presses, or continually check while the game is running. You do not have to animate the Sprite as it moves (a single costume is okay). Test to make sure the player moves as expected.
2. Create a "Level" sprite with two costumes. Each costume in the level should fill the entire stage (i.e., its size should be 480x360). Place a border around the outside of the costume, and place some walls in each costume. All walls and borders should be the same (and a unique) color. In each level, place a small dot or square of a different color.
3. Write a script in the "Player" sprite so that when the sprite touches the color of the dot on the level, it broadcasts "changeLevel". Write a corresponding script for the "Level" sprite so that when "changeLevel" is received, the "Level" sprite changes its costume. Test to make sure that levels change as expected.
4. Create a "Ball" sprite. Create two variables for this sprite, "velocity_x" and "velocity_y". Create a script which places the ball in the center of the stage when the game starts, and which sets "velocity_x" and "velocity_y" to random values between -10 and 10. Create a script which, while the game is running, changes the x and y position of the sprite by the corresponding velocity variable (don't forget to include a short wait in this). Test to make sure the ball starts in the center of the level and moves a random direction when the game is begun.

5. Add two dots of one color to the left and right of the Ball sprite, and two dots of a different color to the top and bottom of the Ball sprite. Create two scripts so that if the left / right colored dots touch the wall / border color, the "velocity_x" changes from positive to negative (or vice versa), and if the top / bottom colored dots touch a wall / border color, the "velocity_y" changes from positive to negative. (You simply need to multiply the variable by -1 to achieve this). This should make the ball bounce off of borders / walls. You will likely need to introduce a moderate amount of delay after changing the variables, otherwise the ball may remain stuck on a wall. Test the behavior of the game to see if the ball bounces.
6. Create a "Light" sprite. This sprite should have two costumes (i.e., light is off, light is on). This could be as simple as two different colored dots. Add a variable "numberOfTimes" to this sprite. When the "Player" touches the "Ball", have the "Player" broadcast "hitMe". When "Light" receives "hitMe", have it change color (costume) for a second or so. Also, increment "numberOfTimes" by one, and have the sprite say this value. Note that a short delay will likely be necessary after the broadcast, to avoid broadcasting multiple times. Test the behavior of the game.

Submission

1. Submit the Scratch project (yourName_Homework1.sb) to Homework 1 in the dropbox.

Assessment

Your grade will be based on how well you followed the above instructions. Each of the six items in the homework will have equal weight. If you have trouble implementing one item, move on and implement the remaining (i.e., if you can't make the ball bounce, still implement the Light portion).

Late assignments will be deducted 10% per day late.