Exploring Computer Science

Days 5-6 Scratch Lesson Plans

Day 5 Move

Objective: Students will explore the ways that sprites can move around the stage, using just the x coordinate of the xy coordinate pair.

Step One: Discuss the number line that they learned in math. Explain that if a number is positive on the number line, then you are to move to the right, but if a number is negative on the number line, you are to move to the left. (With middle-schoolers you might want to show them this video clip <https://www.youtube.com/watch?v=1O12C9EcdFo&scrlybrkr=47263aa8> and have them practice by standing up and having them physically move (Simon says move positive ten steps, Simon says move negative ten steps…make a Simon says game of it.)

Step Two: On overhead, run the moving.sb program. Discuss what happened with each of the animals.

-Click on each of the sprites and examine each of the programs. Then have the students work with a partner and answer questions 1-8. Discuss.

-Ask them about the significance of the positive x and negative x and what they meant. (referring back to step one)

-Ask them why it’s important that the program resets itself whenever you click on the green flag. (very important when you start programming the baseball.sb.)

Step Three: Let them experiment with Moving.sb and remix it to make the sprites move different amounts, different directions, etc. Share their newly remixed programs with each other.

Day 6 Baseball

Objective: Students will explore ways that sprites can move around the stage using both the x and the y coordinates of the xy coordinate pair.

Step One: Review positive and negative x and what that means on the Scratch stage. Ask students what they might do if they want their sprites to move up and down as well. Review positive and negative y and what they mean on the Scratch Stage. (If they are totally clueless on coordinate planes, you might want to spend an extra day on teaching coordinate planes OR show this Brainpop (<https://www.brainpop.com/math/dataanalysis/coordinateplane/> ).

On the overhead, show them the Baseball.sb demo, (Baseball demo <http://www.missblomeyer.com/docs/expcs/baseball.sb2.swf> ), and point out the following items:

-This program has a reset script- what might be included in it?

- The cat turns and faces the direction it is running.

- The cat celebrates when it completes the home run. (How might we change this?)

Then have students complete numbers 9 and 10 on the Moving Project worksheet. Discuss answers with class.

Step Two: Have students navigate to Scratch.mit.edu and search for baseball.sb. Pass out the baseball rubric and let them write their own program for Scratch Cat.

Baseball rubric <https://docs.google.com/document/d/1JM9oEAlLQs2JAZFgrDJeW-Cwf7sb4aMVjZUBfxtrmeA/edit>