

Lesson 3 - Events - Teacher's Guide

<http://www.stencyl.com/teach/act3/>

Objective

Expose students to fundamental programming concepts including Events, Variables and Coordinate Systems (for drawing graphics).

Outcome

Students will apply the concepts they have learned by adding the following functionality to an existing game:

- Adding collectible items.
- Drawing a score to the screen.

Lesson Plan (1 - 2 hours)

Discussion
20 minutes

Cover the topics under Discussion Notes (Page 2)

Present the topics. Pose questions at appropriate points and encourage students to participate in the discussion.

Activity
40 minutes

Extend an existing game

Students will apply what they've just learned to add functionality to an existing game.

Activity
60 minutes

Work on extra activities

Students will work on a more challenging set of activities in order to demonstrate mastery of the concepts they've learned.

Note: Extra activities are optional but recommended.

Discussion Notes

Topic 1: Events

Events are things that “happen” in a game. Events are important because they make the game act differently depending on what is happening.

For example, if the player presses the jump button, we expect the Hero to jump. For this happen, the game fires a key-press event, which triggers the jump behavior for the Hero.

Discussion Idea: What are examples of events? Have students come up with these on their own.

- External Events
 - Keyboard
 - Mouse Clicks
 - Touch
 - Camera
 - Network / Internet
- Internal Events
 - Collisions
 - Actors reaching some part of a stage

Topic 2: Variables

Variables let us remember things for the future. In Stencyl, we call them *attributes*.

For example, in a baseball game, each team’s score is tracked over the course of the game. Variables are much like keeping score (but they can hold more than just numbers!).

Discussion Idea: Have students come up with reasons why variables are useful for games, preferably using concrete examples. For example, Super Mario Bros. uses variables to keep track of the time remaining to complete the current level.

Anatomy of a Variable

Variables consist of a name (identifier), a type and a value. The name lets us use a variable in the future, so that we can tell it apart from other variables.

score -> 24

The type, on the other hand, tells the system what kind of information a variable holds. Some variables hold numbers. Others hold text.

Last but not least, the value is the actual information held by a variable.

Scope

Scope tells us whether a variable is accessible throughout the entire game (global variable) or if it pertains only to specific parts of a game, such as an individual actor (local variables).

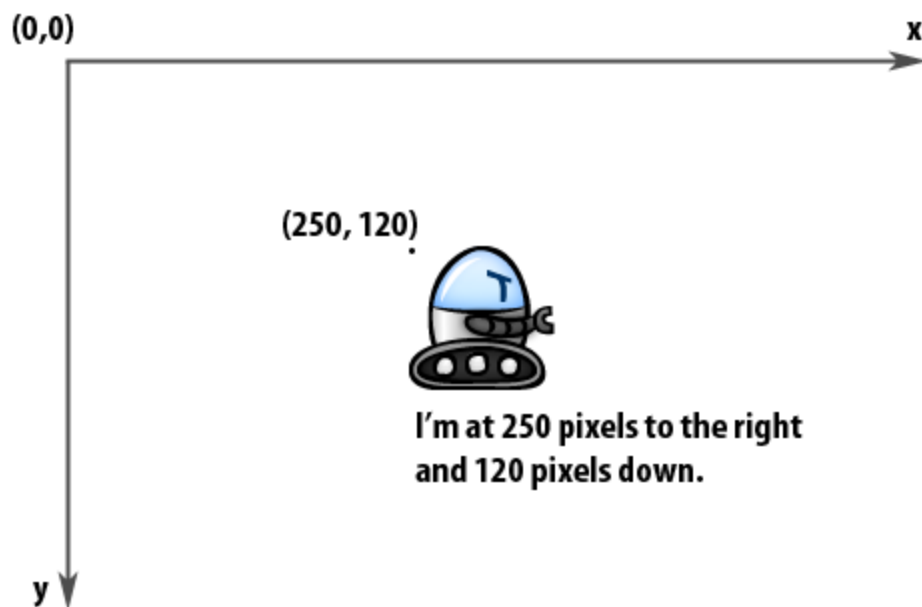
For now, we'll only concern ourselves with global variables.

Question: When would it be useful to have local variables vs. just global variables?

Topic 3: Drawing

In order to complete the activity, students will draw the game's score to the screen. It's appropriate to mention our coordinate convention for drawing.

When drawing graphics to the screen, our convention is to treat (0,0) as the top-left corner.



Tip: If students haven't been introduced to coordinate systems, skip this or convey using pictures.