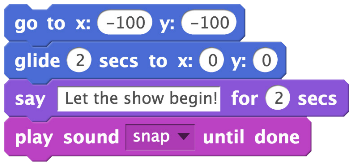
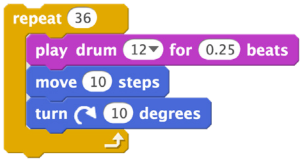
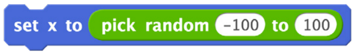
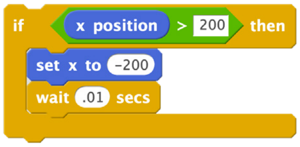
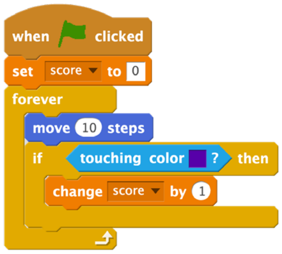
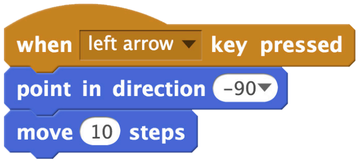
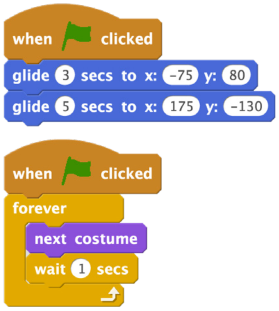
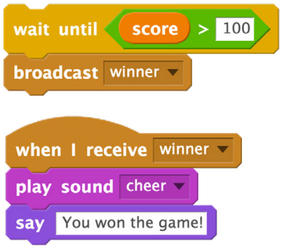
COMPUTATIONAL CONCEPTS SUPPORTED IN SCRATCH

In the process of creating projects with Scratch, young people develop as computational thinkers. They learn concepts, engage in practices, and develop perspectives they can use to express their ideas with code. This list features fundamental computational concepts that are supported in Scratch.

Concept	Explanation	Example
sequence	To create a program in Scratch, you need to think systematically about the order of steps.	 go to x: -100 y: -100 glide 2 secs to x: 0 y: 0 say Let the show begin! for 2 secs play sound snap ▾ until done
iteration (looping)	*forever* and *repeat* can be used for iteration (repeating a series of instructions)	 repeat 36 play drum 12▾ for 0.25 beats move 10 steps turn ↻ 10 degrees
random	*pick random* selects random integers within a given range.	 set x to pick random -100 to 100
conditional statements	*if* and *if else* check for a condition.	 if x position > 200 then set x to -200 wait .01 secs
variables	The variable blocks allow you to create variables and use them in a program. Variables can store numbers or strings. Scratch supports both global and object-specific variables.	 when ⚑ clicked set score ▾ to 0 forever move 10 steps if touching color ■ ? then change score ▾ by 1
event handling	*when key pressed* and *when sprite clicked* are examples of event handling – responding to events triggered by the user or another part of the program.	 when left arrow ▾ key pressed point in direction -90▾ move 10 steps

To learn more computational thinking, see scratched.gse.harvard.edu/ct/

Concept	Explanation	Example
threads (parallel execution)	Launching two stacks at the same time creates two independent threads that execute in parallel.	 when ⚑ clicked glide 3 secs to x: -75 y: 80 glide 5 secs to x: 175 y: -130 when ⚑ clicked forever next costume wait 1 secs
coordination and synchronization	*broadcast* and *when I receive* can coordinate the actions of multiple sprites. Using broadcast and wait allows synchronization.	 wait until score > 100 broadcast winner ▾ when I receive winner ▾ play sound cheer ▾ say You won the game!

To learn more about Scratch see scratch.mit.edu/about