

pset 0: Scratch

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Scratch



Toolbox



- Sprites & costumes
- Stage & backgrounds
- Conditions
- Loops
- Variables
- Broadcasting events
- Threads

Sprites

- Every object is a **sprite**.

- ▣ Two cats \Rightarrow two sprites



- Sprites have:

- ▣ **Scripts** (how the sprite 'behaves')

- ▣ **Costumes** (what the sprite looks like)



Stage

- Where all sprites are placed
- The stage can also have scripts
 - ▣ Useful when scripts aren't specific to an actual sprite
- Instead of costumes, has **backgrounds**.

Creating Scripts; Entry Point

- Begin the program with pressing the green flag.



Statements

- Where the action is

play sound meow ▼

move 10 steps

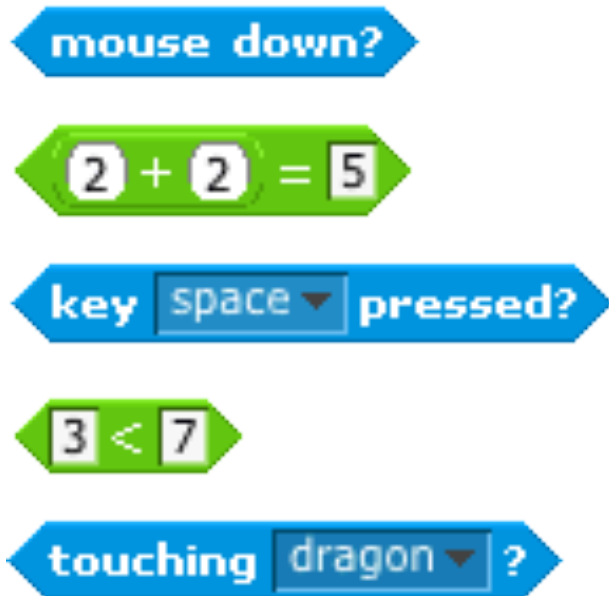
set score ▼ to 20

change size by 10

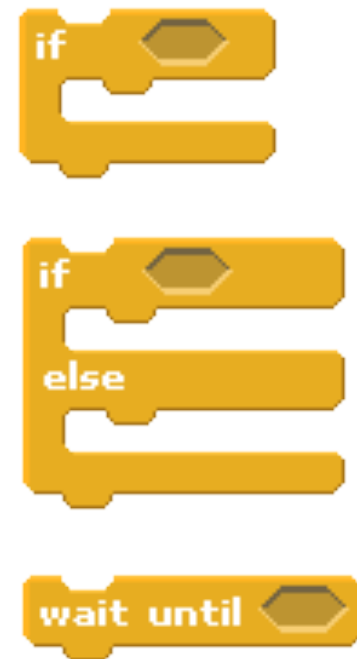
set pen color to ■

Booleans, Conditions

- Ask a true/false question...



- ...And do something based on the answer.



Loops

- Used to repeat statements

- ▣ Continuously



- ▣ For a set number of times



- ▣ Until a certain condition is true



Avoid this:



Much better!



Variables

- Contain values
 - ▣ In Scratch: Numbers and words



A Scratch 'set' block, which is orange and has a notch on the left side. It contains the text 'set', a dropdown menu showing 'text', the word 'to', and a text input field containing 'Hello, World!'.



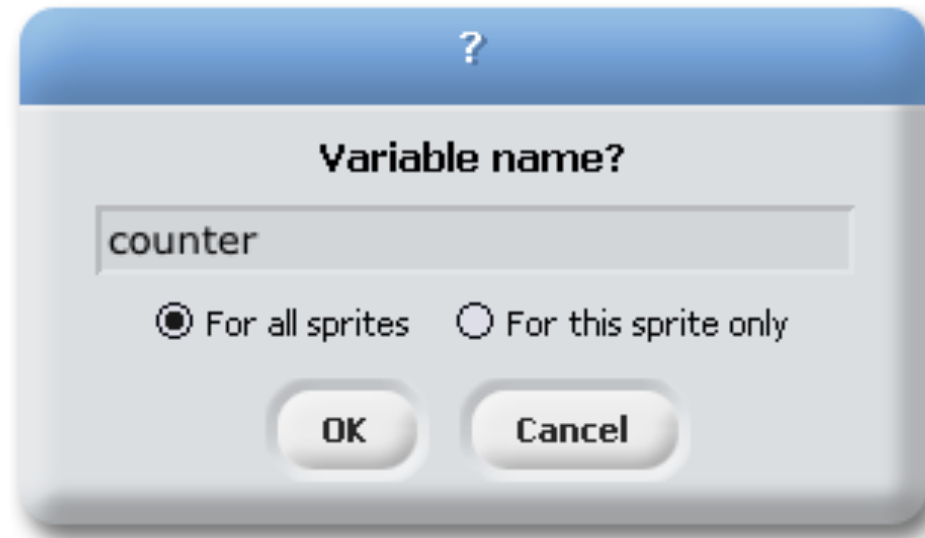
A Scratch 'change' block, which is orange and has a notch on the left side. It contains the text 'change', a dropdown menu showing 'counter', the word 'by', and a numeric input field containing '3'.



A Scratch 'if' block, which is green and has a pointed right side. It contains the text 'counter', a less-than sign '<', and a numeric input field containing '0'.

Variables: Scope

- Global (stage + all sprites)
- Local (one sprite only)
- *Who needs to use the variable?*



Events

- How the sprite behaves when...



Broadcasting events

- Allows sprites to communicate

- Signal an event:

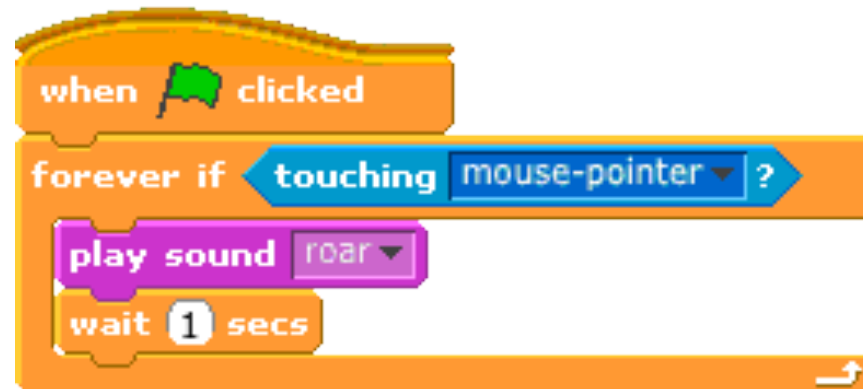


- Handle an event:



Threads

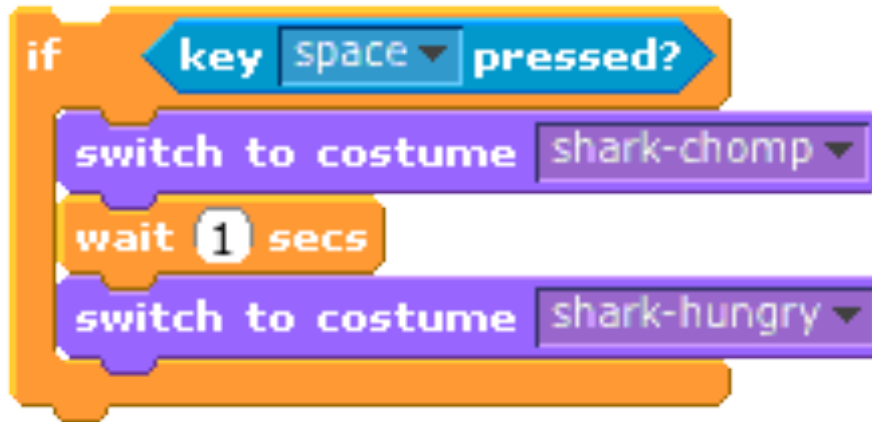
- Simultaneous processes



Example: Hungry Shark

HungryShark 0

- Shark moves off screen
- Chomp action



- Fish movement



HungryShark 1

- Chomp, revisited



- Score updates

HungryShark 2

- Eating a poisonfish makes the shark sick



- Game over feature



this was walkthrough 0