

**Scratch Jr.**

**Tufts University + MIT Media Lab. +  
Playful Invention Company + Two Sigma**

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# Scratch Jr.

Scratch for preschool children

App for Android or IOS (or desktop)

NO variables

Scenes + Actors (background and sprites)

Simple interactions (start, touch, hit)

Simple messages (6 “colours” only)

PARALLEL execution of scripts for the same event (interleaved)

Games made of (up to 4) scenes

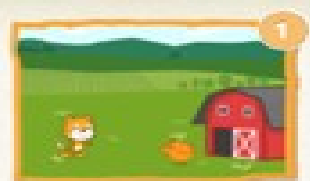
No interaction between Scenes (apart “switch to”)

Beeps and/or recorded sounds

Repeat N times

NO if-then-else

Scratch Jr



Cat



Barn

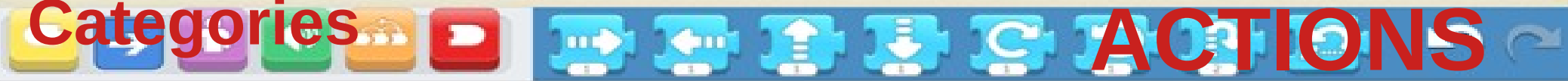


Chicken

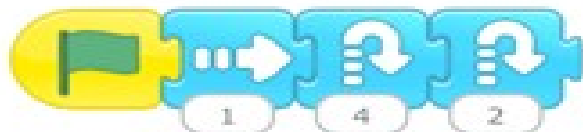


SCENES

Categories



ACTIONS



REACTIONS (events)

# Action Blocks

## Motion

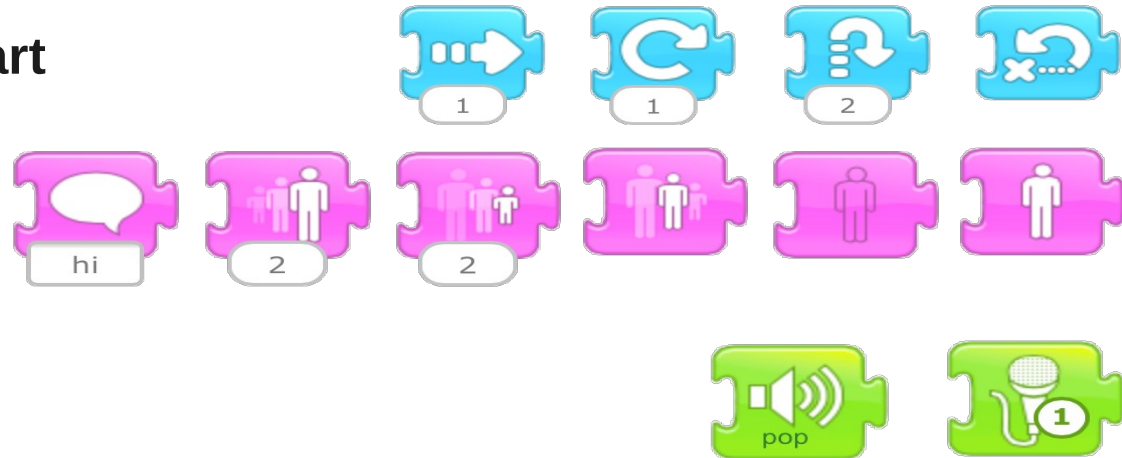
move/rotate/jump/go back to start

## Look

say/grow/shrink/hide/...

## Sound

"pop"/play recording



# Control Blocks

## Triggers/Event definition

start on flag/touch/hit/got msg./send msg.



## Control

wait/speed/halt/repeat N times



## End

end/repeat forever/go to screen X



# WHO'S MISSING?

# IF/THEN/ELSE!!!

# Interactivity

## TOUCH

Kid vs. Agent (touch Agent picture on screen)

Agent vs. Agent (Agent hits Agent)

**HINT:** to interact with the background use an “obstacle” Agent  
e.g. when you want to detect when the agent hits a wall of a labyrinth

## TEXT or SOUND

Agent to kid (Agent shows a message)

(Agent plays a sound)

(Agent plays a recording)

# Styles of programming

## Concurrent

Concurrent execution of multiple scripts for the same event

## Event-based

Agent reactions to standard interactions AND/OR messages

## Coordination

Message-based (messages are broadcasted to all agents **in the SAME scene**)

Time-based (by inserting wait)

# MISSING

**Variables!**

**Values!**      there's no input apart from movement/touch

**IF-THEN-ELSE?**

it's “implicit” in the different events that could happen while the actors interact with each other

E.g. go to the “WIN/LOST” screen if goal reached/or the wall hit



# C.T. concepts

## Sequence/Algorithm

ordered actions to solve a task

## Loops / nested loops

repeat the same sequence (but not conditioned)

## Parallelism

different actions done at the same time  
e.g. composition of movements

## Events

something starting a reaction

External:

touch/hit

Internal:

messages

agents' collisions

# Example: build an Interactive Labirynth

## Agents:

- Arrows
  - send msg
- Star moving  
(if got msg)
- Walls
  - To be avoided
  - go to “LOST”
- Goal
  - go to “WIN”

