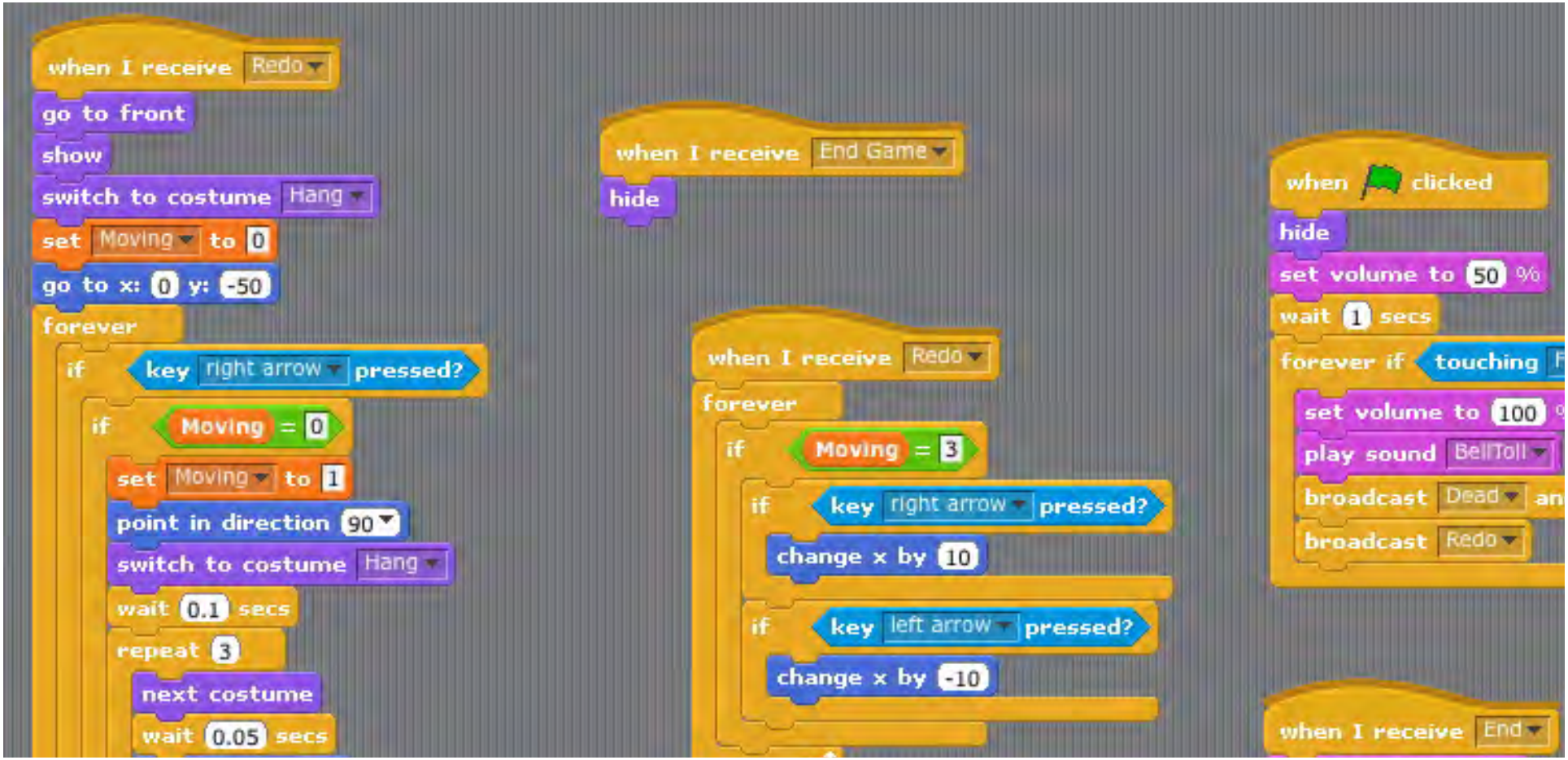

Strategies and Approaches for Assessing the Development of Computational Thinking

Scratched Webinar Series
Wednesday, May 30, 2012
7pm – 8pm EST
Karen Brennan and Michelle Chung

What are young people learning as they develop interactive media with Scratch?

AddictingGames

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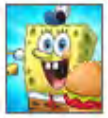
New games

updated: 05/22/12

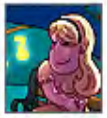
Martians...From Mars!
Lead the Defense of Earth from Cavemen to Astronauts!



Free! SpongeBob Diner Dash
Help SpongeBob run a restaurant!

Killbot
Notebook Robot Goes on Rampage!

Erline
Partners in Platform Quest Use Unique Powers!



Finding My Heart
Discover Differences to Let Love Bloom!

12 Hand-Drawn Games
Play It Like You Drew It!

Adventure Time: Rhythm Heroes
Pop a Groove with Finn and Jake!

Battleship
The Battle for Earth Begins Now!

Dragons of Atlantis
Build an Empire, Raise your Dragon, Join Today!

Featured Games

put a power move on them

The Amazing Spiderman
Spiderman Battles Criminals on the Rooftops of New York!

AddictingGames Mobile App
Break Bricks, Enlist Monsters!

Become the Ultimate Hero!
Become the Ultimate Hero!

SCRATCH

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Create and share your own interactive stories, games, music, and art

Check out the 2,548,250 projects from around the world!

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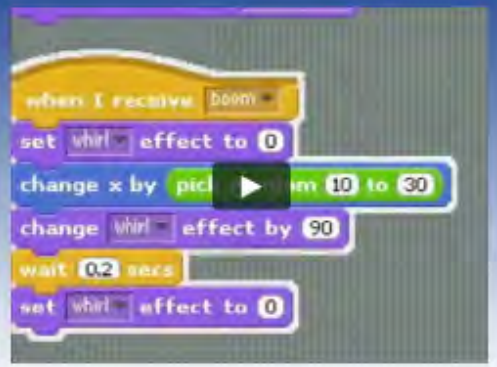
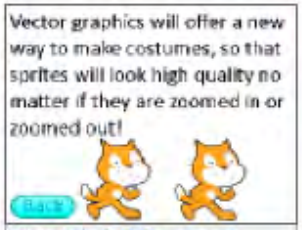


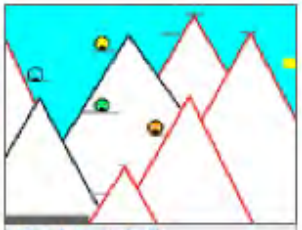
Featured Projects

See more

The giant squid
by wasabi06



Scratch 2.0 Overview
by Lucario621 *



BETA Invisiball...
by sparky08

Projects Selected by Legolas_Greenleaf

Learn more

Scratch Day

Be a part of Scratch Day - a worldwide network of gatherings, where Scratchers come together to meet, share, and learn.

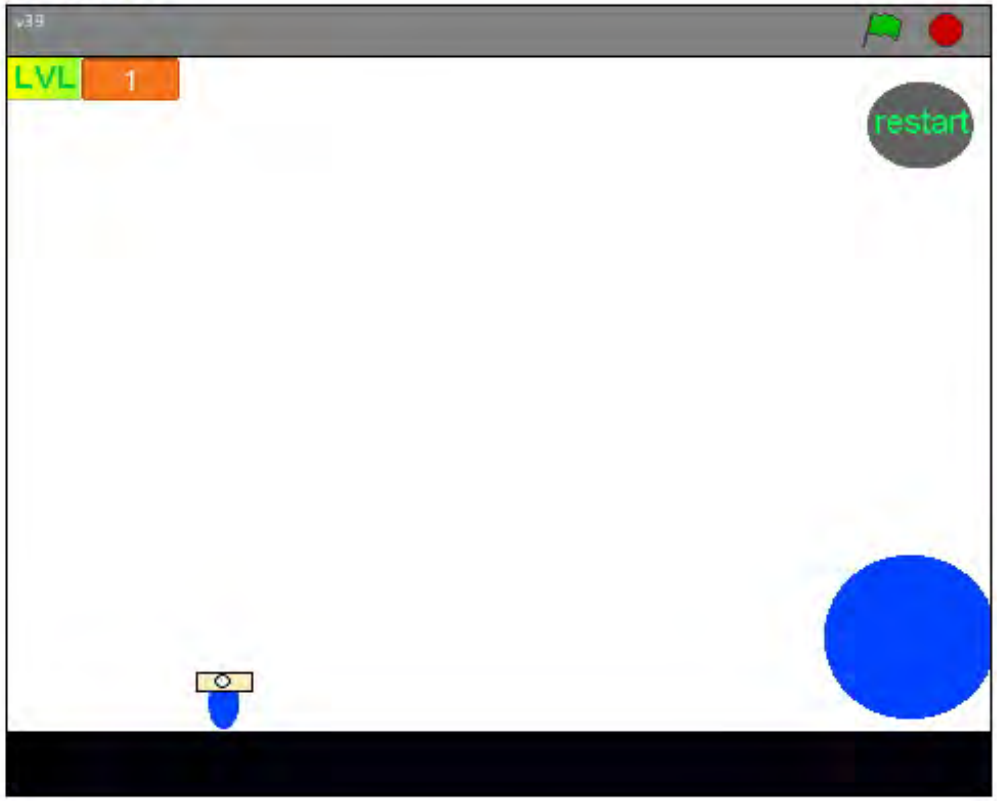
Find out more

ScratchEd

Do you help people learn Scratch? Join ScratchEd, our new online community for educators.

Find out more

100 levels



dylanscratchm... shared it 1 month, 2 weeks ago

Download this project!

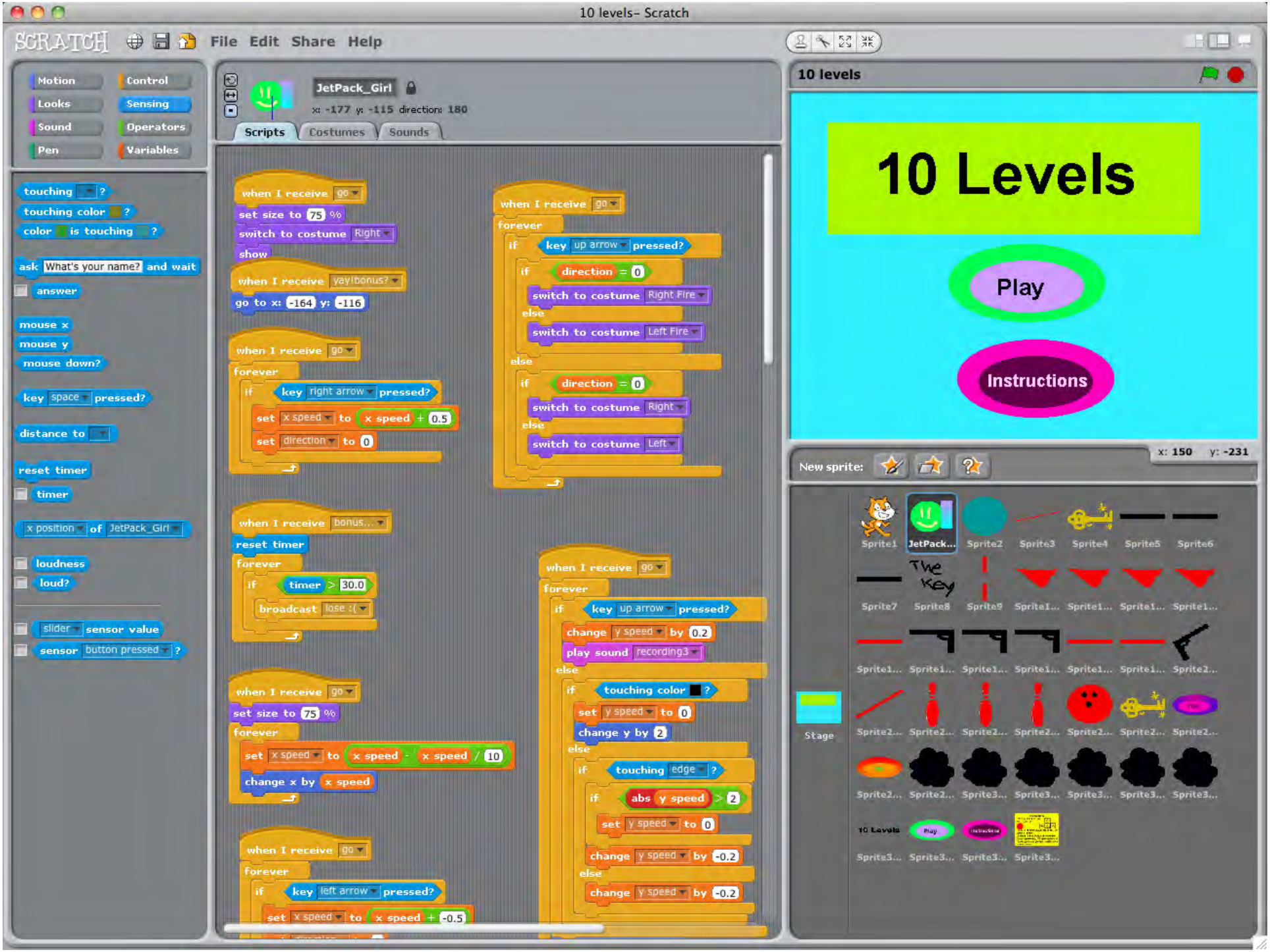
Download the 15 sprites and 24 scripts of "100 levels" and open it in Scratch

Project Notes

welcome to 100 levels.
i made originally 51 levels and when i said for every love it i would add a level. but then it got curated and it got to many love its and it got really stressful
every ther comment is how do you do this level.
how do you do that.
and then came the day that i couldnt finish all 100 because my computer fizzed out.
well now i would suggest that after you play this game you press love it and then go play some of my other really good games.
one for instance is called ninja assissin and it is really fun and before ninja assassin three can come out i need 10 love its. and


SCRATCH
File Edit Share Help
Motion
Control
Looks
Sensing
Sound
Operators
Pen
Variables
Sprite1
x: 0 y: 0 direction: 90
Scripts
Costumes
Sounds
move 10 steps
turn 15 degrees
turn 15 degrees
point in direction 90
point towards
go to x: 0 y: 0
go to
glide 1 secs to x: 0 y:
change x by 10
set x to 0
change y by 10
set y to 0
if on edge, bounce
x position
y position
direction
New Sprite
Computer
karen
Desktop
Costumes
Fantasy
gobo1
gobo2
gobo3
1 script
Growing Drago...
Scripts: 6
JetPack Girl
Scripts: 2
Jump-flip Mons...
Scripts: 2
Jumping Jack
knight1
Scripts: 2
OK
Cancel
x: -366 y: -161
Stage


10 Levels
Play
Instructions


10 levels- Scratch
SCRATCH
File Edit Share Help
Motion
Control
Looks
Sensing
Sound
Operators
Pen
Variables
touching ?
touching color ?
color is touching ?
ask What's your name? and wait
answer
mouse x
mouse y
mouse down?
key space pressed?
distance to
reset timer
timer
x position of JetPack_Girl
loudness
loud?
slider sensor value
sensor button pressed ?
JetPack_Girl
x: -177 y: -115 direction: 180
Scripts
Costumes
Sounds
when I receive go
set size to 75 %
switch to costume Right
show
when I receive yay!bonus?
go to x: -164 y: -116
when I receive go
forever
if key right arrow pressed?
set x speed to x speed + 0.5
set direction to 0
when I receive bonus...
reset timer
forever
if timer > 30.0
broadcast lose :(
when I receive go
set size to 75 %
forever
set x speed to x speed - x speed / 10
change x by x speed
when I receive go
forever
if key left arrow pressed?
set x speed to x speed + -0.5
when I receive go
forever
if key up arrow pressed?
if direction = 0
switch to costume Right Fire
else
switch to costume Left Fire
else
if direction = 0
switch to costume Right
else
switch to costume Left
when I receive go
forever
if key up arrow pressed?
change y speed by 0.2
play sound recording3
else
if touching color ?
set y speed to 0
change y by 2
else
if touching edge ?
if abs y speed > 2
set y speed to 0
change y speed by -0.2
else
change y speed by -0.2
10 levels
10 Levels
Play
Instructions
New sprite:
x: 150 y: -231
Stage
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JetPack...
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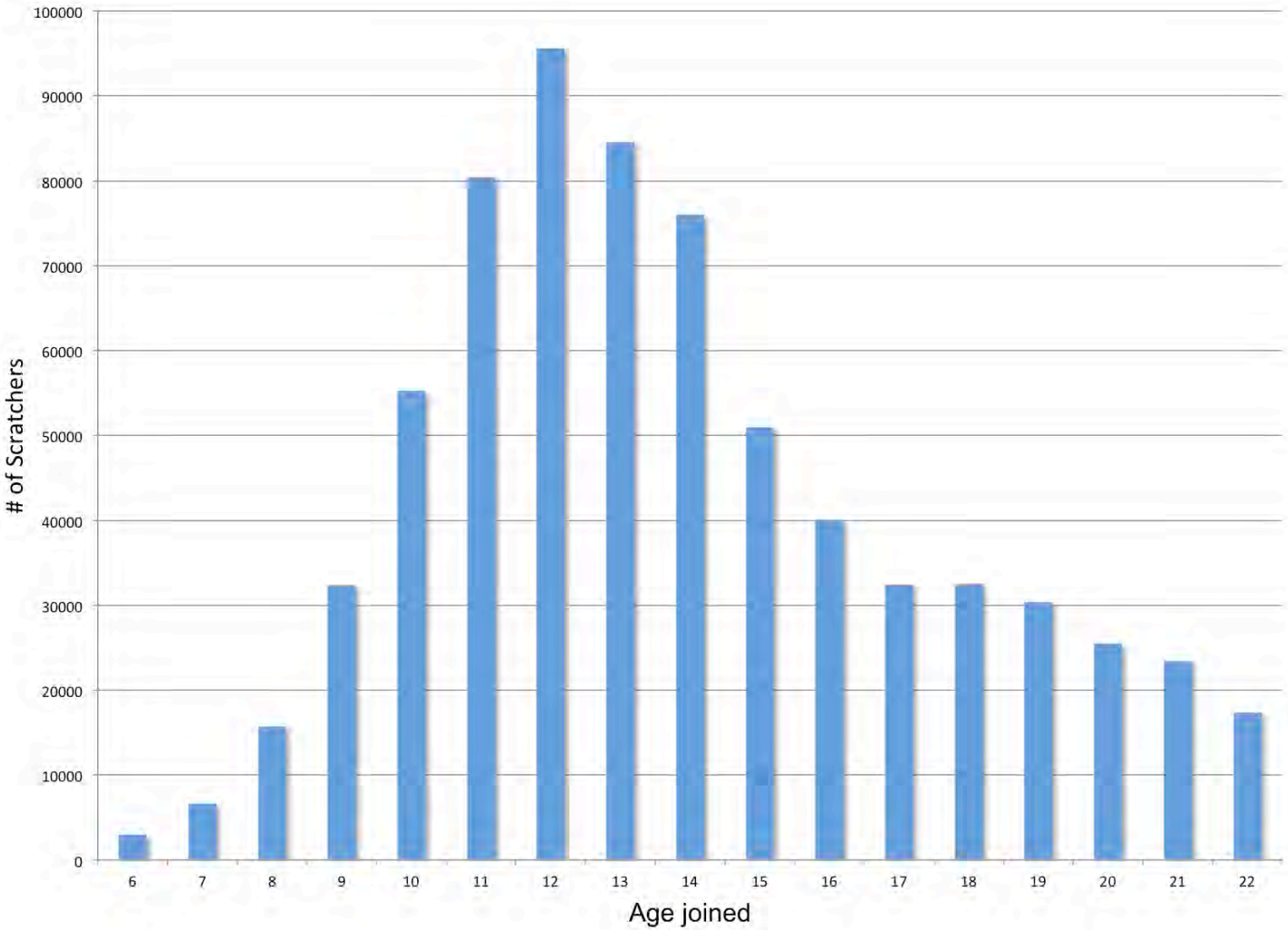
1,125,262

registered members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Age joined

2,566,018

projects uploaded

What are young people learning as they develop interactive media with Scratch?

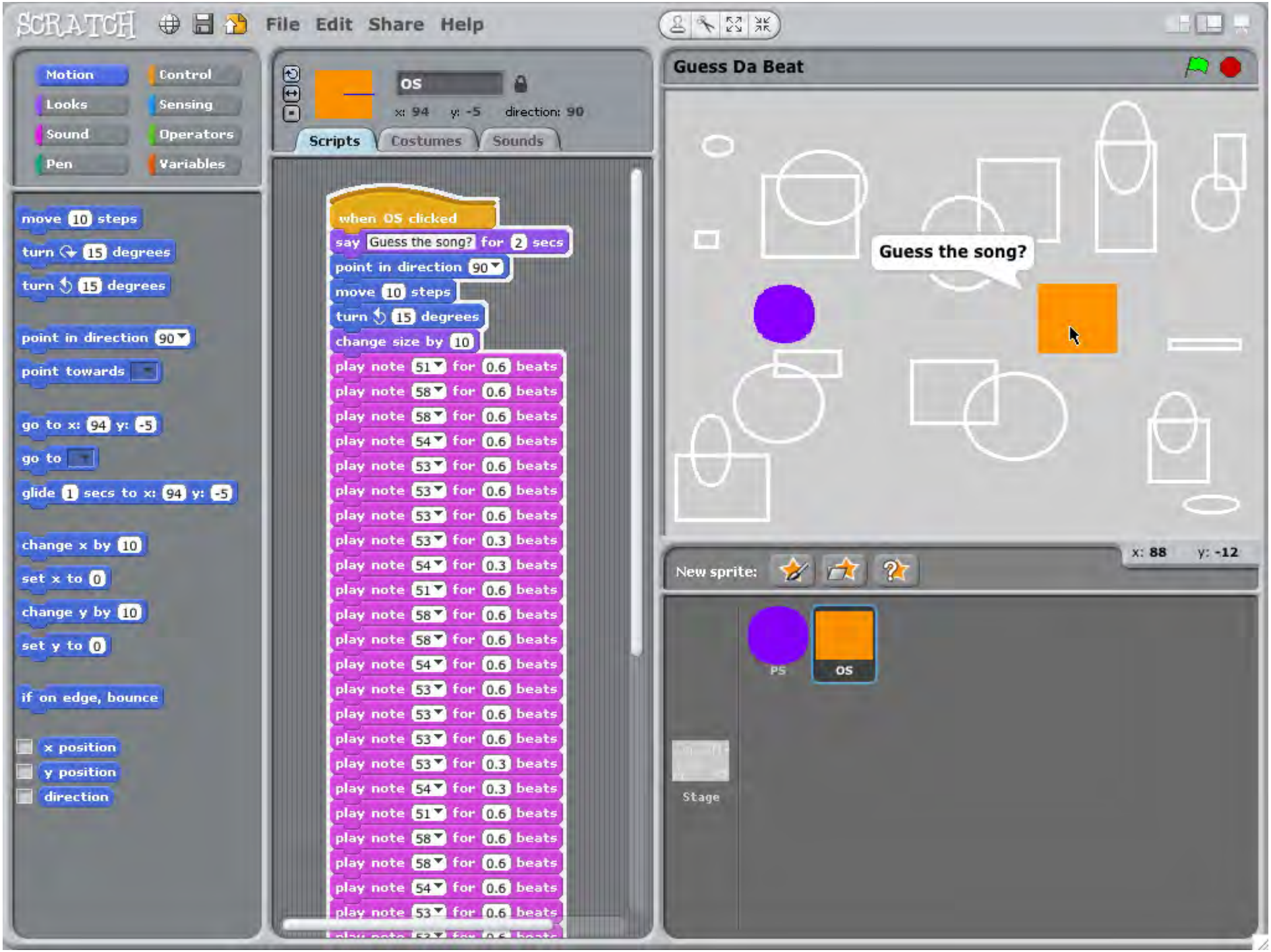
Computational Thinking

Computational Thinking

Computational **Concepts**
Computational **Practices**
Computational **Perspectives**

Computational **Concepts**

sequences
loops
parallelism
events
conditionals
operators
data


SCRATCH
File Edit Share Help
Motion
Control
Looks
Sensing
Sound
Operators
Pen
Variables
move 10 steps
turn 15 degrees
turn 15 degrees
point in direction 90
point towards
go to x: 94 y: -5
go to
glide 1 secs to x: 94 y: -5
change x by 10
set x to 0
change y by 10
set y to 0
if on edge, bounce
x position
y position
direction
OS
x: 94 y: -5 direction: 90
Scripts
Costumes
Sounds
when OS clicked
say Guess the song? for 2 secs
point in direction 90
move 10 steps
turn 15 degrees
change size by 10
play note 51 for 0.6 beats
play note 58 for 0.6 beats
play note 58 for 0.6 beats
play note 54 for 0.6 beats
play note 53 for 0.6 beats
play note 53 for 0.6 beats
play note 53 for 0.6 beats
play note 53 for 0.3 beats
play note 54 for 0.3 beats
play note 51 for 0.6 beats
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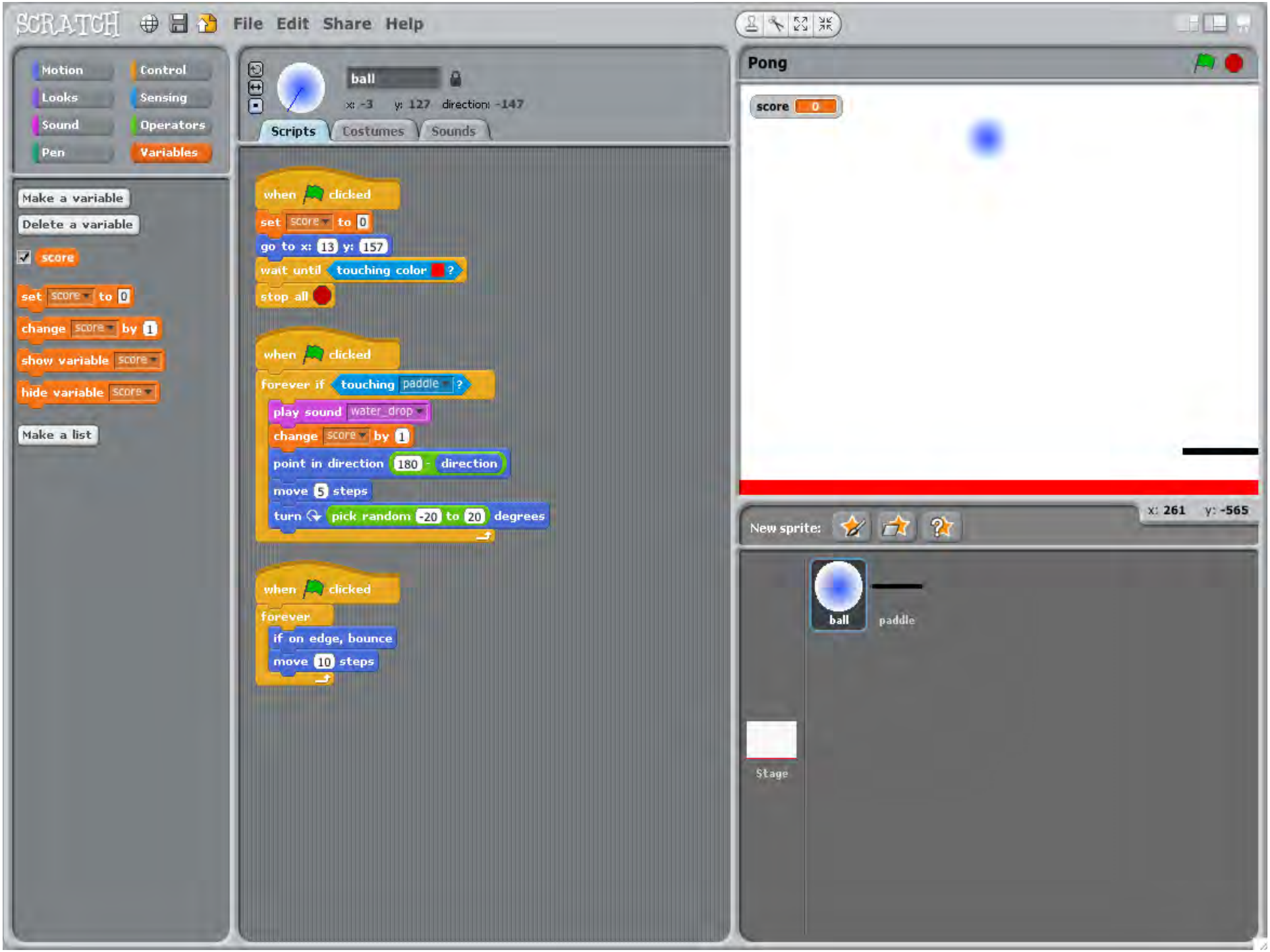
play note 53 for 0.6 beats
play note 53 for 0.6 beats
play note 53 for 0.6 beats
play note 53 for 0.3 beats
play note 54 for 0.3 beats
play note 51 for 0.6 beats
play note 58 for 0.6 beats
play note 58 for 0.6 beats
play note 54 for 0.6 beats
play note 53 for 0.6 beats
Guess Da Beat
Guess the song?
x: 88 y: -12
New sprite:
PS
OS
Stage


SCRATCH
File Edit Share Help
Motion
Control
Looks
Sensing
Sound
Operators
Pen
Variables
Make a variable
Delete a variable
score
set score to 0
change score by 1
show variable score
hide variable score
Make a list
ball
x: -3 y: 127 direction: -147
Scripts
Costumes
Sounds
when clicked
set score to 0
go to x: 13 y: 157
wait until touching color ?
stop all
when clicked
forever if touching paddle ?
play sound water_drop
change score by 1
point in direction 180 - direction
move 5 steps
turn pick random -20 to 20 degrees
when clicked
forever
if on edge, bounce
move 10 steps
Pong
score 0
New sprite:
x: 261 y: -565
ball
paddle
Stage

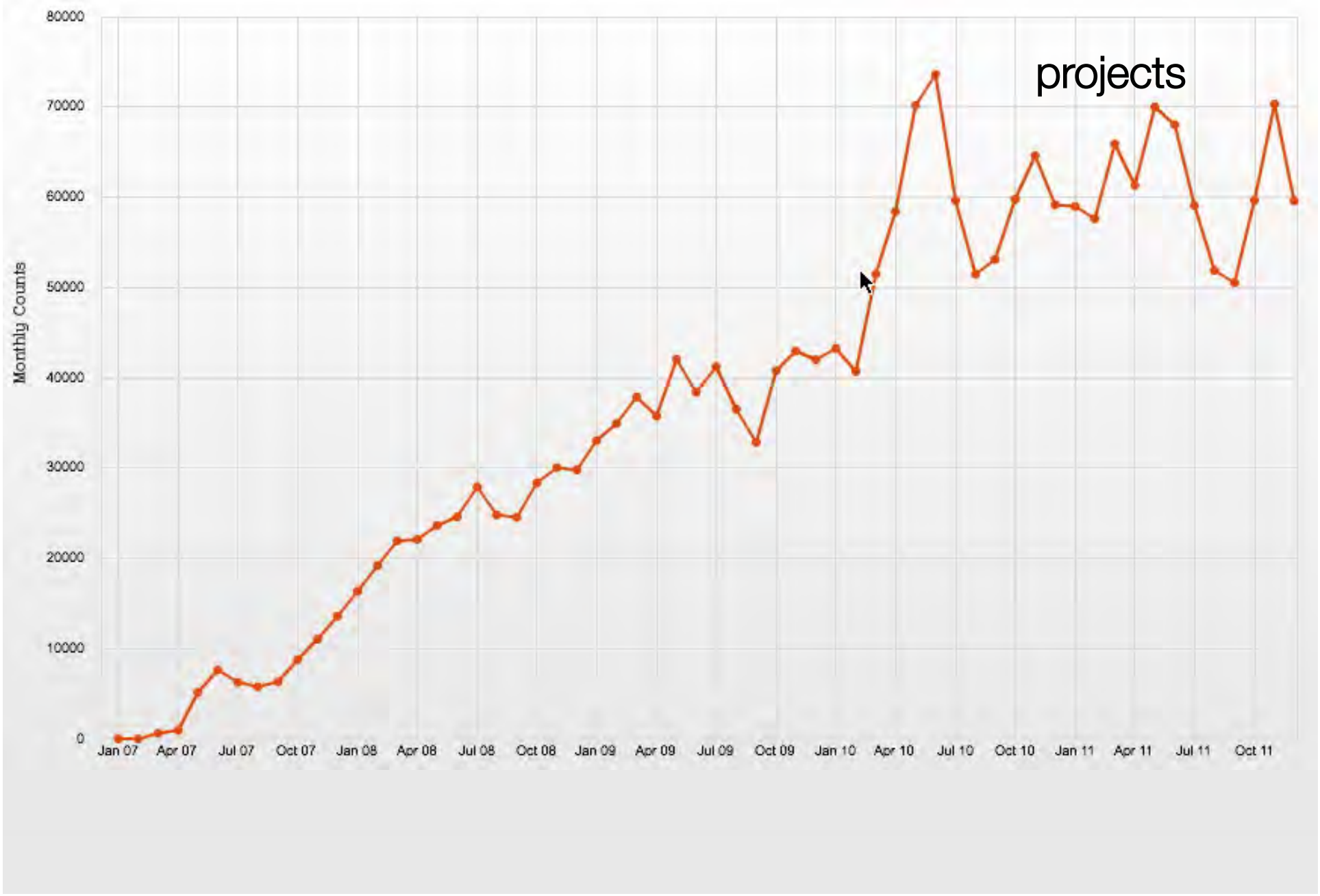
Computational **Practices**

being incremental/iterative

testing/debugging

reusing/remixing

abstracting/modularizing


projects
Monthly Counts
80000
70000
60000
50000
40000
30000
20000
10000
0
Jan 07
Apr 07
Jul 07
Oct 07
Jan 08
Apr 08
Jul 08
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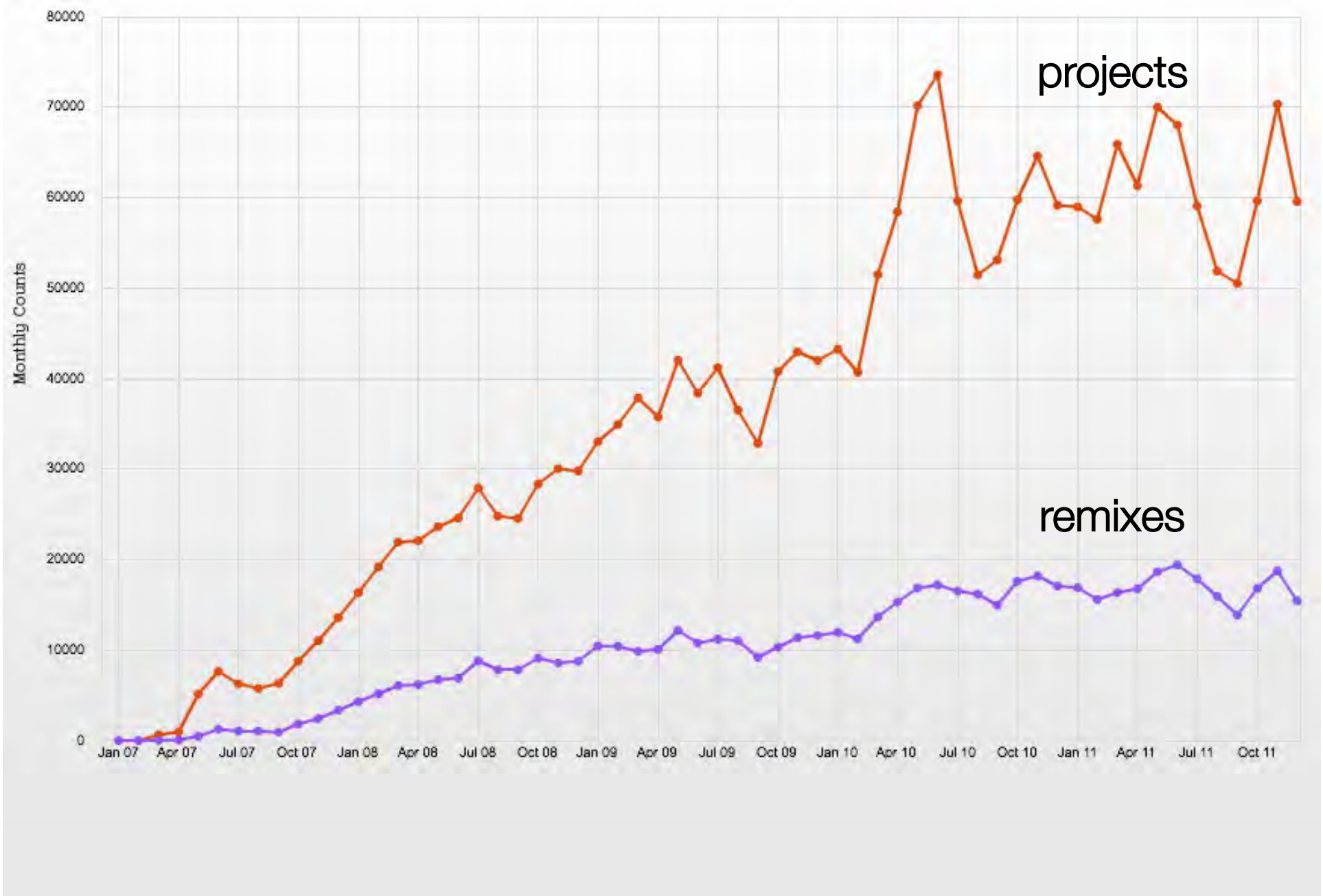
projects
remixes
Monthly Counts
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70000
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50000
40000
30000
20000
10000
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Jan 08
Apr 08
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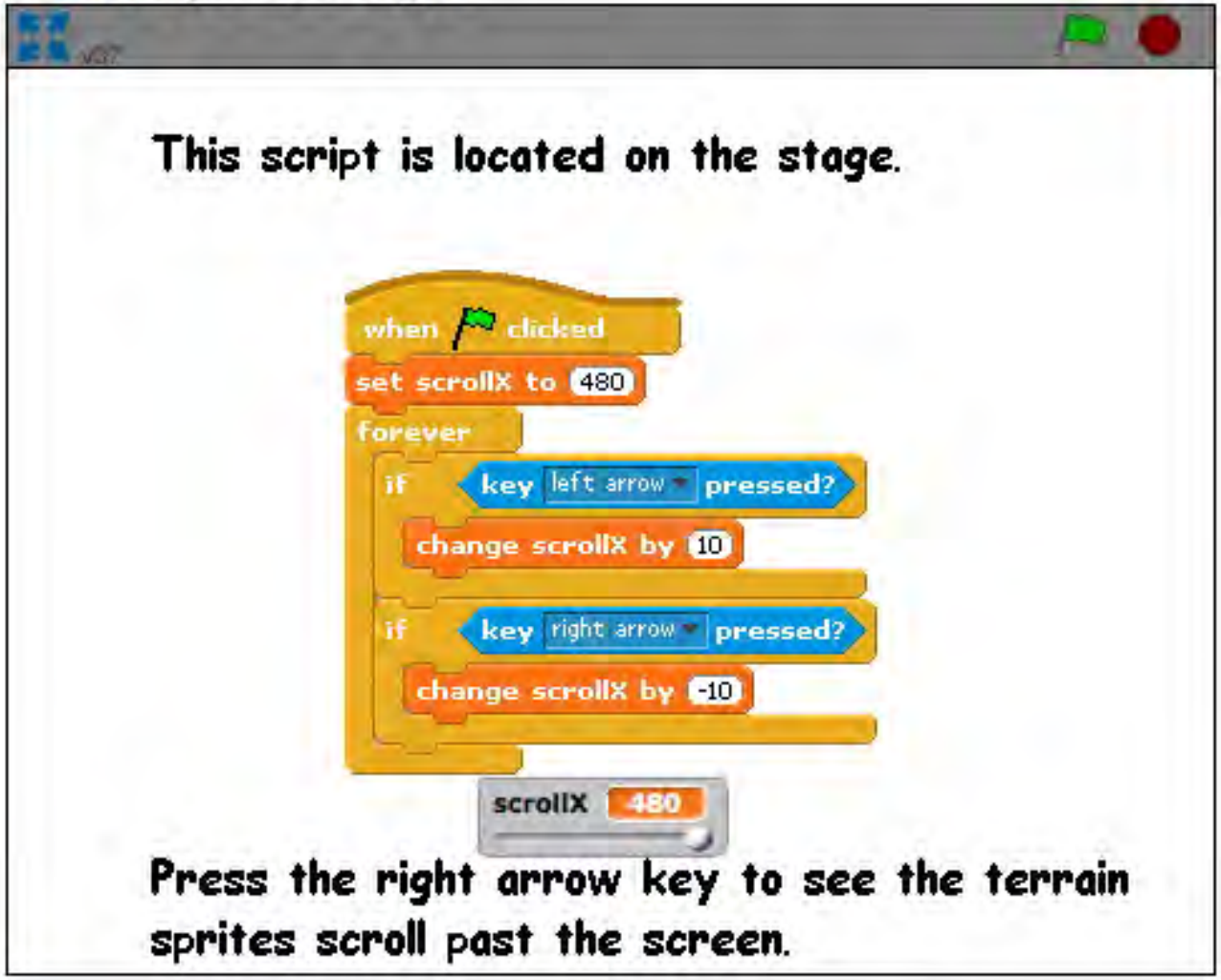
Jan 11
Apr 11
Jul 11
Oct 11

Scrolling Done Right



archmage shared it 3 years, 9 months ago

5051 views, 42 taggers, 129 people love it , 460 remixes by 291 people, 1208 downloads, in 29 galleries

MaplestorySim 0.Mover BUG FIX

Based on archmage's project

34 views, 3 remixes by 1 person, 5 downloads, in 1 gallery
Check for favoritors or lovers

Computational **Perspectives**

expressing

connecting

questioning

“

I love Scratch. Wait, let me rephrase that –
Scratch is my life. I have made many projects.

Now I have what I call a ‘programmer’s mind’.

That is where I think about how anything
is programmed. This has gone from toasters,
car electrical systems, and soooo much more.

”

Panther - based on Scratch

Home | Projects▼ | Support▼ | Forums | Download Panther | Meet The Developers | Contests

Featured projects | Panther Features | Tutorials | Upload a project | Blockshop

Many thanks to Skystar for this amazing image!

Panther - What the community wants

Panther is a programming language aimed at young users with only a small knowledge of programming. Panther offers you a more advanced version of Scratch, a simple programming language developed at MIT.

With a host of new features such as file and webpage manipulation and advanced colour sensing, cloning and much more besides, Panther provides advanced usage for avid Scratchers around the globe as well as new programmers looking for a fluid, easy to understand starting language. *Why not visit our Wiki page for a full list of our features?*

Welcome to ProgrammingFreak - our newest developer for Panther 1.1!

stats:

Panther

Blockshop

What are young people learning as they develop interactive media with Scratch?

How can this learning being assessed?

Three Approaches

Project Analysis
Artifact-Based Interviews
Design Scenarios

Three Approaches

Project Analysis

Artifact-Based Interviews

Design Scenarios

SCRATCH

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scmb1

United States

√-1 ♥ MATH

5 recent friends


Val3


lilacfuzz101


ricarose


escapepea


mc98092

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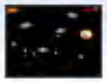
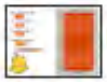

Use This!


Numbers!

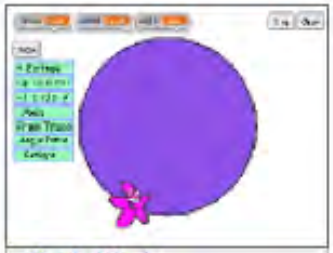

And Repeat...

scmb1's Projects

Subscribe


Magic Mind Reader...
Comments: 225

The World v1
Comments: 16

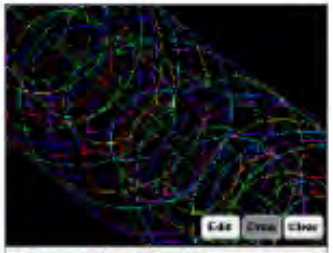

Circle Works
Comments: 51


Selection Sort
Comments: 47

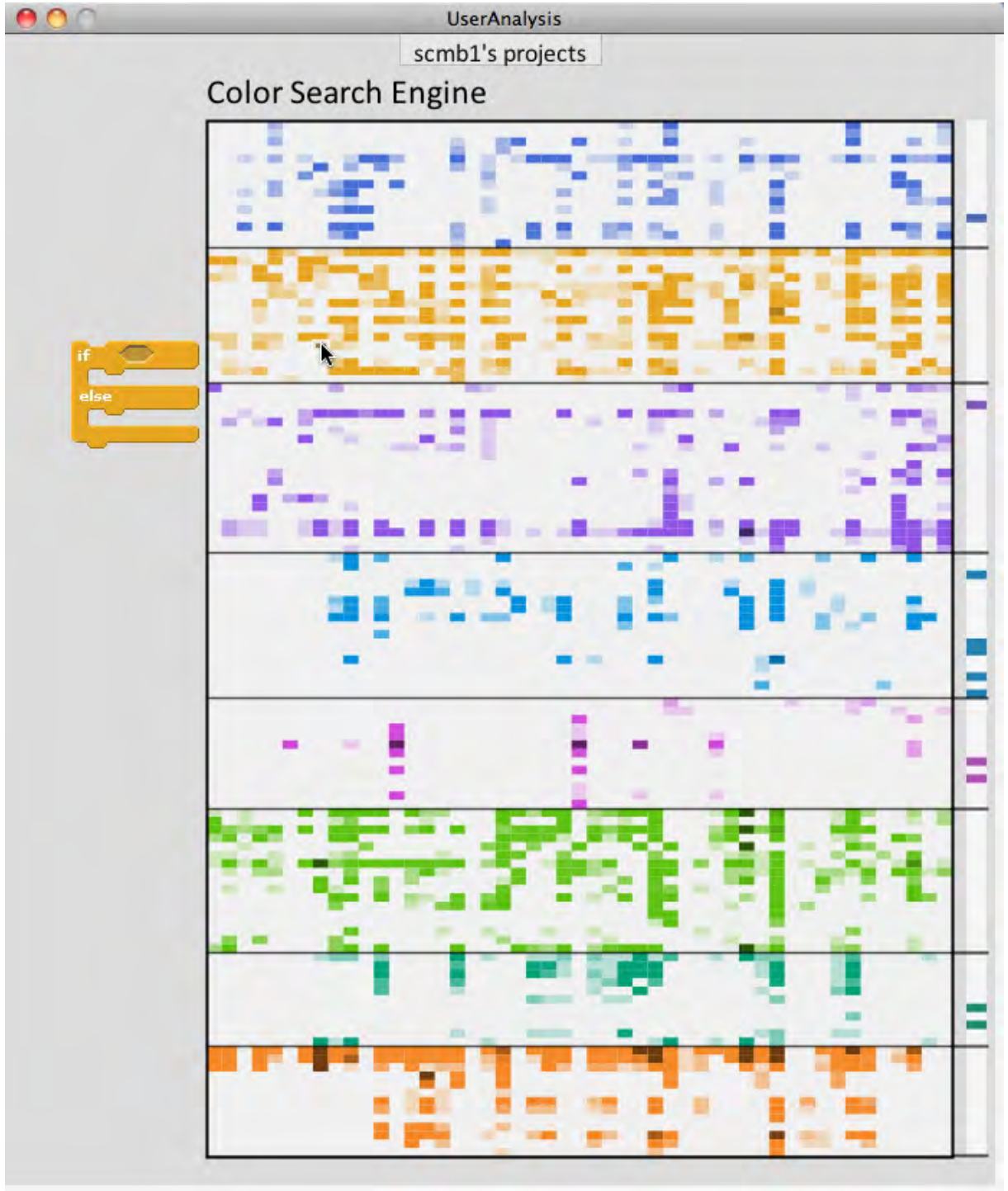

Synthetic Divisio...
Comments: 22


Bubble Sort
Comments: 23

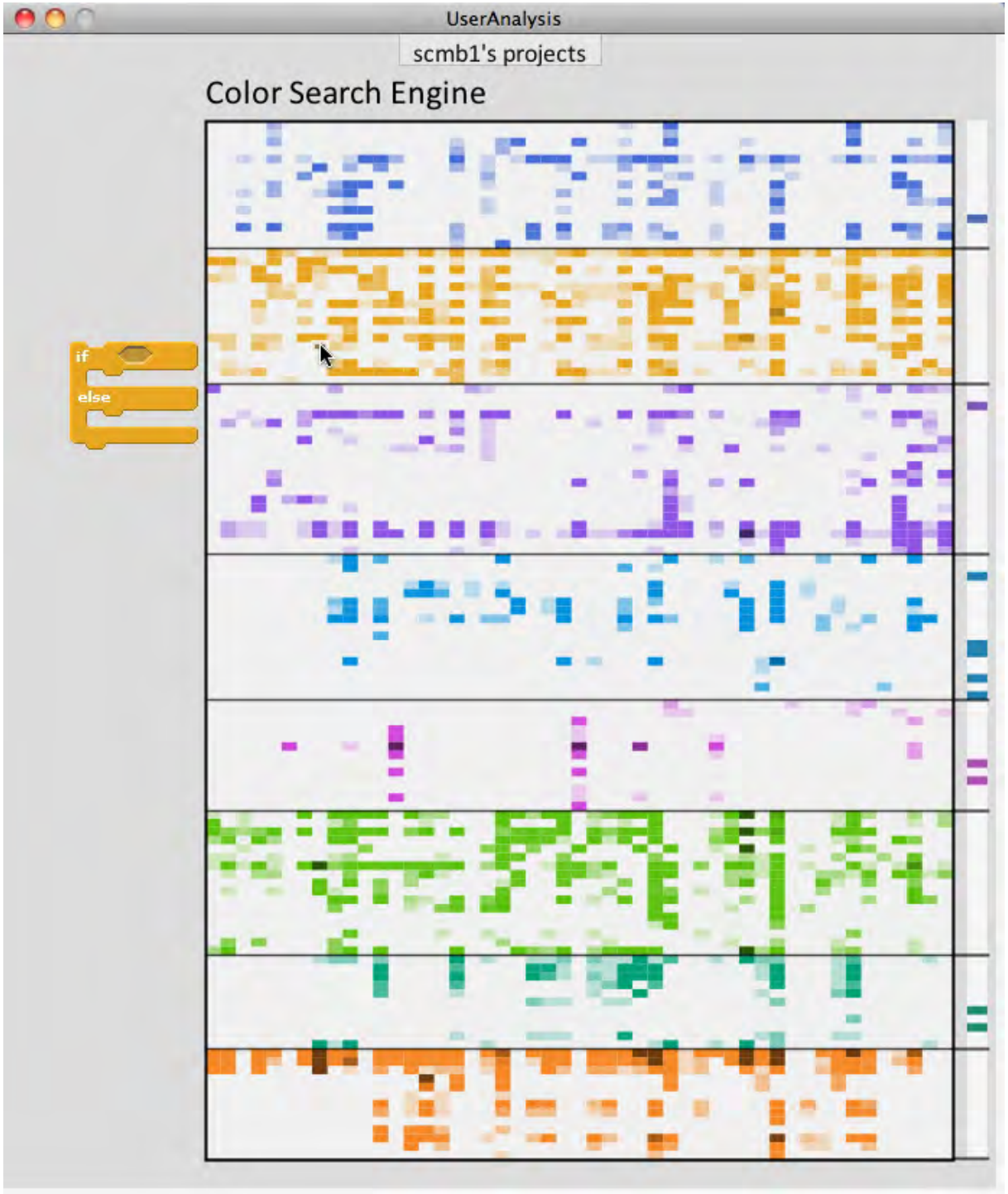

Star Spangled Ban...
Comments: 55


Revolving Design ...
Comments: 17

Happy Father's Da...
Comments: 2

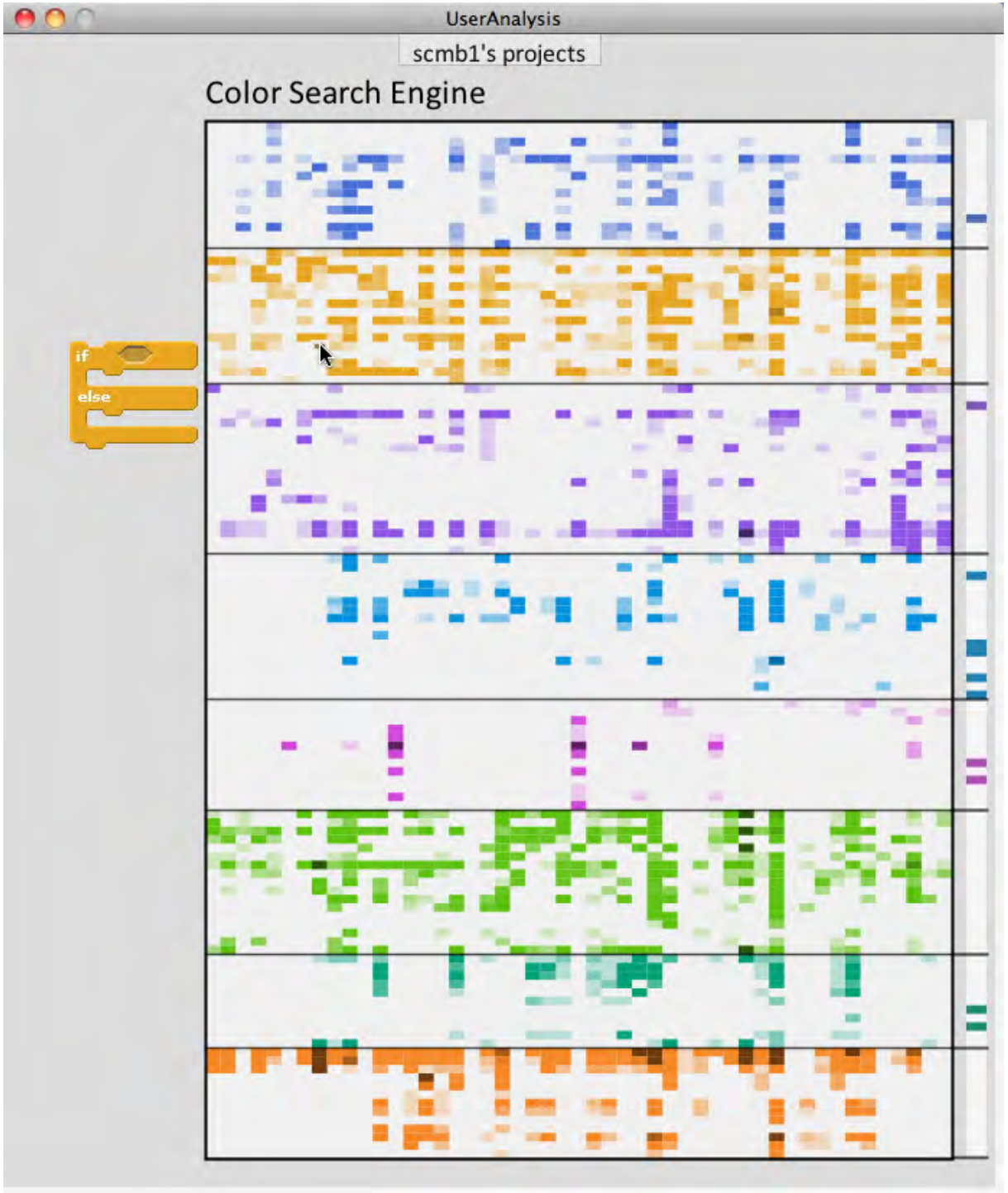

UserAnalysis
scmb1's projects
Color Search Engine
if
else

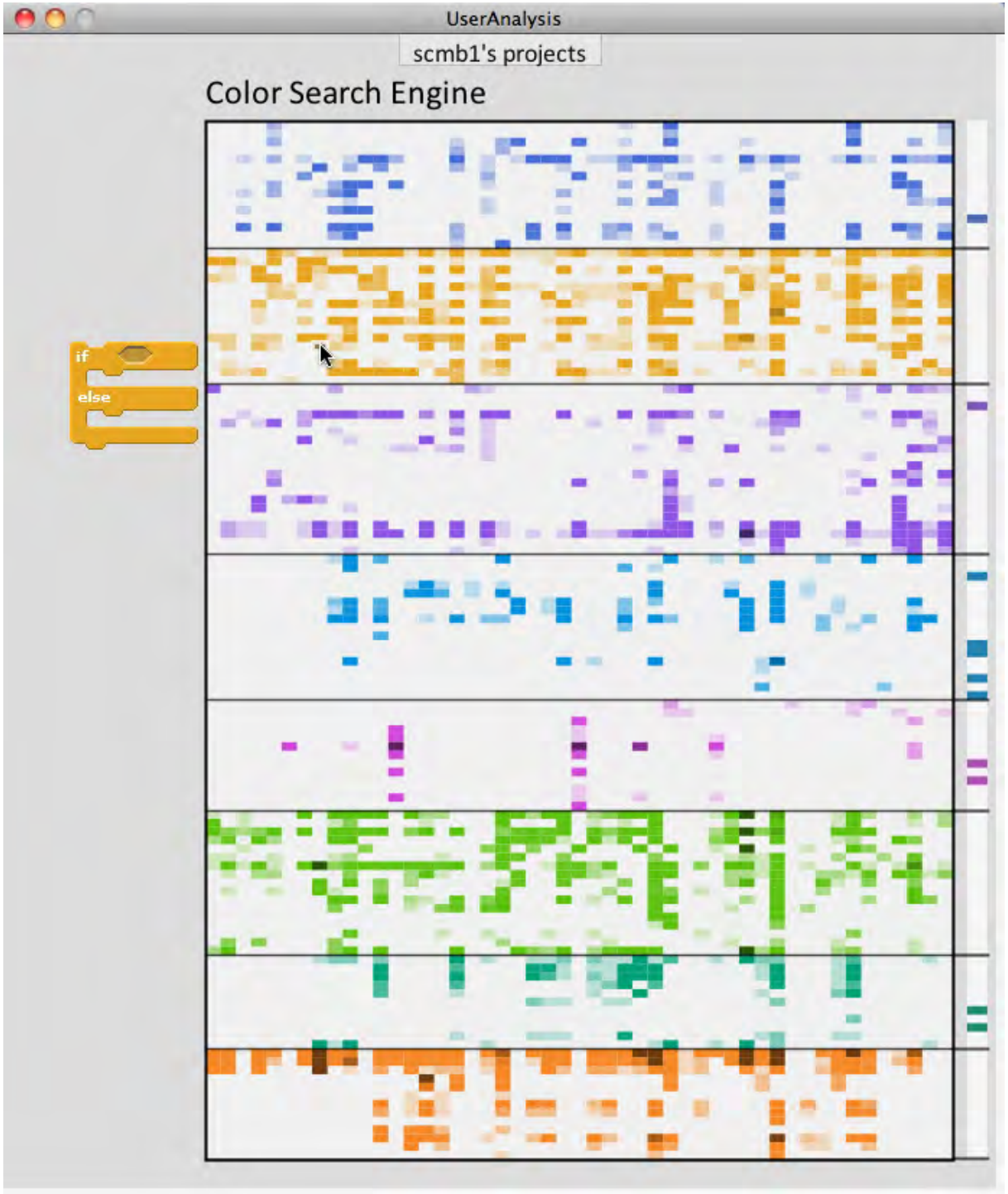
projects ·



projects

blocks used




UserAnalysis
scmb1's projects
Color Search Engine
if
else
projects
blocks used
blocks not used

Strengths

- view collection of work over time
- record of computational concepts being encountered

Strengths

- view collection of work over time
- record of computational concepts being encountered

Limitations

- not all projects are posted
- intentionality of block use is unknown
- development process is unknown

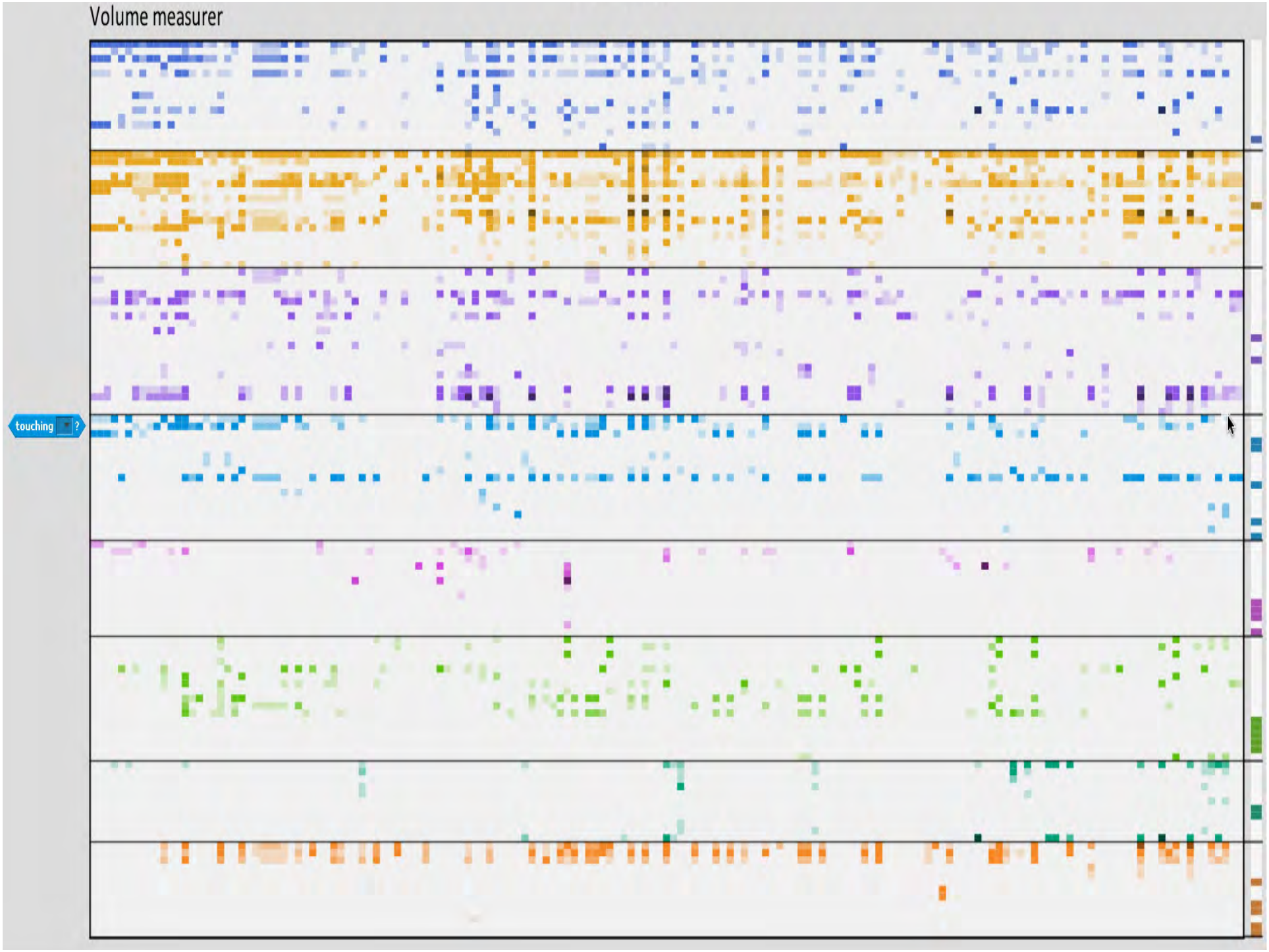
Three Approaches

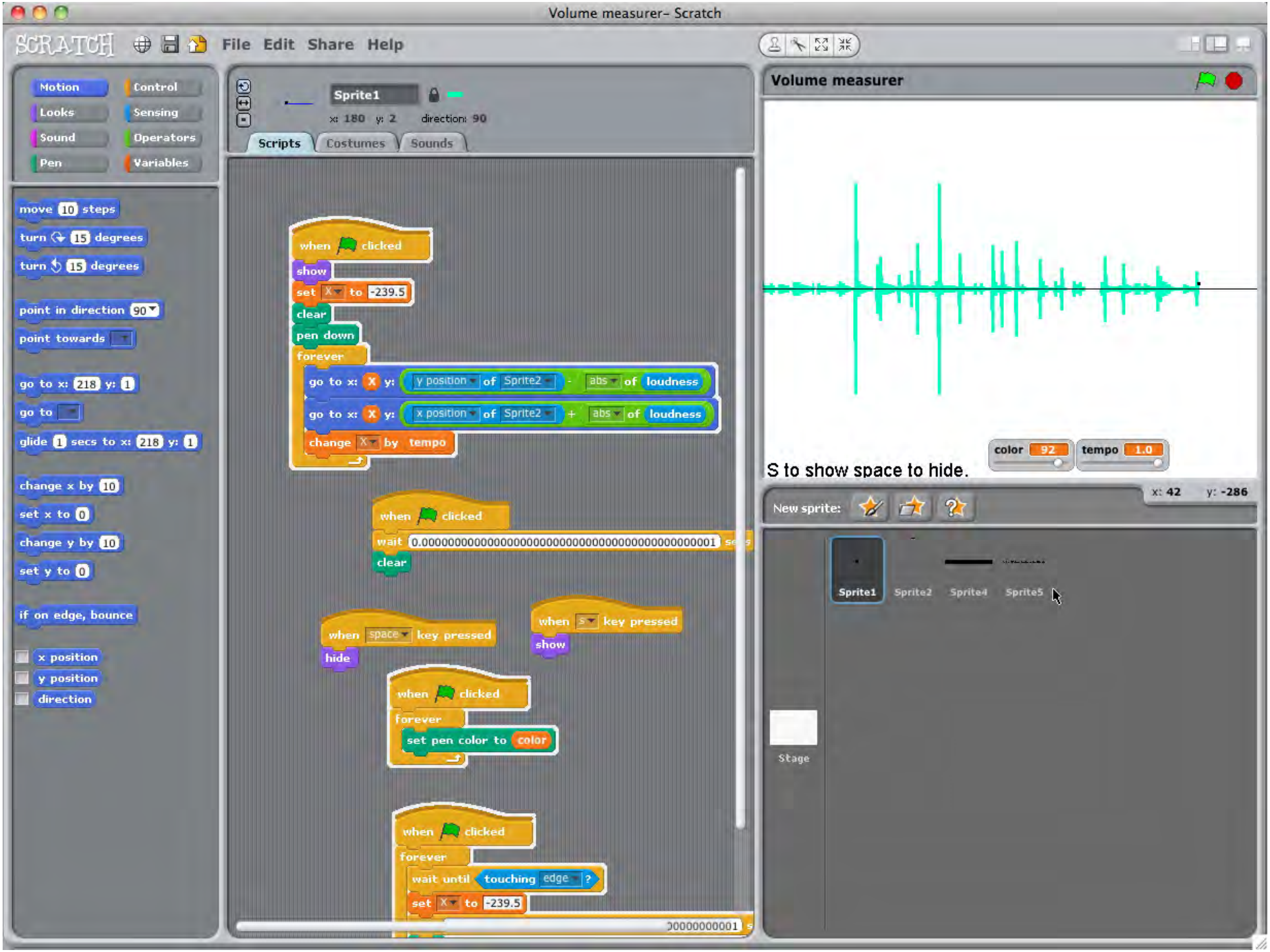
Project Analysis

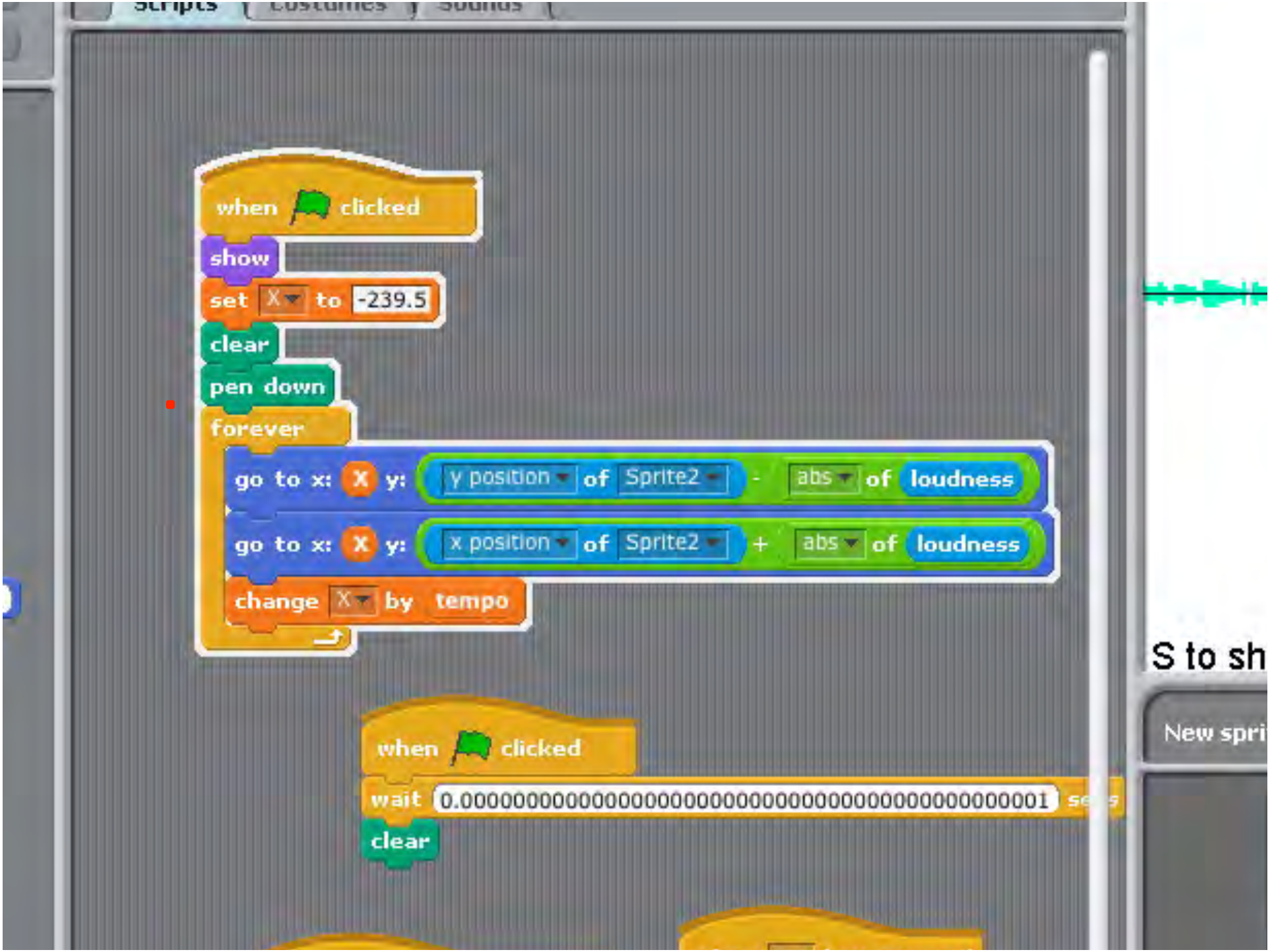
Artifact-Based Interviews

Design Scenarios

- Background
  - Introduction to Scratch
  - Current practices
- Project creation
  - Project framing
  - Project process
- Online community
  - Other people
  - Other projects
- Looking forward
  - Scratch
  - Technology
  - Beyond technology


Volume measurer
touching ?


Volume measurer- Scratch
SCRATCH
File Edit Share Help
Motion
Control
Looks
Sensing
Sound
Operators
Pen
Variables
move 10 steps
turn 15 degrees
turn 15 degrees
point in direction 90
point towards
go to x: 218 y: 1
go to
glide 1 secs to x: 218 y: 1
change x by 10
set x to 0
change y by 10
set y to 0
if on edge, bounce
x position
y position
direction
Sprite1
x: 180 y: 2 direction: 90
Scripts
Costumes
Sounds
when clicked
show
set X to -239.5
clear
pen down
forever
go to x: X y: y position of Sprite2 - abs of loudness
go to x: X y: x position of Sprite2 + abs of loudness
change X by tempo
when clicked
wait 0.0000000000000000000000000000000000000000000001
clear
when space key pressed
hide
when s key pressed
show
when clicked
forever
set pen color to color
when clicked
forever
wait until touching edge ?
set X to -239.5
Volume measurer
color 92
tempo 1.0
S to show space to hide.
New sprite:
x: 42 y: -286
Sprite1
Sprite2
Sprite4
Sprite5
Stage


when clicked
show
set X to -239.5
clear
pen down
forever
go to x: X y: y position of Sprite2 - abs of loudness
go to x: X y: x position of Sprite2 + abs of loudness
change X by tempo
when clicked
wait 0.0000000000000000000000000000000000000000000001
clear
S to sh
New spri

Strengths

- discussion of product *and* process
- more nuanced characterization of understanding of concepts

Strengths

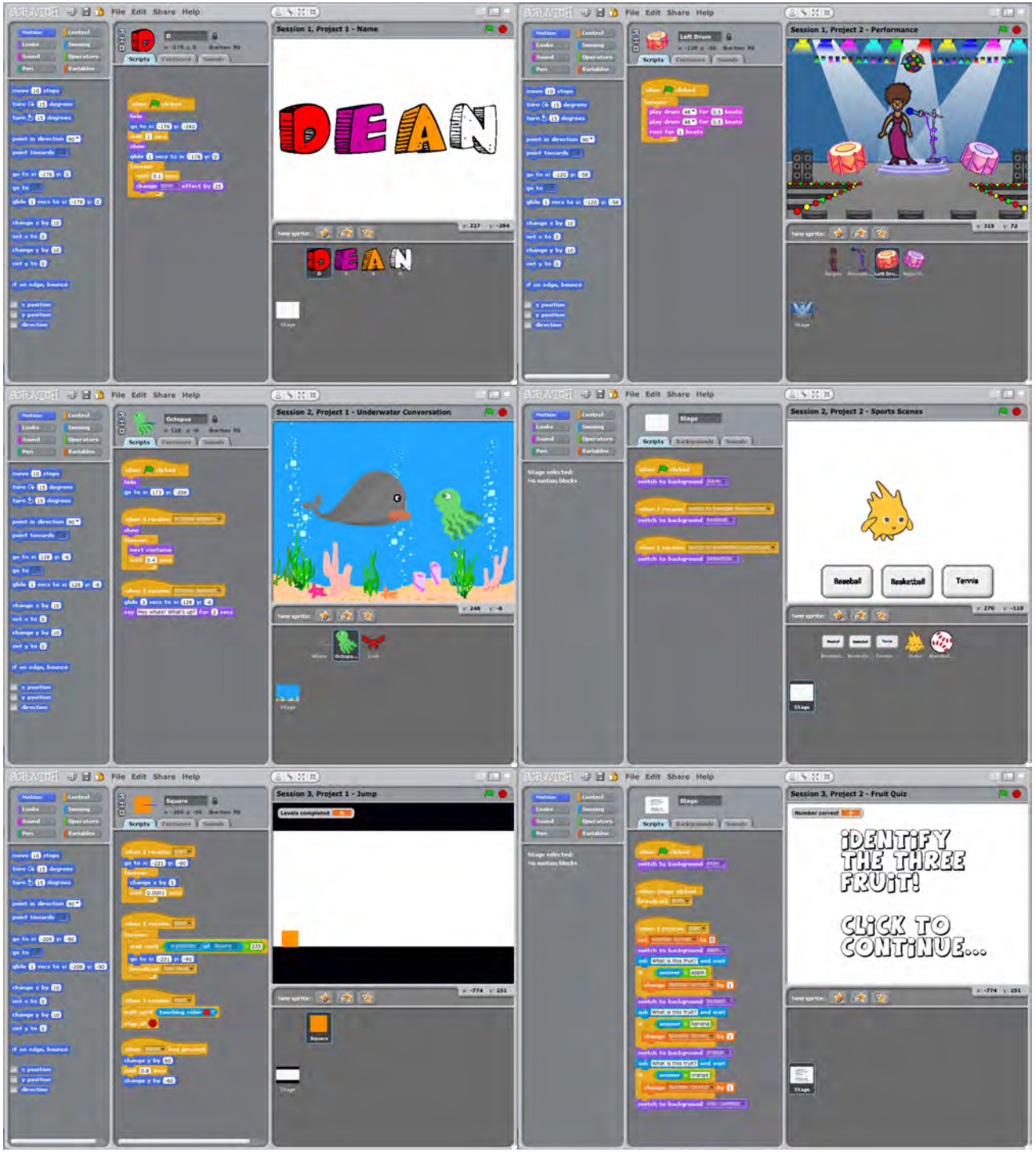
- discussion of product *and* process
- more nuanced characterization of understanding of concepts

Limitations

- time consuming
- subject to vagaries of memory
- constrained by projects selected

Three Approaches

Project Analysis
Artifact-Based Interviews
Design Scenarios



Three sets of projects, with increasing conceptual complexity

1. Explain what the project does
2. Describe how it could be extended
3. Fix a bug
4. Add a feature

Strengths

- explores different ways of knowing (critiquing, remixing, debugging, extending)
- process-in-action

Strengths

- explores different ways of knowing (critiquing, remixing, debugging, extending)
- process-in-action

Limitations

- time consuming
- may not connect to personal interests or may feel like a test

	Concepts	**Practices**	**Perspectives**
Approach #1: Project Analysis	presence of blocks indicates conceptual encounters	N/A	N/A (maybe through project subject analysis)
Approach #2: Artifact-Based Interviews	nuances of conceptual understanding, but with limited set of projects	yes, but subject to limitations of memory	maybe, but hard to ask directly
Approach #3: Design Scenarios	nuances and range of conceptual understanding, but externally selected	yes, in real-time and in a novel situation	maybe, but hard to ask directly

What are young people learning as they develop interactive media with Scratch?

How can this learning being assessed?

What are other approaches?

6 guides

6 guides

Guide #1: Supporting further learning

Assignment 1 (Stairs)

Goal: Have a cat draw a staircase with 5 steps. You must use the repeat block.

Assessing: Iteration, Breaking down a problem into parts, sequencing

Part A: Draw 1 step

Part B: Draw 5 steps

Assignment 2 (Thinking inside the line):

Goal: Make the cat draw line with a slope of 1/2 using the blocks change x and change y. You must make the cat begin at the middle of the screen (0,0)

Bonus: Can you do this assignment using the change x value of 25?

Assessing: Slope, understanding of x and y values, sequencing, linear relationship, ratio

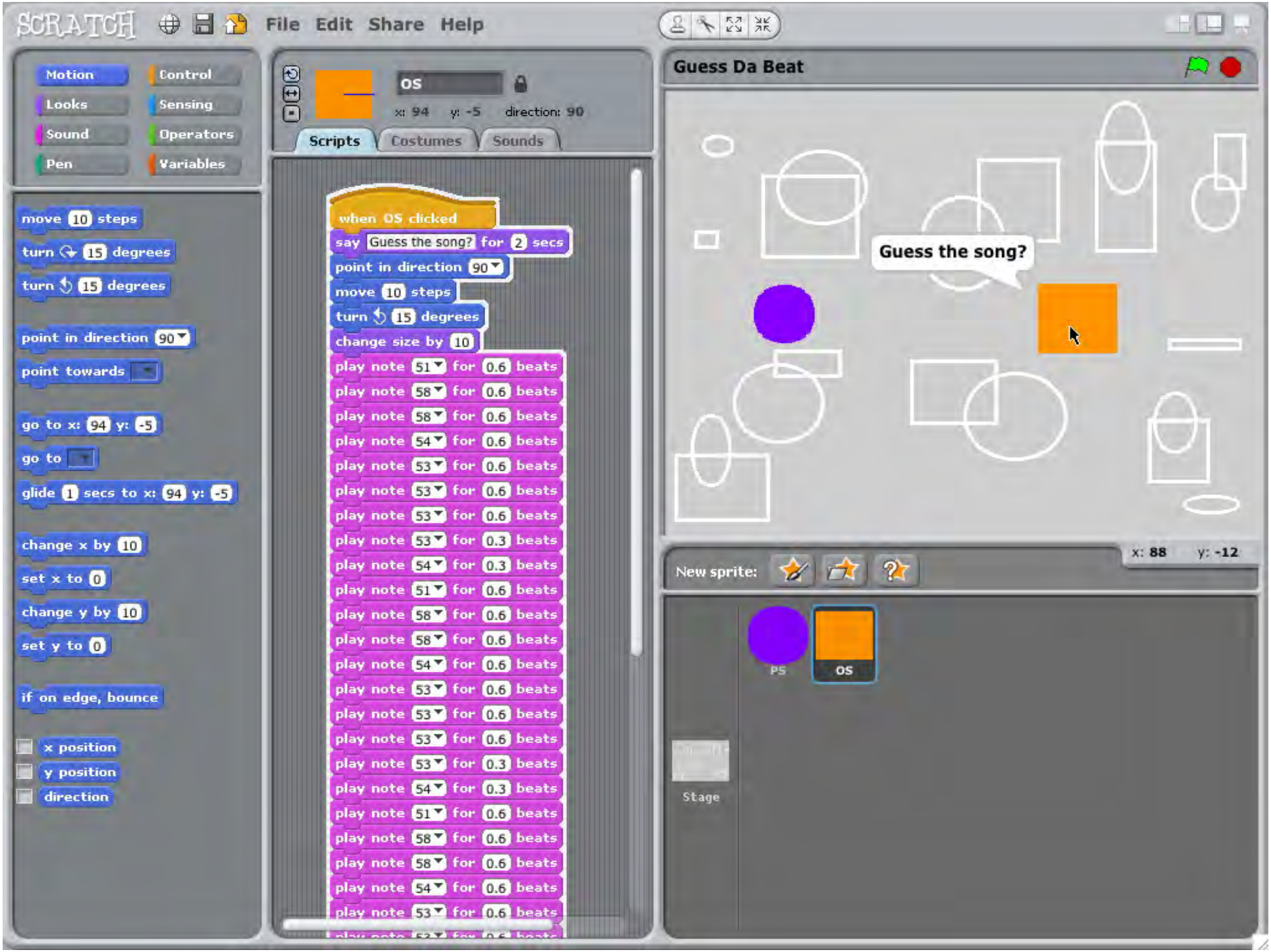
Assignment 3 Debugging (Could be assignment 1):

Goal: If the cat touches (20, 50) have it pop up a speech bubble that says "I have found the secret treasure"

6 guides

Guide #1: Supporting further learning

Guide #2: Incorporating artifacts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set x to 0
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set y to 0
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x position
y position
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OS
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play note 53 for 0.3 beats
play note 54 for 0.3 beats
play note 51 for 0.6 beats
play note 58 for 0.6 beats
play note 58 for 0.6 beats
play note 54 for 0.6 beats
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play note 53 for 0.6 beats
play note 53 for 0.6 beats
play note 53 for 0.3 beats
play note 54 for 0.3 beats
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play note 58 for 0.6 beats
play note 58 for 0.6 beats
play note 54 for 0.6 beats
play note 53 for 0.6 beats
Guess Da Beat
Guess the song?
x: 88 y: -12
New sprite:
PS
OS
Stage

6 guides

Guide #1: Supporting further learning

Guide #2: Incorporating artifacts

Guide #3: Illuminating processes

SCRATCH PROJECT RUBRIC

Name: _____

Category	*Exceptional*	*Proficient*	*Developing*	*Beginning*
Process *(Items that can be assessed by self-reflection or observation of the student at work)*	___ I chose smart places to stop and test my program.	___ I stopped and tested my program in random places.	___ I waited until my project was complete to test my program.	___ I did not stop to test my program.
	___ I used project time well, finished early, and asked myself, "**Now what** can I do to make it better?"	___ I used project time well and met all deadlines.	___ Sometimes I was able to complete tasks to meet deadlines.	___ I need to improve the time it takes me to complete a task.
	___ I found ways to collaborate with people outside my class by using online communities	___ I collaborated in and out of my group, but I did not reach out to online communities.	___ I collaborated only with members of my own group.	___ I completed the project on my own.
	___ When faced with a challenge, I stuck with it until I found a solution and I used my new learning to solve other challenges for myself and/or others.	___ When faced with a challenge, I stuck with it until I found a solution.	___ When faced with a challenge, I chose to do something easier.	___ When faced with a challenge, I got frustrated and stopped working.
	___ I chose the most appropriate problem solving strategy for each situation.	___ I used different problem solving strategies for different situations.	___ I tried the same problem solving strategy each time I had a challenge.	___ I did not know what to do when I had to solve a problem.
	___ I can explain my thinking about how and why I made certain programming decisions and I can make suggestions for improvement.	___ I can explain my thinking about how and why I made certain programming decisions.	___ I can show you how aspects of my program work, but I can't explain why they work.	___ I am not sure how or why I made programming decisions.

6 guides

Guide #1: Supporting further learning

Guide #2: Incorporating artifacts

Guide #3: Illuminating processes

Guide #4: Checking in at multiple waypoints

Formative Assessment: Student Blog

	Exceeds Expectations	**Meets Expectations**	**Does Not Meet Expectations**
Science Content	The student is addressing concerns about the Science content in detail.	The student is addressing concerns about the Science content.	The student fails to adequately address the Science content.
Design and Understanding	The student is reflecting on the design in terms of needs and constraints as well as their own understanding in detail.	The student is reflecting on the design in terms of needs and constraints as well as their own understanding.	The student lacks reflection on the design of the game in terms of needs and constraints as well as their own understanding.
Questioning	The student generates and records in depth questions about the science concepts of video game design.	The student generates and records questions about the science concepts and video game design.	The student is not generating questions while reflecting.

Summative Assessment: Science Video Game

	Exceeds Expectations	**Meets Expectations**	**Does Not Meet Expectations**
Science Content	The student made a strong connection between the game and the science content. The science concepts in the game are represented accurately.	The student made a connection between the game and the science content. The science concepts in the game are represented accurately.	The student fails to make a connection between the game and science content or the science content is inaccurate.
Game Design	The design of the game takes into account needs and constraints. The game is clear, logical and exceptionally creative. The instructions for use are also clear and/or intuitive.	The design of the game takes into account needs and constraints. The design is clear and logical. The instructions for use are also clear and logical.	The design of the game does not take into account needs and constraints. The game is not clear and logical. The game becomes confusing at some points or the instructions are unclear.
Creativity	The student uses the game design tool with exceptional creativity. The game is fun and of interest to intended audience.	The student uses the game design tool creatively to create a game that is of interest to the intended audience.	The game is predictable and of little interest to the intended audience.

6 guides

Guide #1: Supporting further learning

Guide #2: Incorporating artifacts

Guide #3: Illuminating processes

Guide #4: Checking in at multiple waypoints

Guide #5: Valuing multiple ways of knowing

reading

writing

remixing

6 guides

Guide #1: Supporting further learning

Guide #2: Incorporating artifacts

Guide #3: Illuminating processes

Guide #4: Checking in at multiple waypoints

Guide #5: Valuing multiple ways of knowing

Guide #6: Including multiple perspectives

Storytelling using Scratch

Students will be able to create a story related to camp.

Attribute	1 - Exceptional	2 – High Achievement	3 - Achieved	4 - Experiencing Difficulty
Structure	Story has a beginning, middle and end with supporting detail and confident sequencing.	Story has a beginning, middle and end with supporting detail.	Story demonstrates a beginning, middle and end.	Lack of structure
Character	At least three characters are included, each with a distinct personality that is developed through what they say and do.	At least three characters are included with confident character development.	At least three characters are included with some character development.	Little character development.
Language Features	Three or more examples of different language features such as alliteration, simile, onomatopoeia, metaphor or personification.	Two examples of different language features such as alliteration, simile, onomatopoeia, metaphor or personification.	More than one example of alliteration, simile or onomatopoeia. At least one example of metaphor or personification.	One or less example of alliteration, simile or onomatopoeia. No examples of metaphor or personification.
Vocabulary	Wide and appropriate use of vocabulary beyond expectations for age level.	Some use of vocabulary beyond expectations for age level.	Use of vocabulary appropriate for age level.	Very simple use of vocabulary – under expectation for age-level.
Surface features	More than 1 year above age level for spelling, grammar and punctuation.	Up to 1 year above age level for spelling, grammar and punctuation.	At age level for spelling, grammar and punctuation.	Below age level for spelling, grammar and punctuation.
Graphics	Used graphics from Scratch library with creative, confident and original editing or creating of original graphics.	Used graphics from Scratch library with confident editing or creating original graphics.	Used graphics from Scratch library with editing to make more appropriate for recount or created simple original graphics.	Used graphics from Scratch library with little or limited attempt at editing or creating original graphics.
Programming Structures	Three or more programming structures used.	Two different programming structures used.	One programming structure used or linear programming timed carefully.	Linear programming with lack of timing.
Backgrounds	Have use more than two backgrounds and confidently edited or created these.	Have use more than one background and have edited or created these.	Have edited a background from the Scratch or made a simple original background.	Used a standard background from the Scratch library.
Originality/Risk taking/Experimentation	Demonstrates a deep understanding of Scratch by going far beyond what has been demonstrated in class.	With assistance can involve self in some experimentation with use of Scratch to create desired effects.	Has used what has been demonstrated in class but has not experimented further to create desired effects.	No experimentation
Problem Solving	Problem solving independently and can discuss problem-solving strategies.	Problem solving independently.	Problem solving with some assistance.	No attempt at problem solving.

Can do sheet _____ Storytelling using Scratch

I can . . . . . How I am going.

	I am doing this really well.	I am sometimes doing this.	I need help with this.
My story has a beginning, middle and end with supporting detail.			
My characters have distinct personalities that are demonstrated by what they say and do.			
I make my recount more interesting by using language features such as alliteration, simile, onomatopoeia, metaphor and personification.			
I use interesting and high quality vocabulary.			
			

SCRATCHED
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What is Scratch?

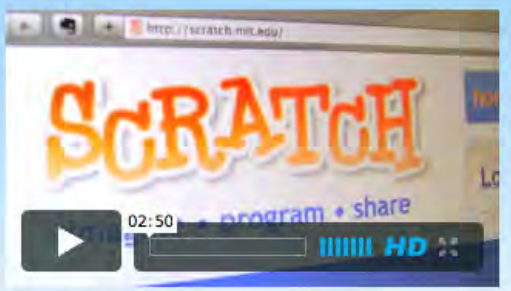
Scratch is a programming language that makes it easy to create interactive art, stories, simulations, and games – and share those creations online.

Learn more »

What is ScratchEd?

ScratchEd is an online community where Scratch educators:

share stories | exchange resources | ask questions | find people



Get Started with Scratch

Imagine the creative possibilities with Scratch and the online community in this intro video.

New Stories

Scratch Day East
Scratch Day East Of England
James Abela posted this *3 days* ago

Pilot Perspectives: Reflections on the Scratch Curriculum Guide by Kara Kestner of Sherwood High School
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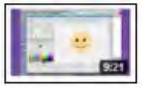

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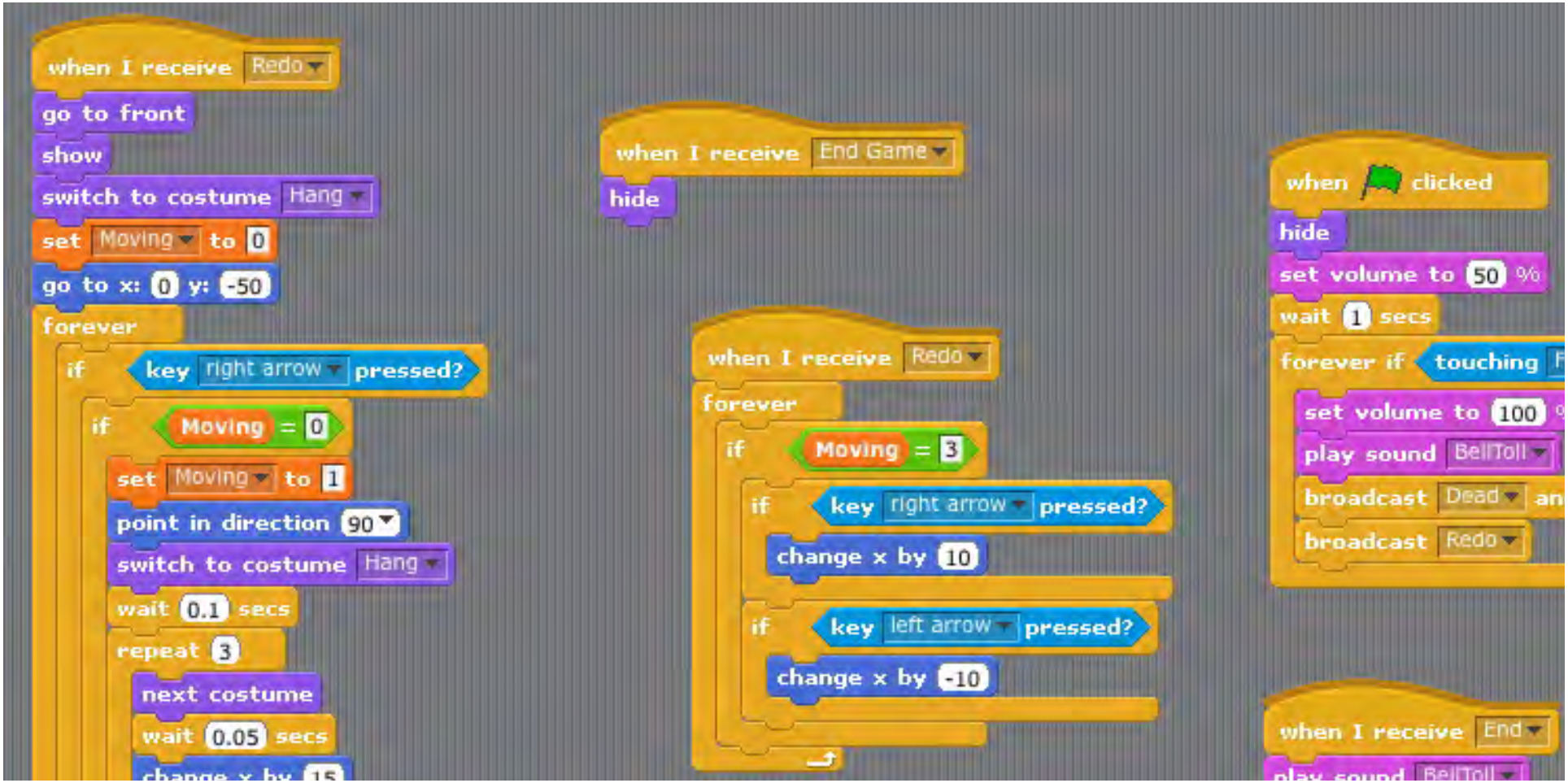

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