

Computational Thinking Practices

ScratchEd Webinar Series

Monday, April 25, 2011

7pm-8pm EST

Hosted by Mitch Resnick and Karen Brennan

when I receive Redo

go to front

show

switch to costume Hang

set Moving to 0

go to x: 0 y: -50

forever

if key right arrow pressed?

if Moving = 0

set Moving to 1

point in direction 90

switch to costume Hang

wait 0.1 secs

repeat 3

next costume

wait 0.05 secs

change x by 15

switch to costume Hang

if color is touching ?

set Moving to 0

else

set Moving to 3

switch to costume Fall

repeat until color is touching ?

change Scrolly by 10

when I receive End Game

hide

when I receive Redo

forever

if Moving = 3

if key right arrow pressed?

change x by 10

if key left arrow pressed?

change x by -10

when I receive Level

reset timer

repeat until Coins = 10 and touching Goal ?

set Time to timer

broadcast Button

broadcast End

when clicked

hide

set volume to 50 %

wait 1 secs

forever if touching F

set volume to 100 %

play sound BellToll

broadcast Dead and

broadcast Redo

when I receive End

play sound BellToll

hide

Computational Thinking

**Computational thinking is a fundamental skill for everyone,
not just for computer scientists.**

Wing, Computational thinking

Computational Thinking

Computational concepts (March 28, Recorded)

Computational practices (Tonight)

Computational perspectives (May 23)

concepts

sequence

loops

parallelism

events

conditionals

operators

variables

lists

practices

incremental/iterative

testing/debugging

reusing/remixing

abstracting/modularizing

perspectives

expressing

connecting

understanding

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: 0

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:



x: 492 y: -215



Sprite1



Stage

SCRATCH



File Edit Share Help



Motion

Control

Looks

Sensing

Sound

Operators

Pen

Variables



JetPack_Girl



x: -177 y: -115 direction: 180

Scripts

Costumes

Sounds

10 levels



10 Levels

Play

Instructions

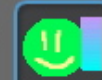
timer 67.2

x: 115 y: 30

New sprite:



Sprite1



JetPack...



Sprite2



Sprite3



Sprite4



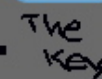
Sprite5



Sprite6



Sprite7



Sprite8



Sprite9



Sprite1...



Sprite1...



Sprite1...



Sprite1...



Stage



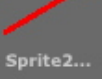
Sprite1...



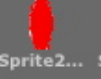
Sprite1...



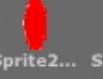
Sprite1...



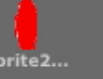
Sprite2...



Sprite2...



Sprite2...



Sprite2...



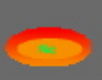
Sprite2...



Sprite2...



Sprite2...



Sprite2...



Sprite2...



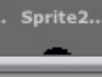
Sprite2...



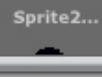
Sprite2...



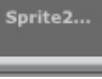
Sprite2...



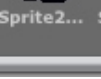
Sprite2...



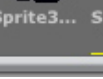
Sprite2...



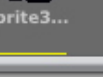
Sprite2...



Sprite2...



Sprite2...



Sprite2...

practices

incremental/iterative

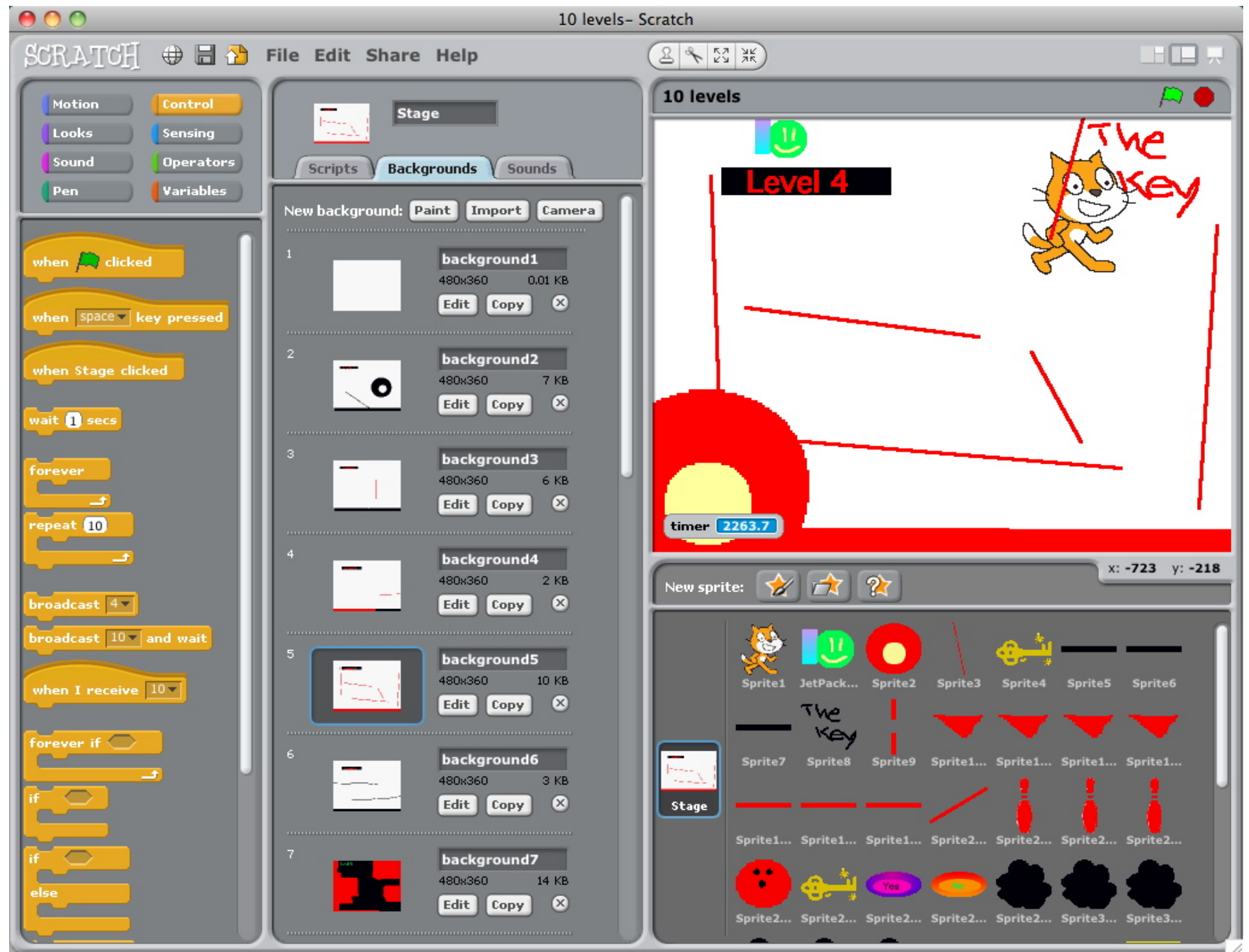
testing/debugging

reusing/remixing

abstracting/modularizing

incremental / iterative

developing a little bit, then trying it out, then developing some more



SCRATCH



File Edit Share Help

Motion

Control

Looks

Sensing

Sound

Operators

Pen

Variables

Make a variable

Make a list

Stage

Scripts

Backgrounds

Sounds

New background: Paint Import Camera

1



background1

480x360

0.01 KB

Edit

Copy



2



background2

480x360

7 KB

Edit

Copy



3



background3

480x360

6 KB

Edit

Copy



4



background4

480x360

2 KB

Edit

Copy



5



background5

480x360

10 KB

Edit

Copy



6



background6

480x360

3 KB

Edit

Copy



7



background7

480x360

14 KB

Edit

Copy



10 levels

LEVEL 10



timer 2194.7

x: -209 y: -352

New sprite:



Sprite1



JetPack...



Sprite2



Sprite3



Sprite4



Sprite5



Sprite6



Sprite7



Sprite8



Sprite9



Sprite1...



Sprite1...



Sprite1...



Sprite1...



Sprite1...



Sprite1...



Sprite1...



Sprite2...



Sprite2...



Sprite2...



Sprite2...



Sprite2...



Sprite2...



Sprite2...



Sprite2...



Sprite2...



Sprite3...



Sprite3...

KB: OK, this is a complicated program. How long have you been working on it?

Scratcher: Maybe three, or maybe two, weeks.

KB: Are you working on it every day?

Scratcher: Like off and on, maybe even a month. Whenever I finished one of the levels, I would show it to my brother.

KB: You talked a bit about how you did a lot of the programming and your brother helped with the concept of the project. What was your process like?

Scratcher: We first came up with it on the way, but for levels 8, 9, and 10 we actually planned beforehand. My brother had this great idea about having level 10 having pins and bowling balls. He said, "That should be level 8" and I said, "No, no that should be level 10, that's really hard" and he said, "ok, ok, ok".

KB: Are there any secret codes or do you actually have to play to get to level 10?

Scratcher: You have to play. That's a really good idea, but now you have to play through the whole game.

testing / debugging

making sure that things work – and finding and fixing mistakes

identify (the source of) the problem

read through your scripts

experiment with scripts

look for examples that work

tell/ask someone else about the problem

try writing scripts again

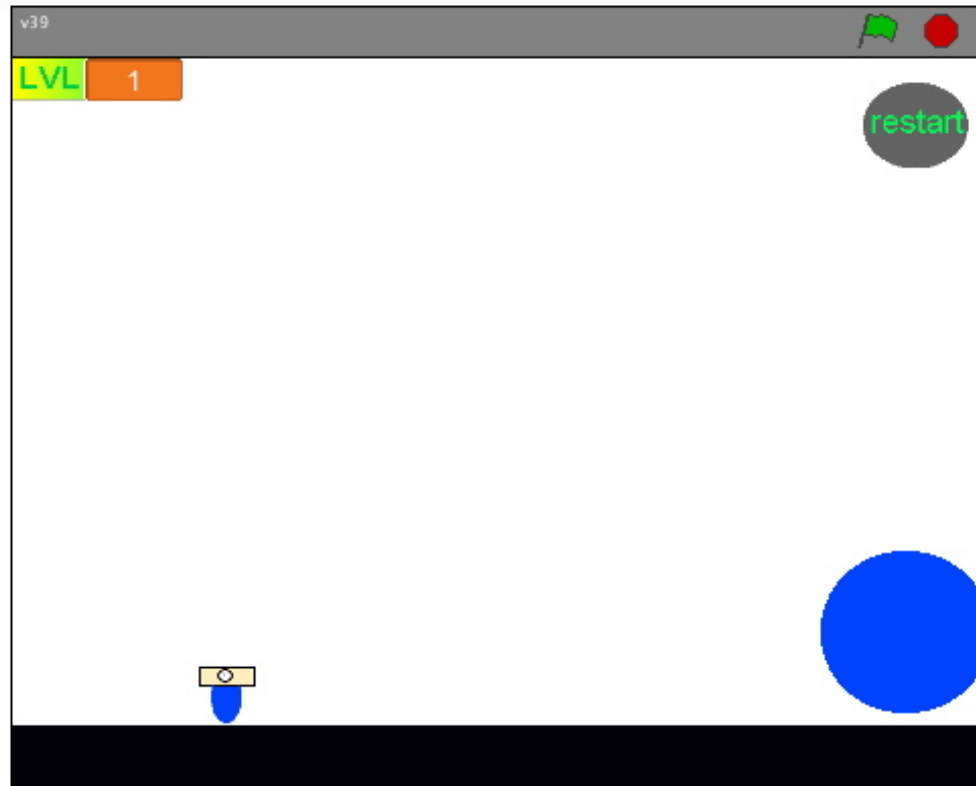
take a break

reusing / remixing

making something by building on what others – or you – have done

[Login](#) or [Signup](#) for an account search

100 levels



[dylanscratchm...](#) shared it 1 month, 2 weeks ago



Some rights reserved

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
assassin 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

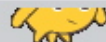
Computer

karen

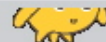
Desktop

Costumes

Fantasy



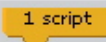
gobo1



gobo2



gobo3



Growing Drago...



Scripts: 6

JetPack Girl



Scripts: 2

Jump-flip Mons...



Scripts: 2

Jumping Jack



Scripts: 2

knight1



Scripts: 2

OK

Cancel

x: -366 y: -161

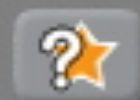
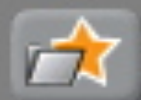


Stage

abstracting / modularizing

building something large by putting together collections of smaller parts

New sprite:



x: 249 y: -70



Sprite1



JetPack...



Sprite2



Sprite3



Sprite4



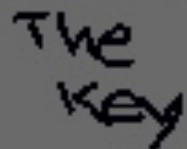
Sprite5



Sprite6



Sprite7



Sprite8



Sprite9



Sprite1...



Sprite1...



Sprite1...



Sprite1...



Sprite1...



Sprite1...



Sprite1...



Sprite2...



Sprite2...



Sprite2...



Sprite2...



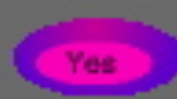
Stage



Sprite2...



Sprite2...



Sprite2...



Sprite2...



Sprite2...



Sprite3...



Sprite3...



Sprite3...



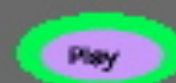
Sprite3...



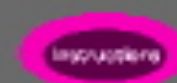
Sprite3...

10 Levels

Sprite3...



Sprite3...



Sprite3...



Sprite3...

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

change y by y speed

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

go to x: -133 y: 161

forever

if touching color ?

go to x: -133 y: 163

if touching color ?

go to x: -133 y: 162

broadcast switch

if touching color ?

go to x: -133 y: 162

broadcast switchagain

if touching color ?

go to x: -133 y: 162

broadcast 4

if touching color ?

go to x: -133 y: 162

broadcast 5

if touching color ?

go to x: -133 y: 162

broadcast 6

if touching color ?

go to x: -133 y: 162

broadcast 7

if touching color ?

Supporting fluency with CT practices

incremental/iterative

testing/debugging

reusing/remixing

abstracting/modularizing

Thank You!

<http://scratched.media.mit.edu>

<http://events.scratch.mit.edu>

Next webinar: Computational Thinking Perspectives

Monday, May 23, 2011

7pm-8pm EST