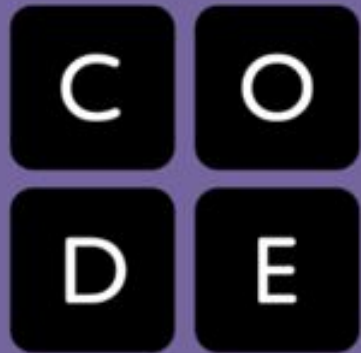


Going Rogue

How Code.org Created a
Curriculum Development Platform,
Without their Engineers



Josh Caldwell

Curriculum Development Manager
josh@code.org | @mrjoshida

Who am I?

Recovering Middle School Teacher

Curriculum Developer

Not an Engineer

Glutton for Punishment



Who is Code.org?



Our vision:

every student

in **every** school

opportunity

Who is Code.org?

We're a small team

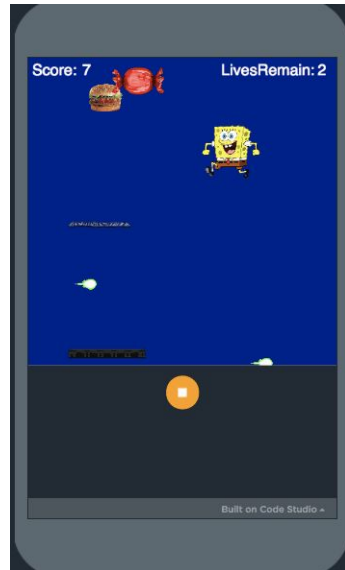
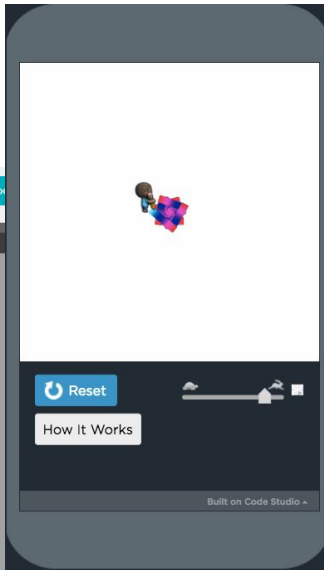
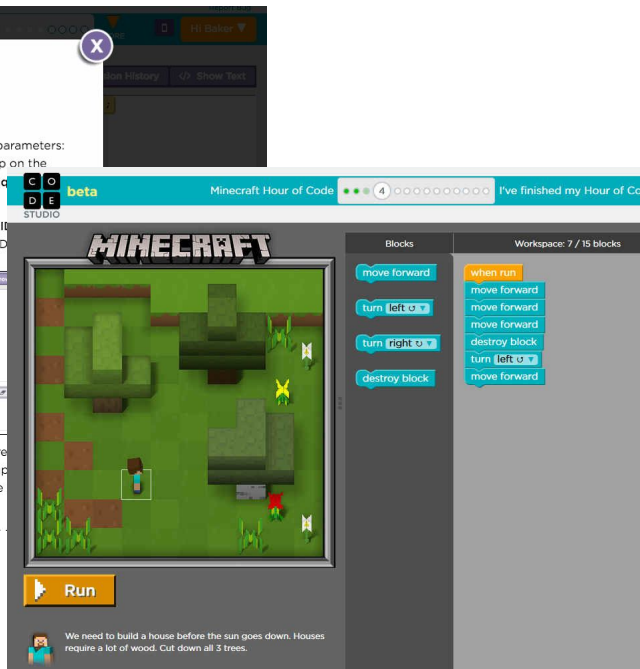
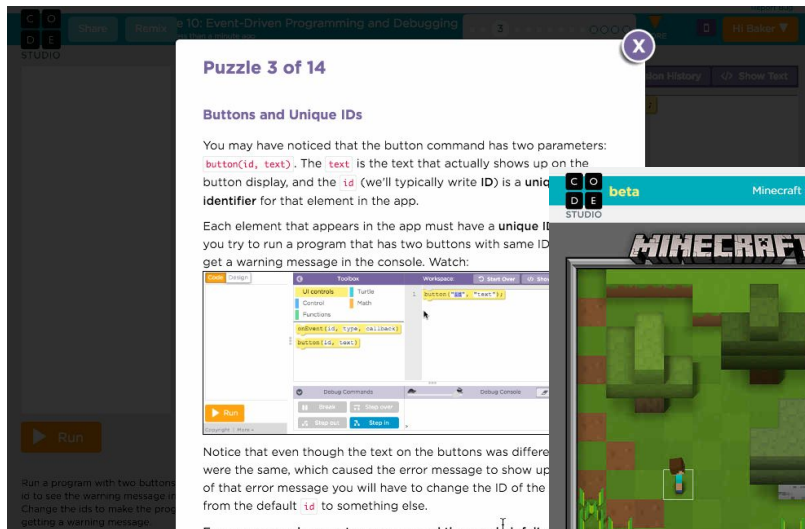


Who is Code.org

With a big reach



Our engineers make great tools



Who is Code.org?

That we use in great courses

Elementary school

CS Fundamentals

Middle School

CS in Science

CS in Algebra

CS Discoveries

High School

AP CS Principles

Who is Code.org?

Written on not-so-great tools :/

Multiple writing formats (md, gdoc, pdf)

Manually created/updated overview docs:

(Standards alignment, pacing guides, resource lists, lesson/unit summaries, vocab lists, and on and on)

No meta data

Inconsistent style and format

Too much tribal knowledge



UNIT 1 Ch. 1 1 2 3 Ch. 2 4 5 6 C O D E

Lesson 4: What is a Computer?

Unplugged | Concept Invention

Overview

Purpose

Agenda

Teaching Guide

Getting Started

Activity

Wrap Up

Extended Learning
Assessment
Standards Alignment

Objectives

Preparation

Links

Vocab

Introduced Code

Support
Lesson Forum
Report Bug

Teaching Tip

Content Corner

Discussion Goal

Learning objectives
Materials and prep
Digital resources
New vocab
New code
Overview and purpose
Tags and keywords
Related extension lessons
Assessment info
Aligned learning standards

Famous Last Words...

“All we need is a slightly
customized CMS,
why don't I just
set one up myself?”

“Improving” our writing process

Phase 1



+



“Improving” our writing process

Pitching
to the
Engineering
team...



A few simple requirements...

- Avoid interacting with main site
 - Actually, stay out of the ecosystem entirely
- Minimize organizational dependency
- On your own for everything
- Must support > 100k teachers
- Budget of \$0

“Improving” our writing process



A black silhouette of a hand with fingers spread, set against a background of dense, multi-colored digital noise. The text "New plan: Go Static" is overlaid in white on the palm area.

New plan:
Go Static

Phase 2

1. CurriculumBuilder hosted on premises, internal only
2. Opinionated models and md filters for consistency
3. Django-jackfrost to generate a static site
4. Django-storages to push to S3 bucket
5. Point curriculum links at bucket

Successes:

More consistent lessons

Control over formatting

Writers can self publish

Easy to update

Easy to create meta views



Challenges:

- Multiple sources of truth
- No comm between tools
- More internal users
- Evolving curricula
- Big project

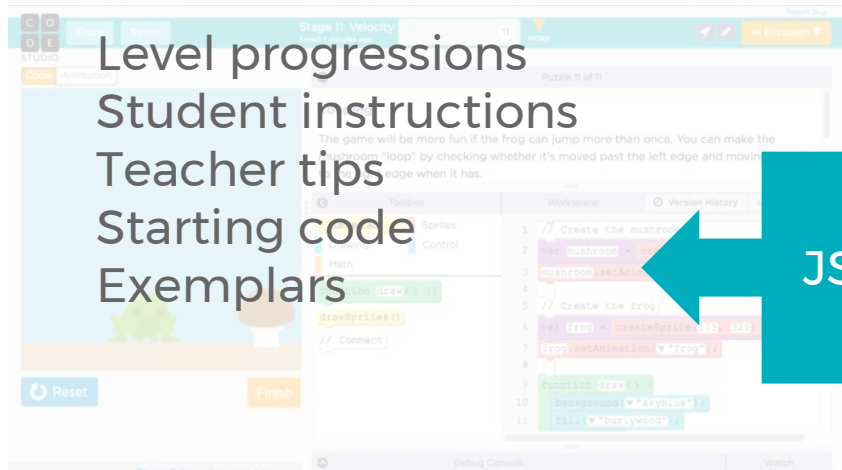


Phase 3

(in progress)

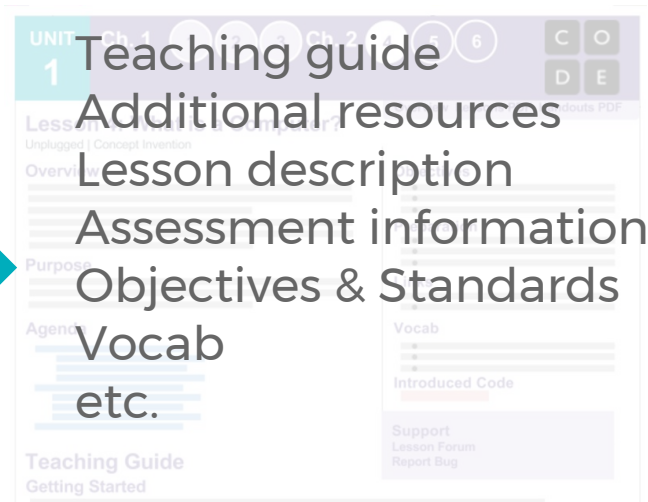
Consolidating Truth & Communicating

LevelBuilder



JSON!

CurriculumBuilder



Don't Cross

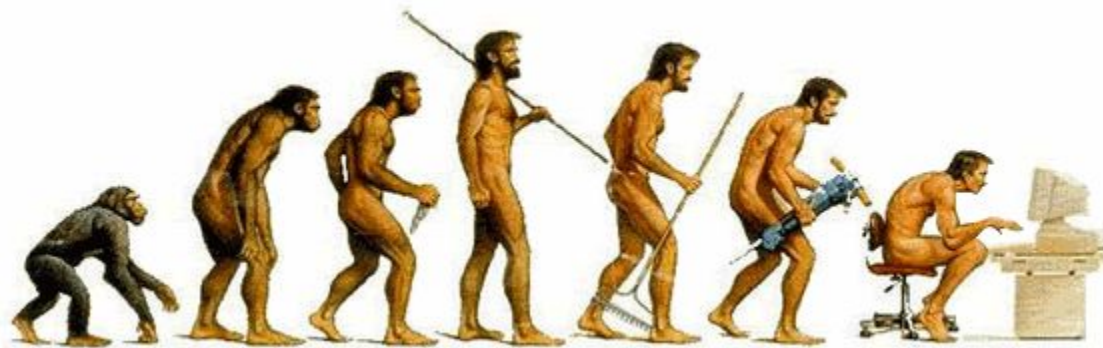


The Streams!

Django Rest Framework
+
Django-jackfrost
=
Reliable Read Only API

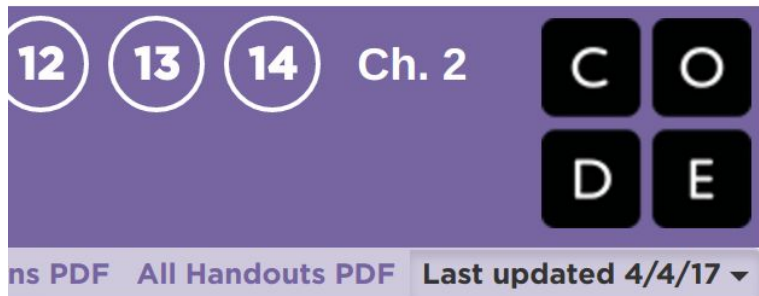


More Users & Evolving Curricula



Need for auditing and recovery

django-reversion & django-reversion-compare



4/4/17

Significantly modified to remove elements relying on the Draw Loop (which is now being taught later) and to bring forward the Animation Tab. This lesson now ends in a mini project called the Sprite Scene. This is a simple static image that combines shapes, Sprites, and text.

be able to:

Description

In this lesson studentthe class applyies the problem solving process to three different problems in order to better understand the value of each step. They will solve a word search, arrange seating: a word search, a seating arrangement for a birthday party, and planning a trip. The problems grow increasingly complex and poorly defined to highlight how the problem solving process is particularly helpful when tackling these types of problems. The lesson concludes with students reflecting on their experience with the problem solving process. They will justify the inclusion of each step and will brainstorm questions or strategies that can help them better define open-ended problems, as this is often the most critical step.

CODE

Still working on that...



Takeaways

There's a package for almost everything

mezzanine.jupo.org

django-rest-framework.org

github.com/kezabelle/**django-jackfrost**

github.com/jschneier/**django-storages**

github.com/etianen/**django-reversion**

github.com/jedie/**django-reversion-compare**

github.com/semente/**django-smuggler**

Sometimes too many...

PACKAGE	DJANGO-COMPRESSOR	DJANGO-WEBPACK-LOADER	DJANGO-REQUIRE	DJANGO-CSS (DEAD/ORSOLETE)	DJANGO-STATIC	DJANGO-STATICFILES	LESSCPY	WQ.APP	DJANGO-MEDIAGENERATOR	DJANGO-WEBPACKER	DJANGO-FREEZE	DJANGO-CROCODILE	DJANGO-STATIC-MEDIA-MANAGER	DJANGO-CLEVERCSS	DJANGO-COLDBREW	DJANGO-VERSIONED-STATIC	DJANGO-MEDIAGENERATOR-NG	DJANGO-JSDIR	DJANGO-COMPRESS
Description	Compresses linked and inline javascript or CSS into a single cached file.	Transparently use webpack with django	A Django staticfiles post-processor for optimizing with RequireJS.	django-css is a fork of django_compressor that makes it easy to use CSS compilers with your Django projects. CSS compilers ...	Template tags for better serving static files from templates in Django	[Unmaintained] A Django app that provides helpers for serving static files, used in Django and Pinax.	Python LESS compiler	5.3 we're app library, a JavaScript+Python toolkit for building robust offline-capable progressive web apps for citizen science, mobile crowdsourcing, and ...	Django asset manager	A django compressor tool that bundles css, js files to a single css, js file with webpack and updates your ...	django-freeze is a static site generator made to fill some gaps of the unmaintained django-medusa. It converts your django site ...	A simple CSS and Javascript aggregator for django js.	An app to copy static media files over to a remote place, optionally minifying css and js.	Django CleverCSS	coffeeScript tooling for django	Lightweight application for managing versioned static files and minifying them for production use.		Drastically eases management of JS files in a django app	
Category	App	App	App	App	App	App	Other	Other	App	App	App	App	App	App	App	App	App	App	App
# Using This	107△	2△	2△	1△	5△	56△	1△	1△	43△	0△	0△	0△	1△	0△	0△	1△	1△	1△	11△
Python 3?	✓	✓	✓	✗	✗	✗	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗	✓	✗
Development Status	Production/Stable	Unknown	Production/Stable	Unknown	Production/Stable	Beta	Production/Stable	Production/Stable	Production/Stable	Unknown	Unknown	Beta	Beta	n/a	Beta	Beta	n/a	Production/Stable	n/a
Last updated	May 24, 2017, 10:10 a.m.	July 11, 2017, 7:19 p.m.	April 12, 2017, 5:13 a.m.	July 14, 2011, 5:15 p.m.	Aug. 5, 2016, 8:20 a.m.	June 7, 2012, 3:51 p.m.	Oct. 4, 2016, 5:48 a.m.	July 24, 2017, 2:51 p.m.	Oct. 20, 2014, 9:31 a.m.	April 10, 2017, 7:31 a.m.	May 24, 2017, 4:28 a.m.	June 6, 2013, 5:33 a.m.	June 18, 2010, 2:27 p.m.	July 3, 2011, 6:08 p.m.	Jan. 31, 2014, 4:50 p.m.	Sept. 5, 2016, 7:13 a.m.	Feb. 28, 2017, 2:44 p.m.	Oct. 22, 2015, 1:10 p.m.	
Version	2.1.1	0.5.0	1.0.11	2.3.1	1.5.6	1.2.1	0.12.0	1.0.0	1.12	0.1.1	0.6.2	0.4.1	0.6	n/a	0.5	1.4.3	n/a	0.3.1	n/a
Repo	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	GitHub	Bitbucket	Bitbucket	Other
Commits																			
Stars	1888	917	246	227	192	132	106	62	53	36	29	18	17	14	4	4	3	2	n/a
Repo Forks	509	111	39	28	31	37	43	25	23	3	5	n/a	2	3	n/a	1	n/a	n/a	n/a
Participants	jezdez diox karyon lucastan carltonjibson mintchaos scop carljin kudiatayamroth jaap3 more...	owais matthias dentos aculski fladi piemel ssteiners basicsdjs alphadaiamroth shapromatron more...	etanan thijsriemstra unazizakain axelmagn brad alendit jordicometrice MiquelSR shewitt effrenus	dziegler minchaos tyrnoff Arampgatang oesmith	peterbe dobcey tyronpost grinequid vinodpandey alidaology Lacrymology anemichov joseguerra mgedmin more...	robotis saschpe adrianban ford bbenne10 calcaoriede danc86 javacraft mhelman mansam more...	sheppard tomaszn ast0815	lynaix arminasco altbrook BrianPicks agerik rofrankel	nikhil05 ashwin31	fabiccaccamo	jslibbiso	coordt josesoa rieko toddistowell twfwebdev wawrin justquick	danielgtaylor risicle manuq	Myles andreyfedoseev vorushin etios	xaralis martinogden	alokinpic	tkhyn		
Documentation			N/A	N/A	N/A							N/A	N/A	N/A	N/A	N/A		N/A	N/A
Remote files	✗			✗									✓						
Aggregation area	template			template				python + r.js				template							

Shout out to djangopackages.org

Start small

Don't be afraid to iterate

There are a lot of *tutorials* out there

But most are not great *instruction*

Take advantage of the community

Like I didn't

Beware of “I betcha can’t...” or When all you have is a hammer...

Game Lab Documentation: `var sprite = createSprite()`

Game Lab

Sprites

var sprite = createSprite() createEdgeSprite... sprite.setSpeedA... sprite.getDirectio... sprite.getSpeed() sprite.isTouching() sprite.destroy() sprite.pointTo() sprite.bounce() sprite.bounceOff() sprite.collide() sprite.dispose() sprite.overlap() sprite.setAnimati... sprite.minorX() sprite.minorY() sprite.nextFrame() sprite.pause() sprite.play() sprite.setCollider() sprite.setFrame() sprite.setVelocity... sprite.height sprite.width sprite.getScaled...

Category: Sprites

Introduced In... CS Discoveries Unit 3: Sprites

Creates a new sprite and assigns it to the variable specified.

Sprites are used to make complex and interesting animations and games. A sprite is able to store images or animations with a set of properties such as position and visibility. Sprites also have properties to report interactions with other sprites or the mouse.

Examples

Red Stripe

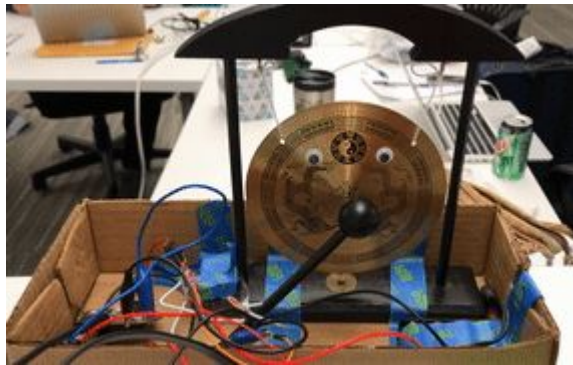
A later sprite overwrites and earlier sprite.

```
1 // A later sprite overwrites and earlier sprite.
2 var sprite1 = createSprite(200,200,100,100);
3 var sprite2 = createSprite(200,200,50,100);
4 sprite2.shapeColor="red";
5 drawSprites();
```

```
1 var sprite = createSprite();
2 drawSprites();
```

Roll a Die

Use 6 different images for a sprite, labeled "dieRed1" through "dieRed6", and randomNumber



Thanks!

Thank You!

code.org/about/jobs

code.org/volunteer