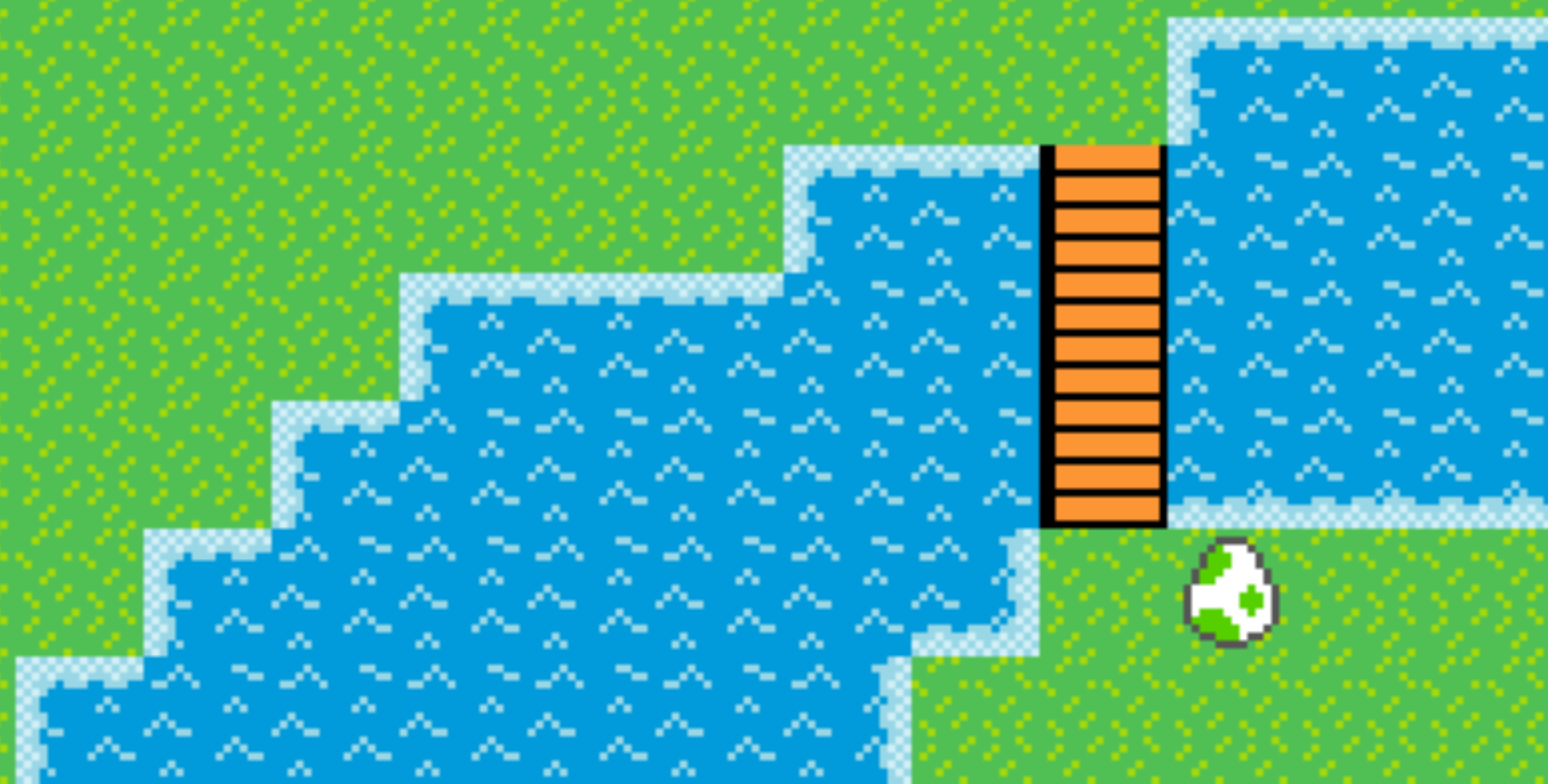


# Mighty Bayard



Nicolas Seriot  
2016-01-26



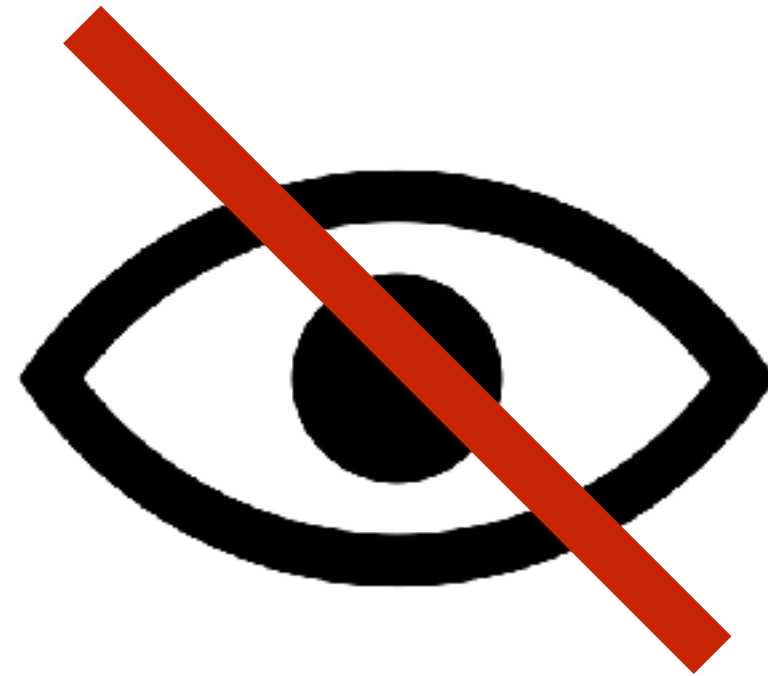
**Part 1**

**A Programming Game**



# Motivation

Can I teach the basics of programming to Émilien, 4.5 yo?



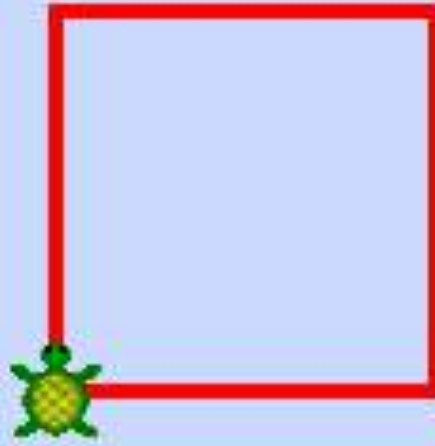
Turtle

Pen

Numbers

Flow

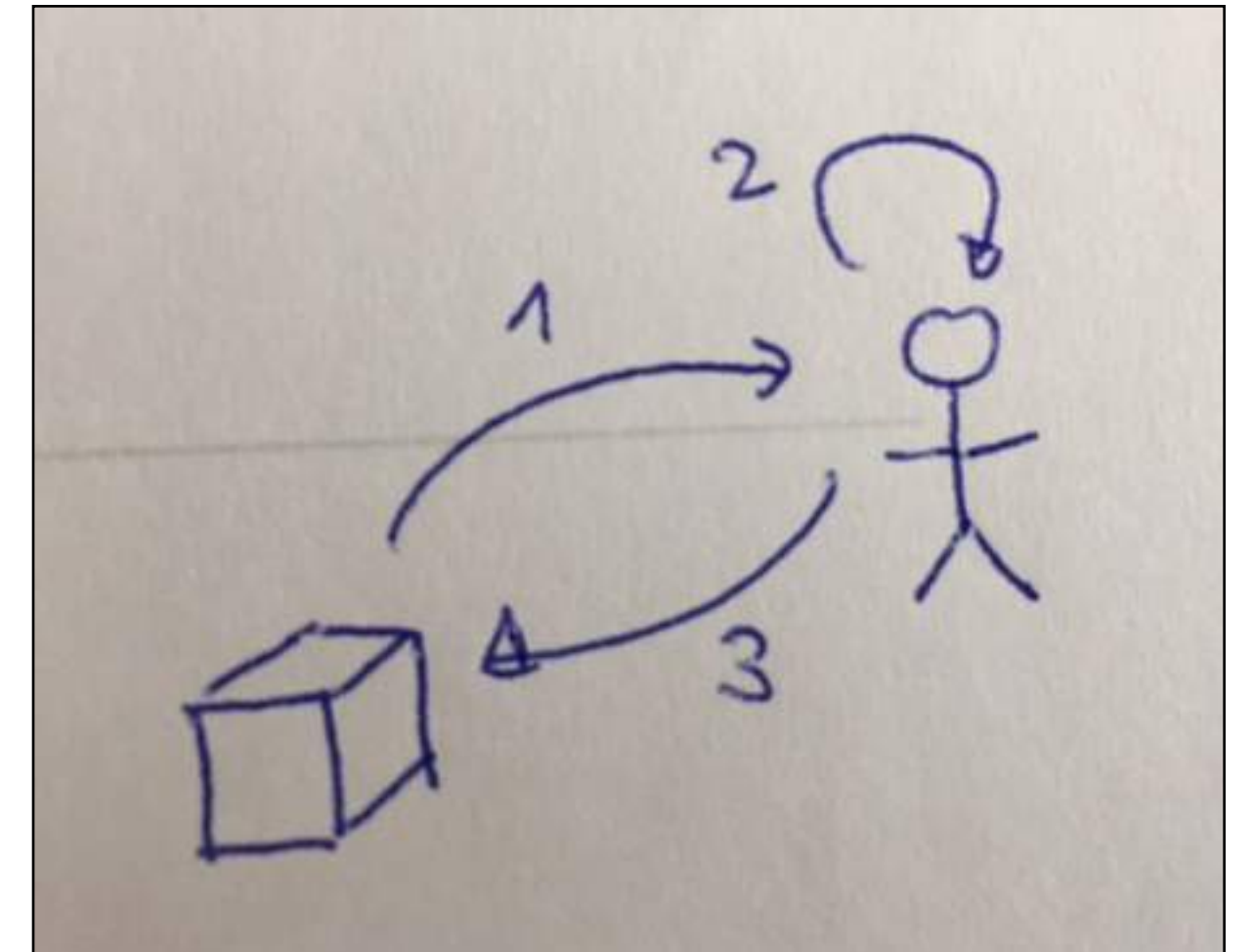
My Blocks



to box  
back 100  
right 90  
forward 1

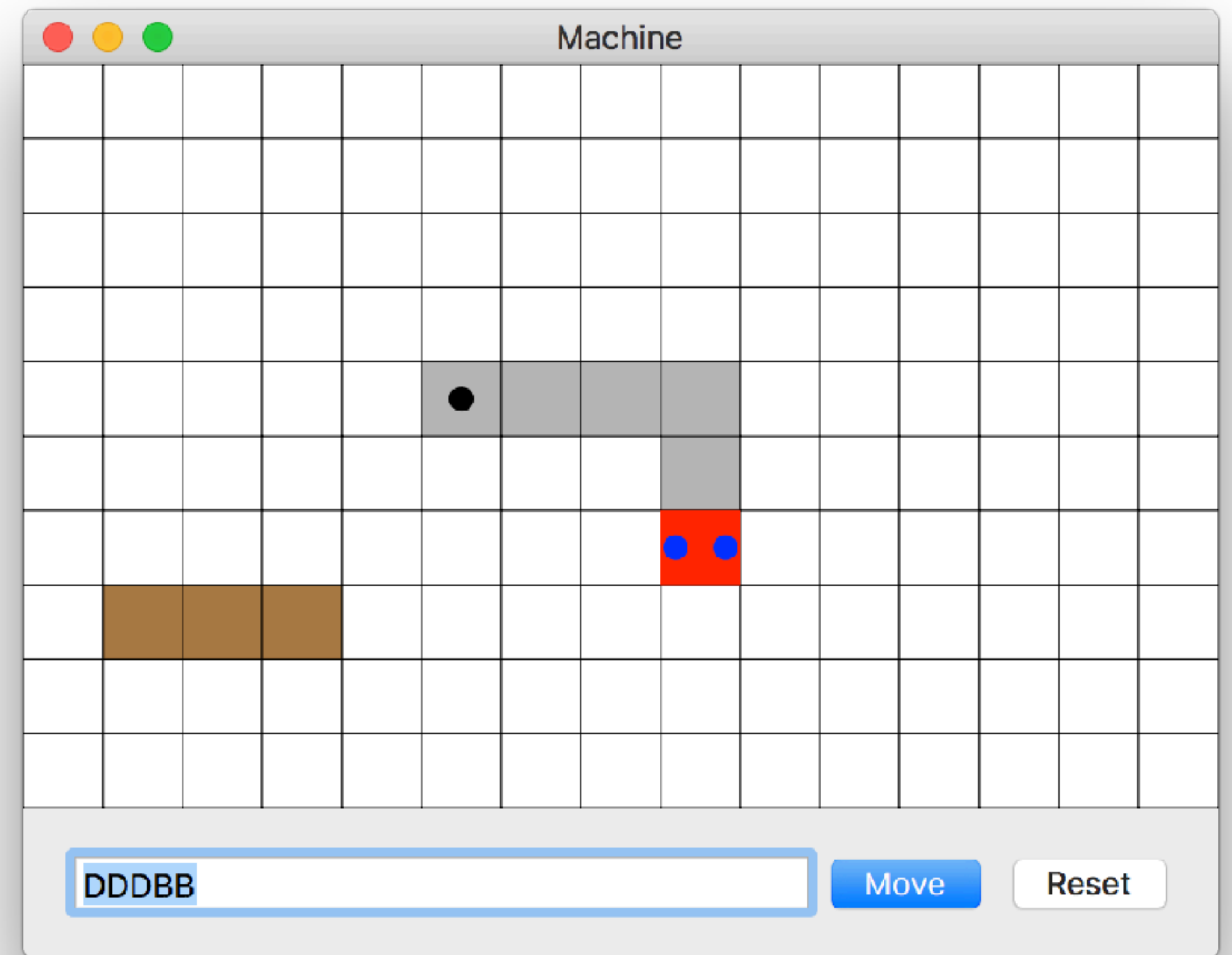
# Reasoning

1. Understand the problem statement
2. Find a solution mentally
3. Tell a machine how to execute the solution
4. Update the solution if necessary
5. Understand that machines are mechanical



# Machine

- sample input: 4D3H6G1B
- limit input to  $[0-9]^* [HBGD]^*$
- uppercase only
- disable key repeat



**Part 2**

**A Puzzle Game**

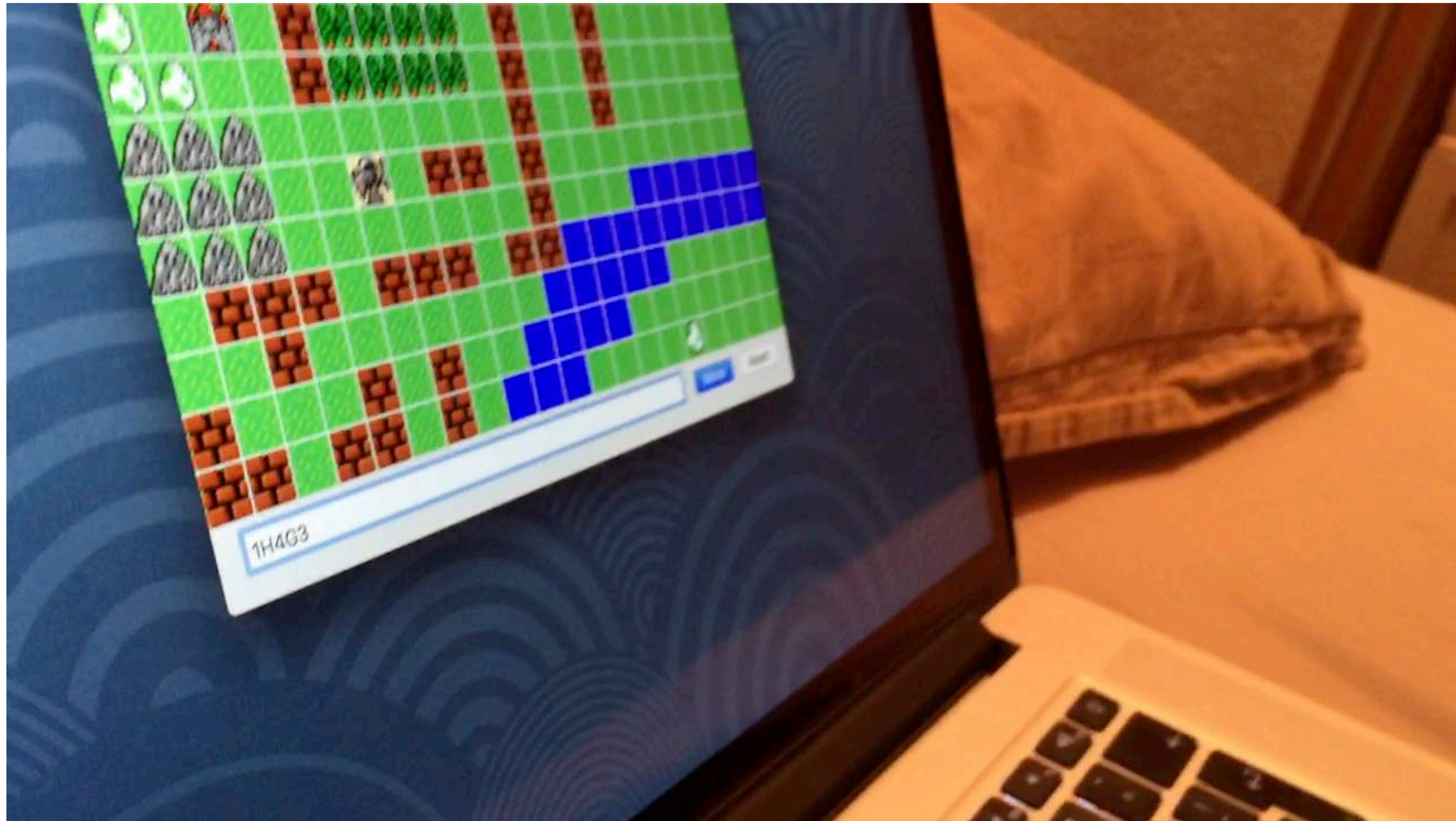
2. Find a solution mentally

3. Tell a machine how to execute the solution

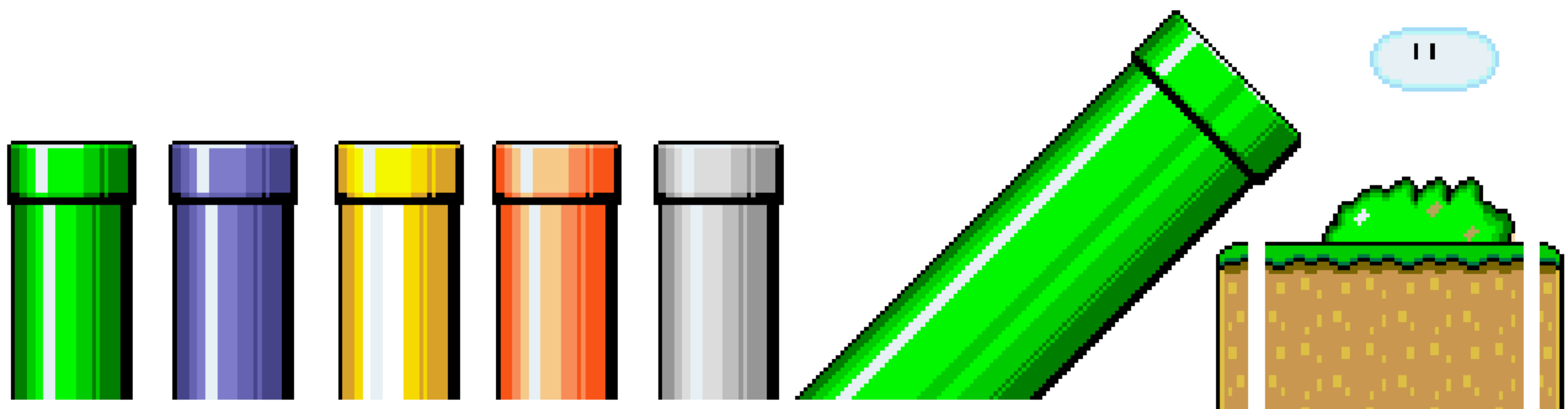
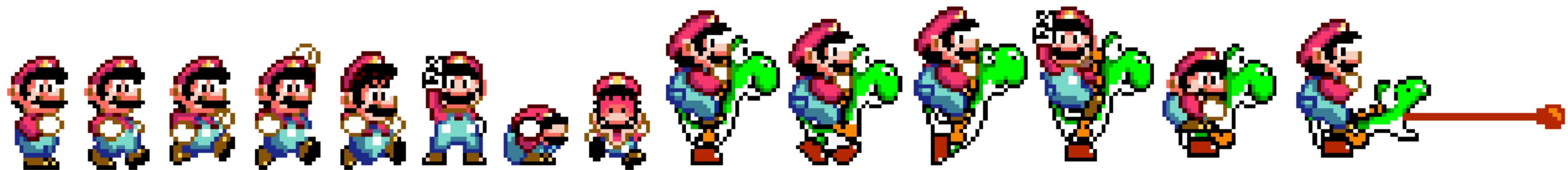




4. Update the solution if necessary  
Here, find a workaround







Super Mario World Sprites - Ripped by Aaron Bridge

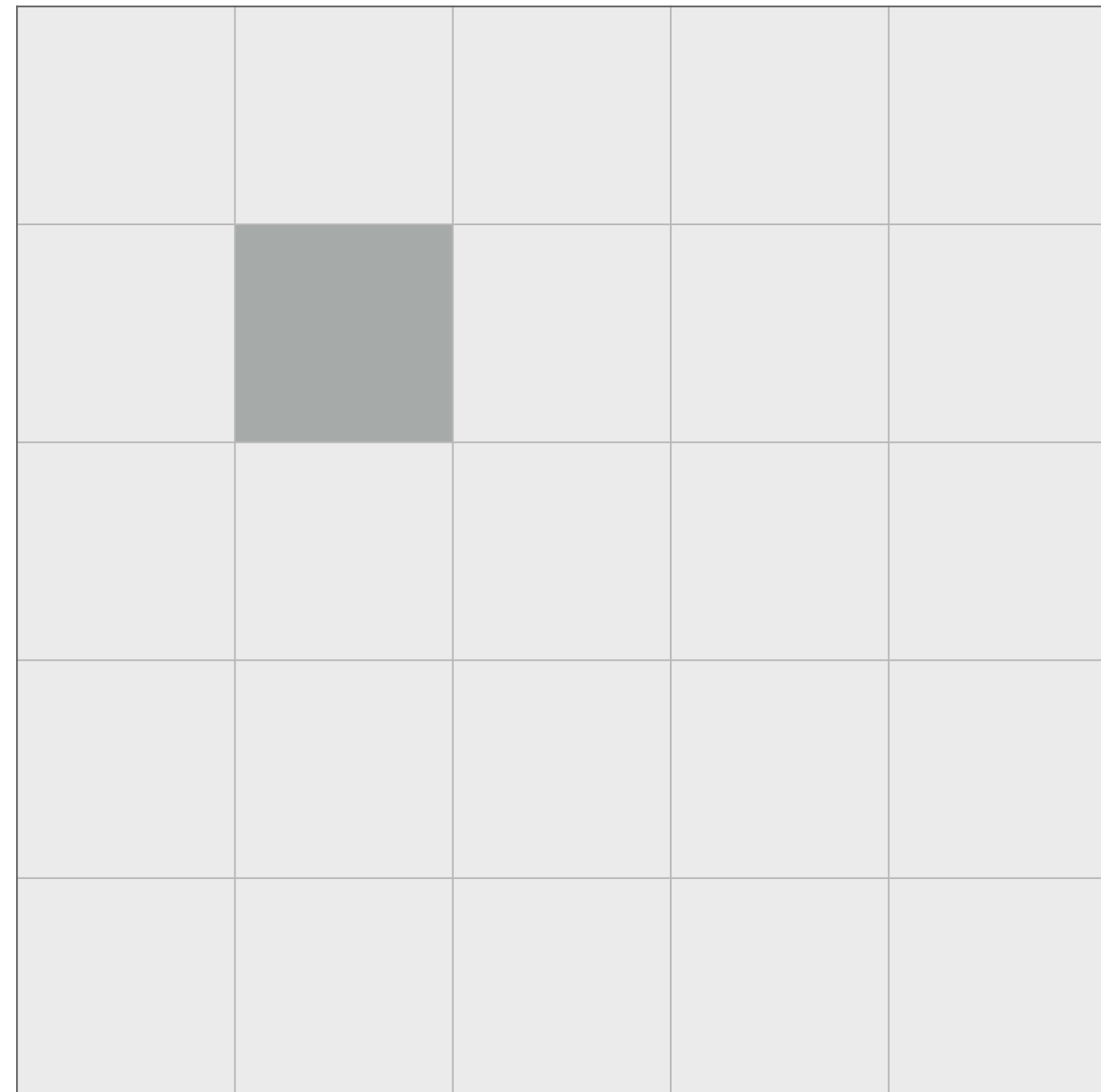


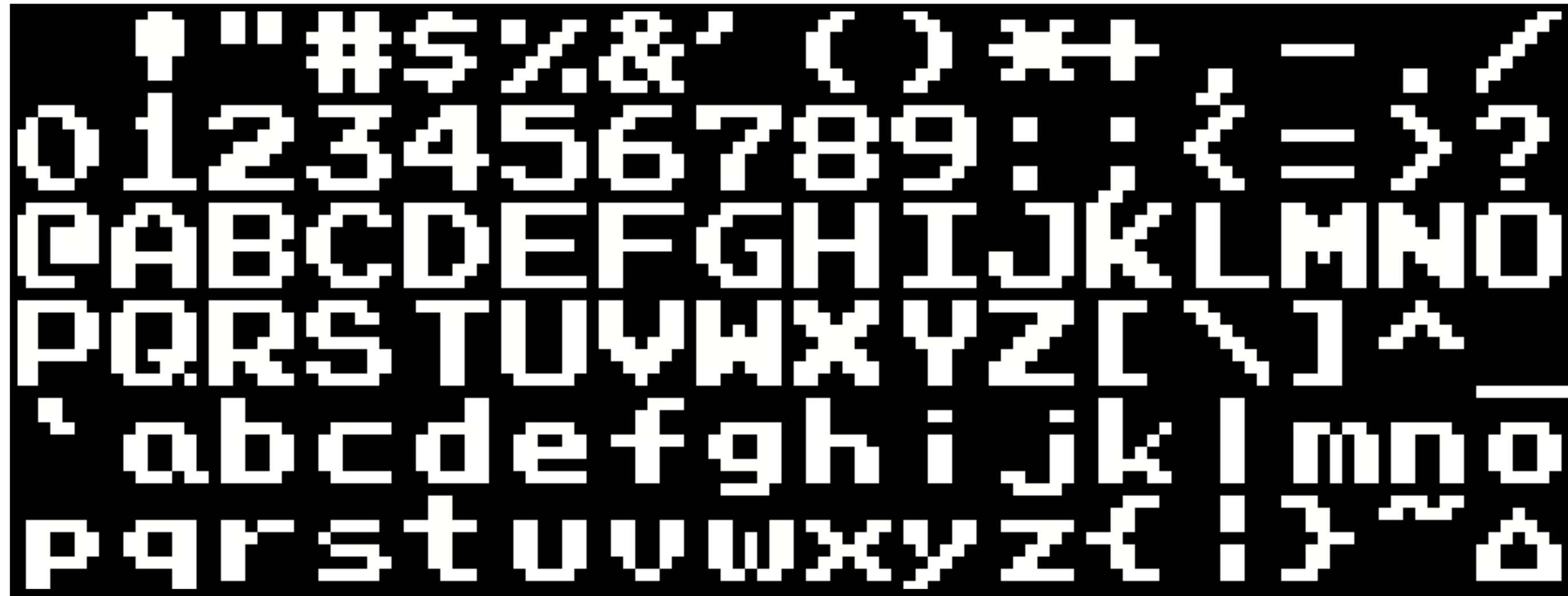


<http://opengameart.org/>

# Optimal Drawing

- draw only when needed
- mark cells dirty as infrequently as possible





# Fonts

<https://forums.nesdev.com/viewtopic.php?t=8440>

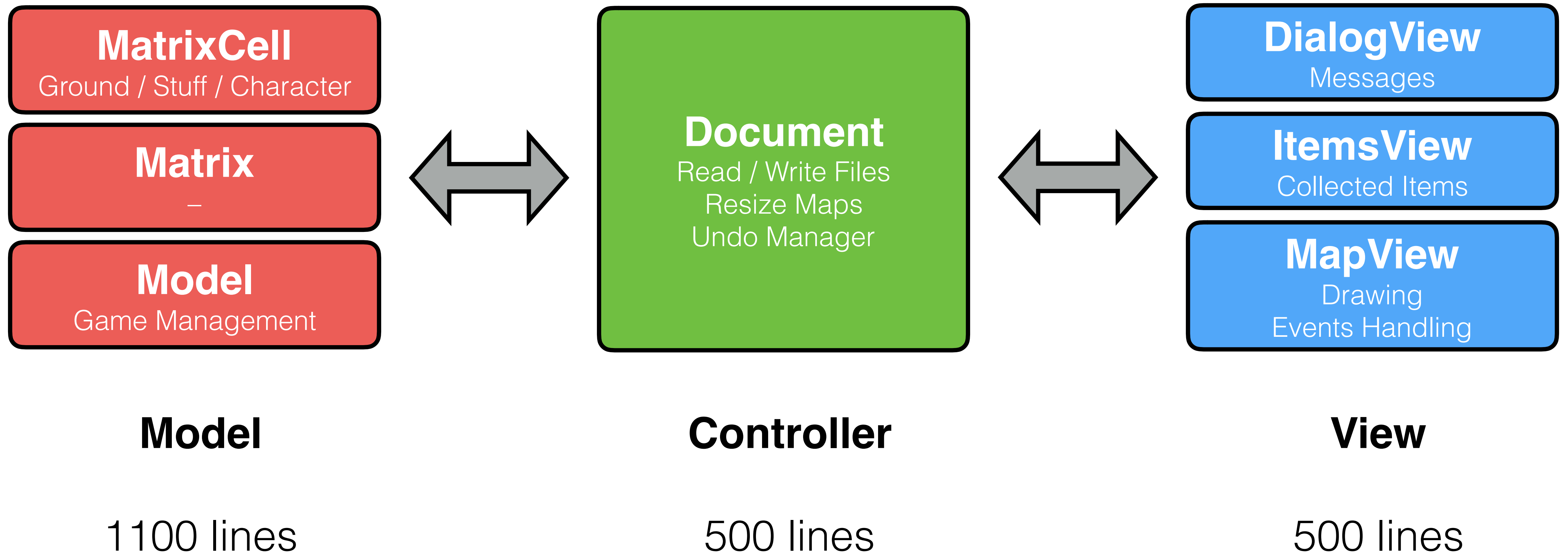
PressStart2P-Regular.ttf

GPL

<http://www.zone38.net/font/>

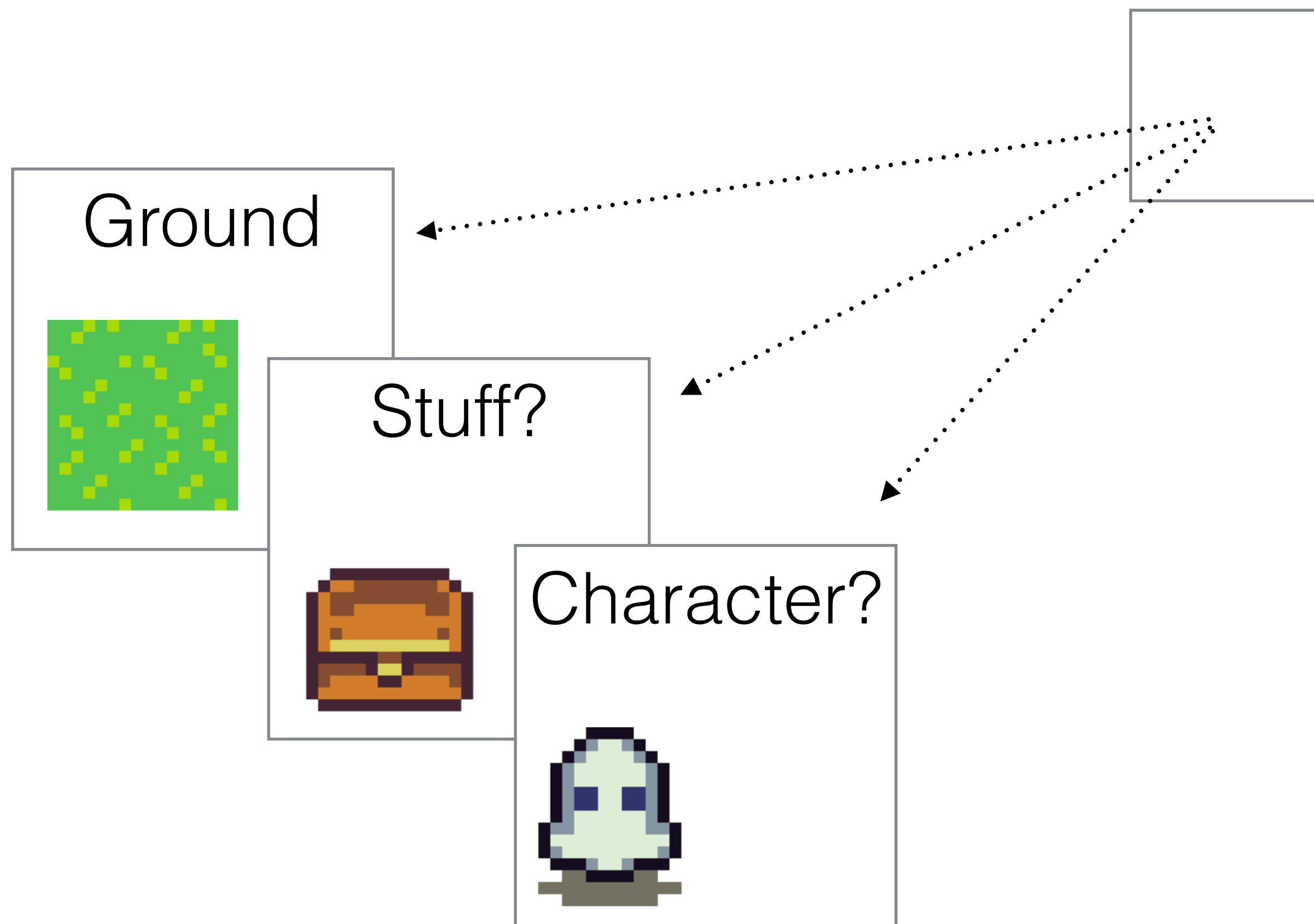


# Architecture





# 3 Layers Cells




# GamePlay & UX

- **no score**, no timeout, no levels, nothing random
- go onto **items** to interact (collect, use, action)
- **fullscreen** mode
- move with **arrows**

"Tu vois Titou, avant je programmais,  
mais maintenant je programme plus!"

(un futur BA?)



# MIGHTY BAYARD



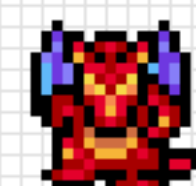
Bayard must reach the castle



Eat eggs and go through walls



Sword kills enemies



Boat will take Bayard on water



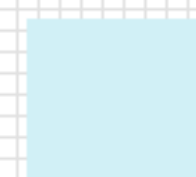
Keys will open chests



Caves communicate



Light in the dark, push stones



Ice slips, ghosts never die



Maps editor, fullscreen mode



A game for kids by @nst021

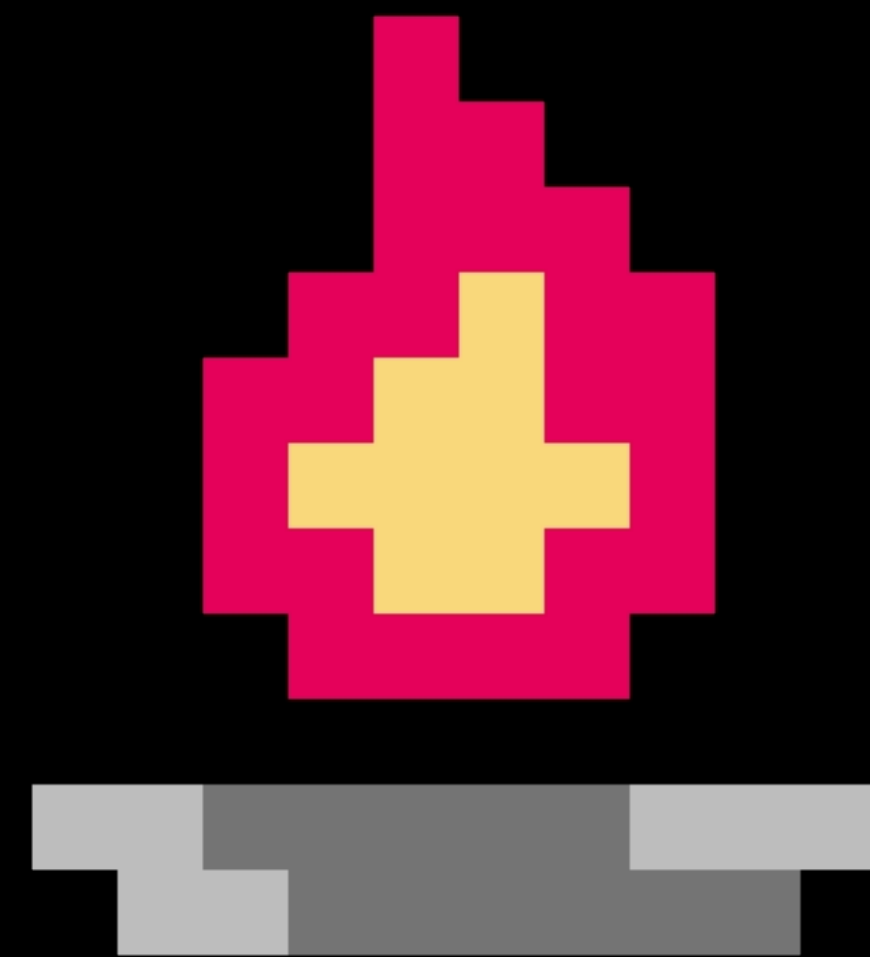


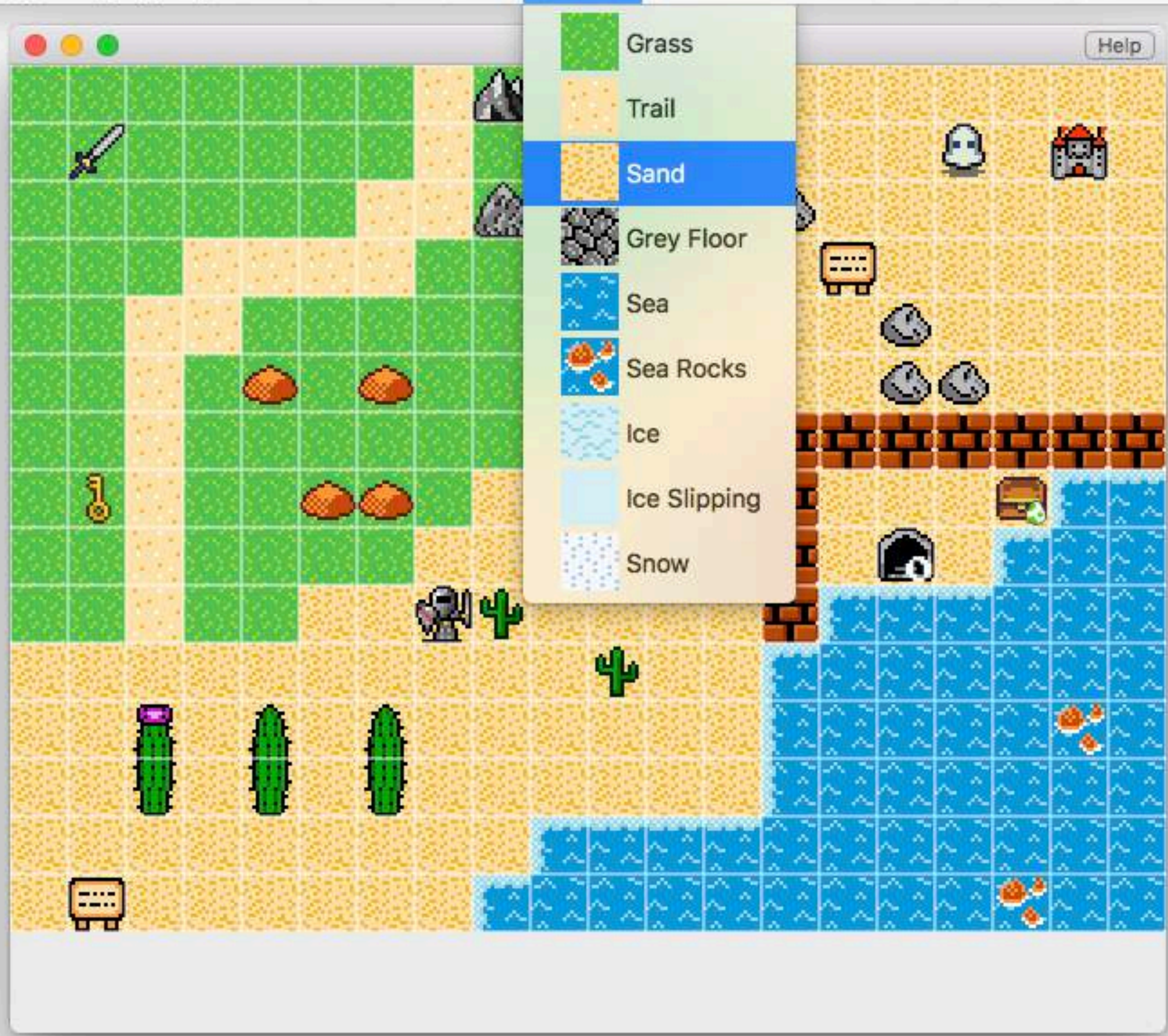










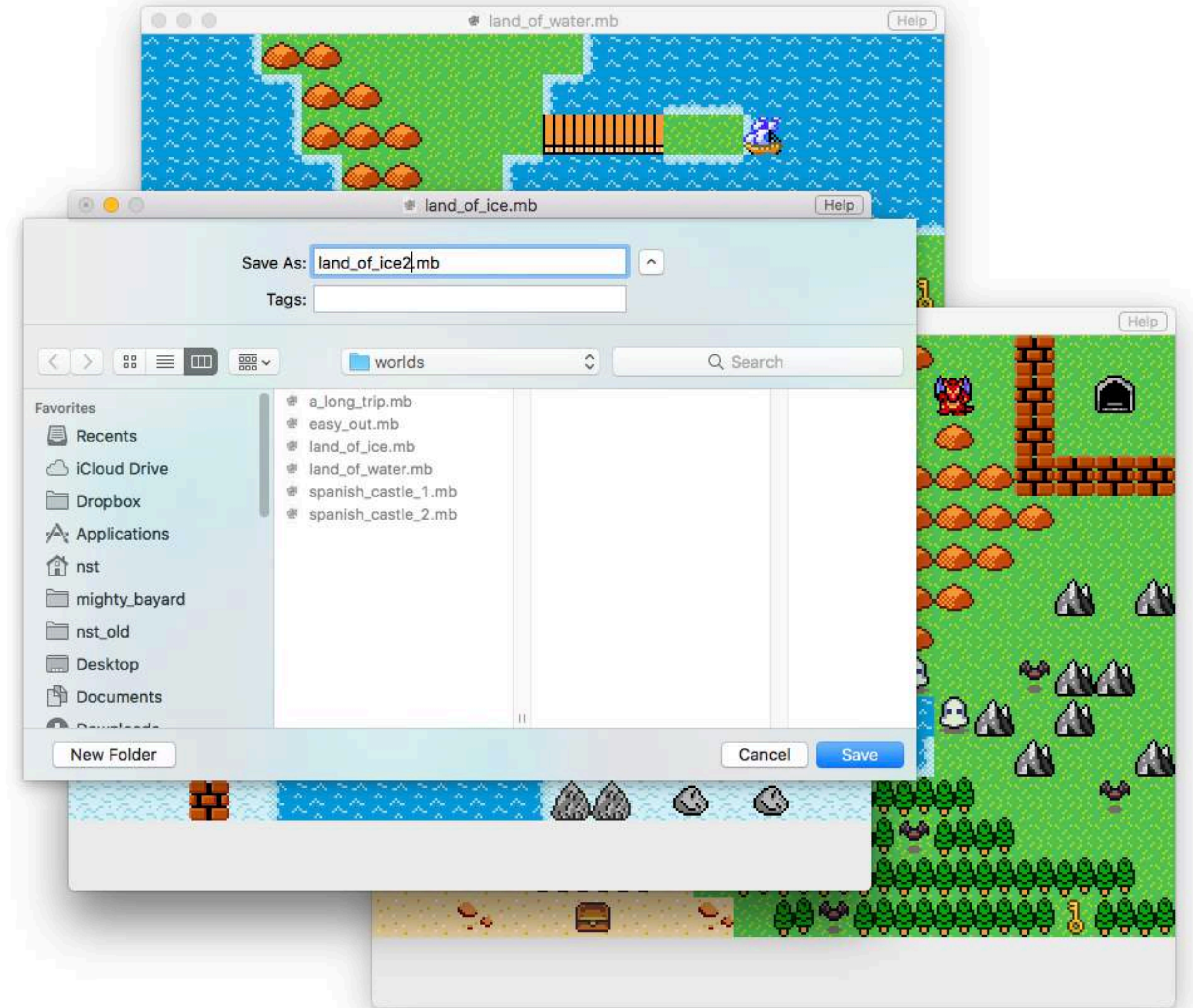


# Map Edition

- update map at anytime, useful with kids
- editor mode allows:
  - map resizing
  - chest and caves edition
- “smart” sea tiles

# NSDocument

- Undo Manager
- Document Serialization



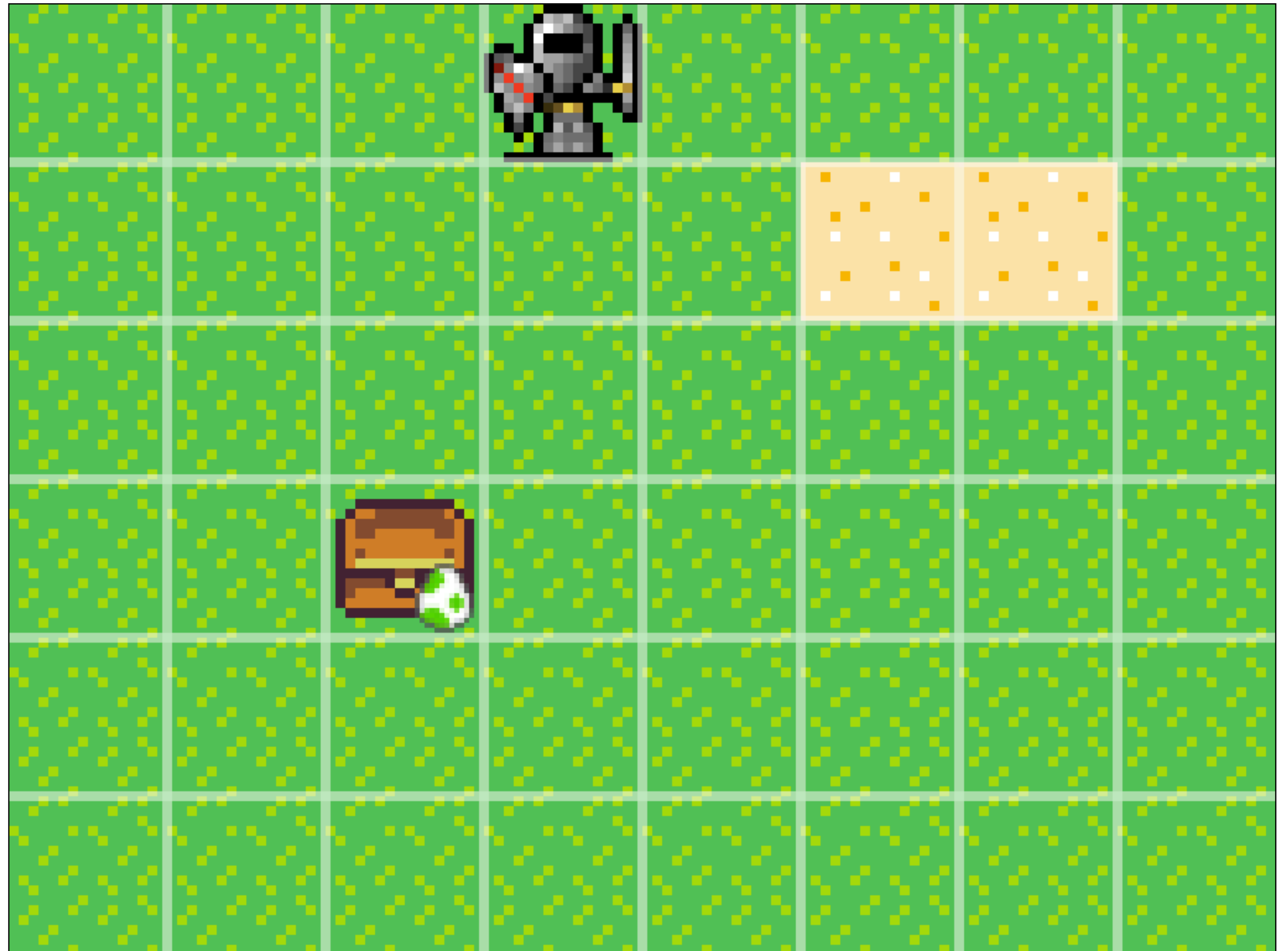
# Undo Manager

- kids make mistake, can cry if they lose!
- edition also needs undo

```
func updateHeroCoordinates(nextCol: Int, nextRow: Int) {  
    // ...  
  
    delegate?.undoManager?.registerUndo(withTarget: self) { (model) in  
        model.updateHeroCoordinates(nextCol: previousCol, nextRow: previousRow)  
        // ...  
    }  
  
    // ...  
}
```

# JSON File Format

```
{  
  "NB_ROWS" : 6,  
  "NB_COLS" : 8,  
  "START_COL" : 3,  
  "START_ROW" : 5,  
  "cellContents" : {  
    "chest|egg" : [  
      [2,2]  
    ],  
    "trail" : [  
      [5,4],[6,4]  
    ]  
  }  
}
```



- AppIcon.icns
- DocIcon.icns
- MightyBayard
- MightyBayard.xcodeproj
- MightyBayardQL
- misc
- worlds

- a\_long\_trip.mb
- easy\_out.mb
- land\_of\_ice.mb
- land\_of\_water.mb**
- spanish\_castle\_1.mb
- spanish\_castle\_2.mb



land\_of\_water.mb

MightyBayard - 14 KB  
Created Sunday, 27 November 2016 at 23:04  
Modified Sunday, 27 November 2016 at 23:04  
Last opened Today, 15:02  
[Add Tags...](#)

# Quick Look Plugin

1. App declares UTI  
`ch.seriot.MightyBayard`



MightyBayard

Description: MightyBayard

Identifier: ch.seriot.MightyBayard

Icon: DocIcon.icns

Conforms To: public.data

Reference URL: None

Extensions: mb

Mime Types: None

Pboard Types: None

OS Types: None

2. QuickLook plugin handles  
`ch.seriot.MightyBayard`

Key	Type	Value
▶ Plug-in factory interfaces	Dictionary	(1 item)
Bundle identifier	String	\$(PRODUCT_BUNDLE_IDENTIFIER)
Plug-in should be registered dynamic...	String	NO
InfoDictionary version	String	6.0
Bundle version	String	1
Quick Look preview width	Number	800
Executable file	String	\$(EXECUTABLE_NAME)
Plug-in unload function name	String	
Quick Look supports concurrent requ...	Boolean	NO
▶ Plug-in types	Dictionary	(1 item)
Quick Look thumbnail minimum size	Number	17
▼ Document types	Array	(1 item)
▼ Item 0	Dictionary	(2 items)
▶ Document Content Type UTIs	Array	(1 item)
Role	String	Quick Look Generator
Bundle versions string, short	String	1.0
Bundle name	String	\$(PRODUCT_NAME)
Plug-in dynamic registration function...	String	
Quick Look preview height	Number	600
Localization native development region	String	en
Copyright (human-readable)	String	Copyright © 2016 ch.seriot. All rights reserved.
Quick Look needs to be run in main t...	Boolean	NO

## MightyBayard.app

Swift libs

Assets.car

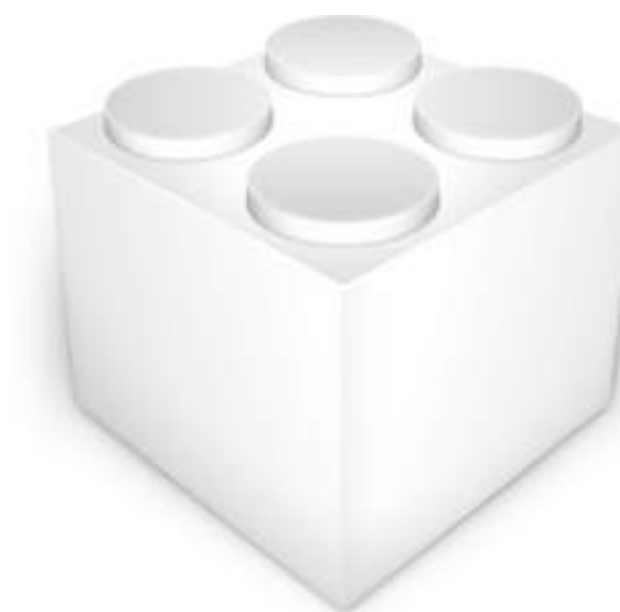
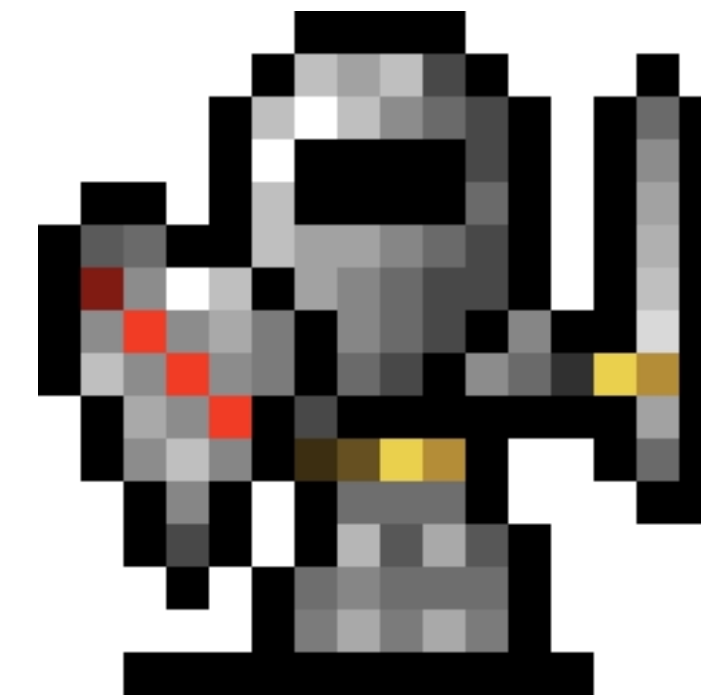
Code

## MightyBayard.qldgenerator

Swift libs

Assets.car

Model + View





# Project Management

/\*

**BUGS:**

- NA

**NEW FEATURES:**

- make more levels

**NICE TO HAVE:**

- embed default levels
- print world picture

**NEXT MAJOR RELEASE**

- animate characters
- games should be bundled with customizable tiles inside

\*/

# Part 3

## Towards a RPG

# CPU vs GPU

Core Graphics

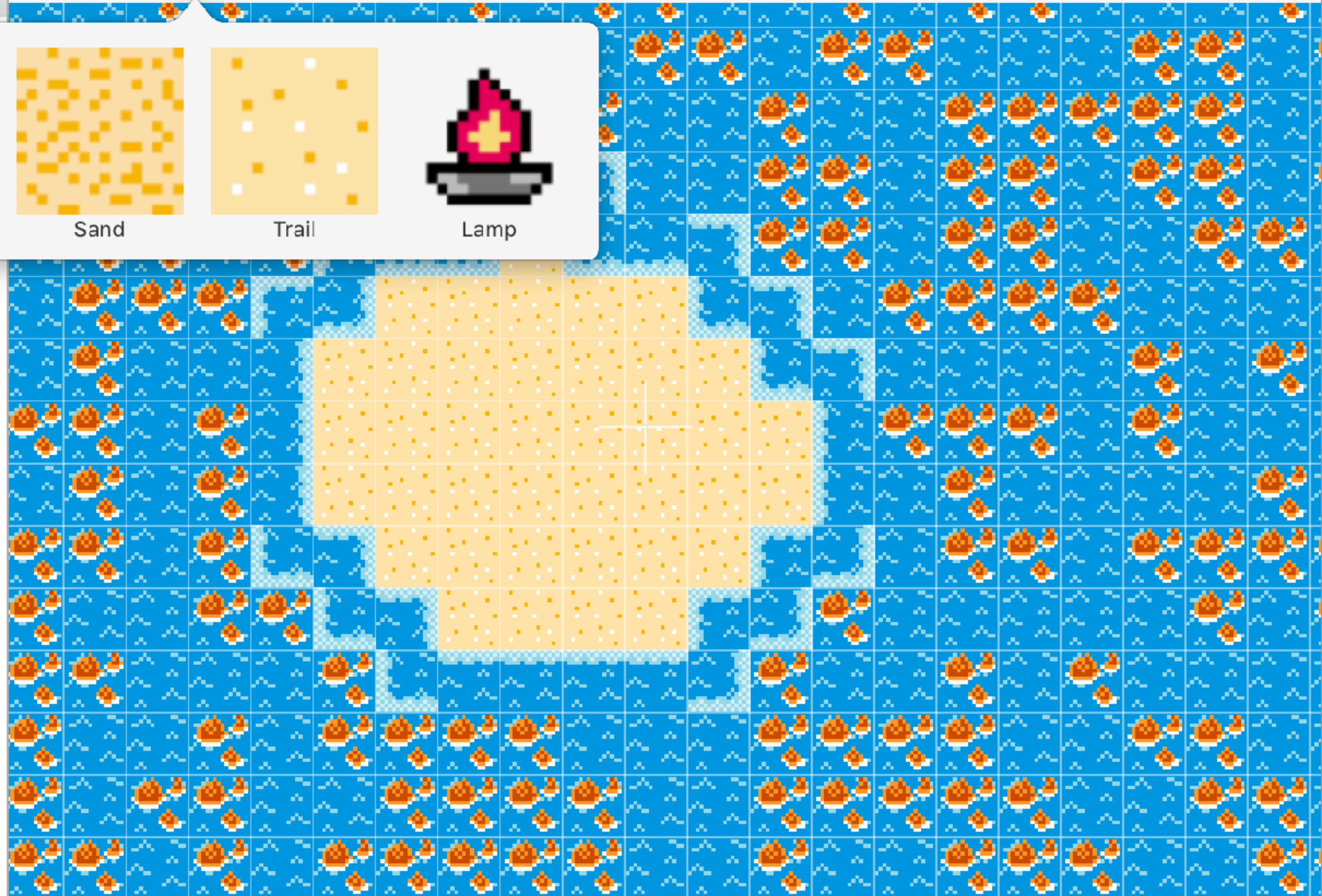
CoreAnimation

UIKit



Done

Sea Sand Trail Lamp



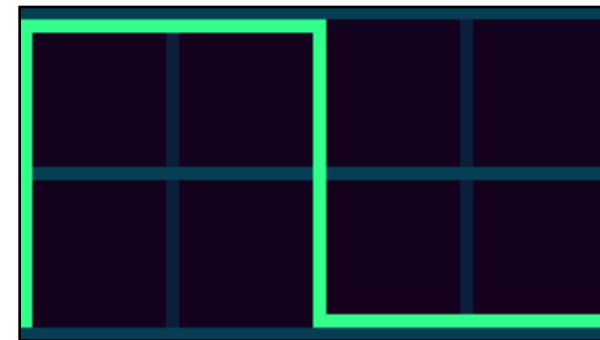
Animate

Playback Speed - 1x +

- = +

0:00 00:01 00:02 00:03 00

# Chiptune Music

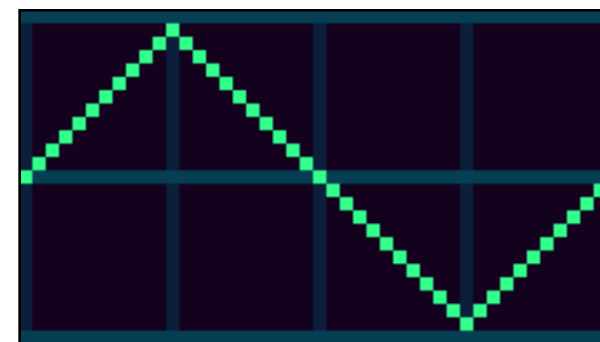


Pulse 1

melody

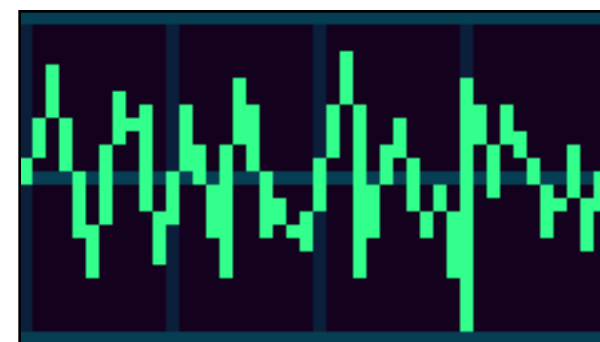
Pulse 2

melody



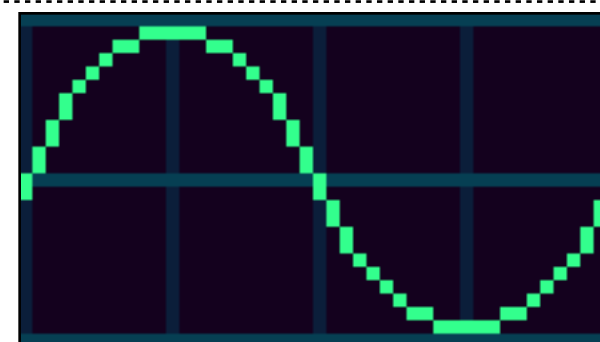
Triangle

bass



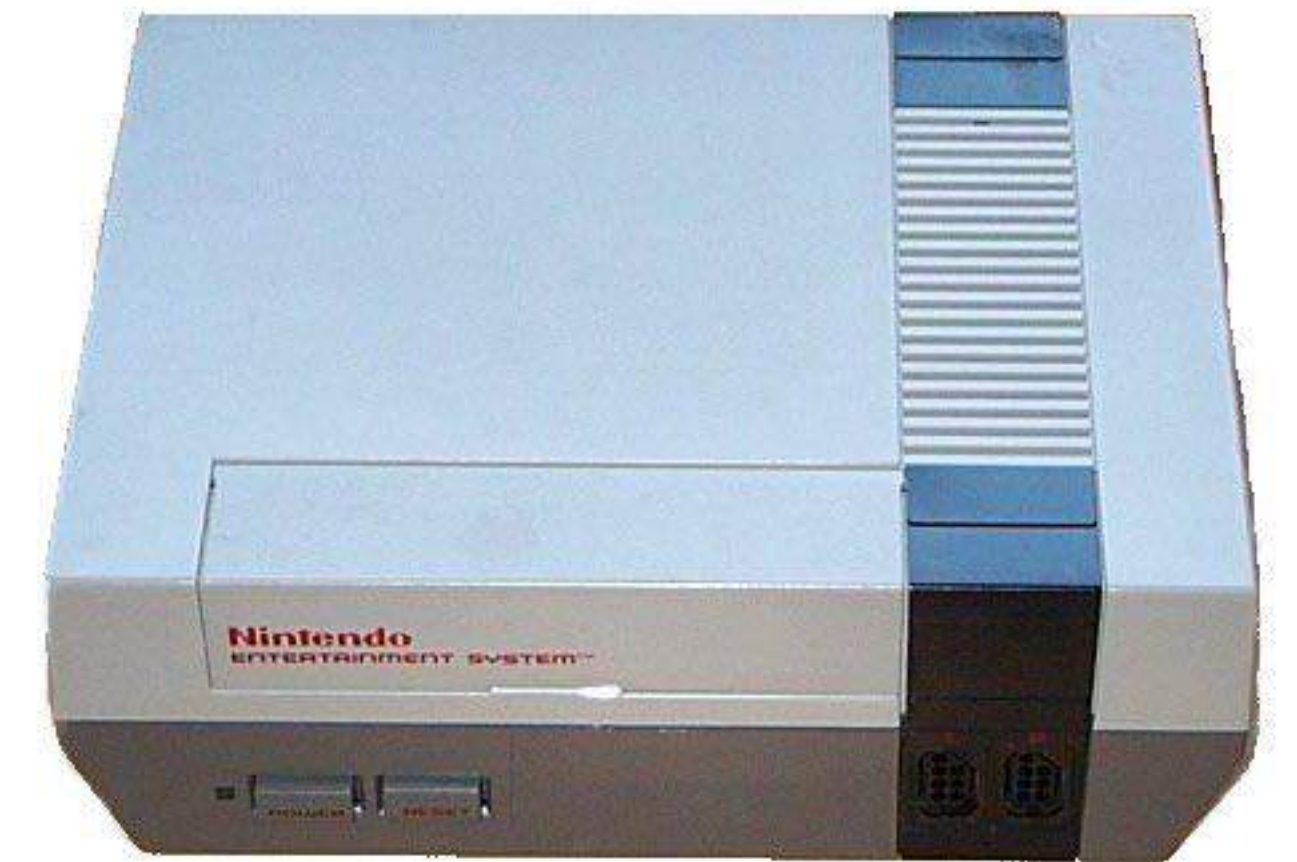
Noise

percussions

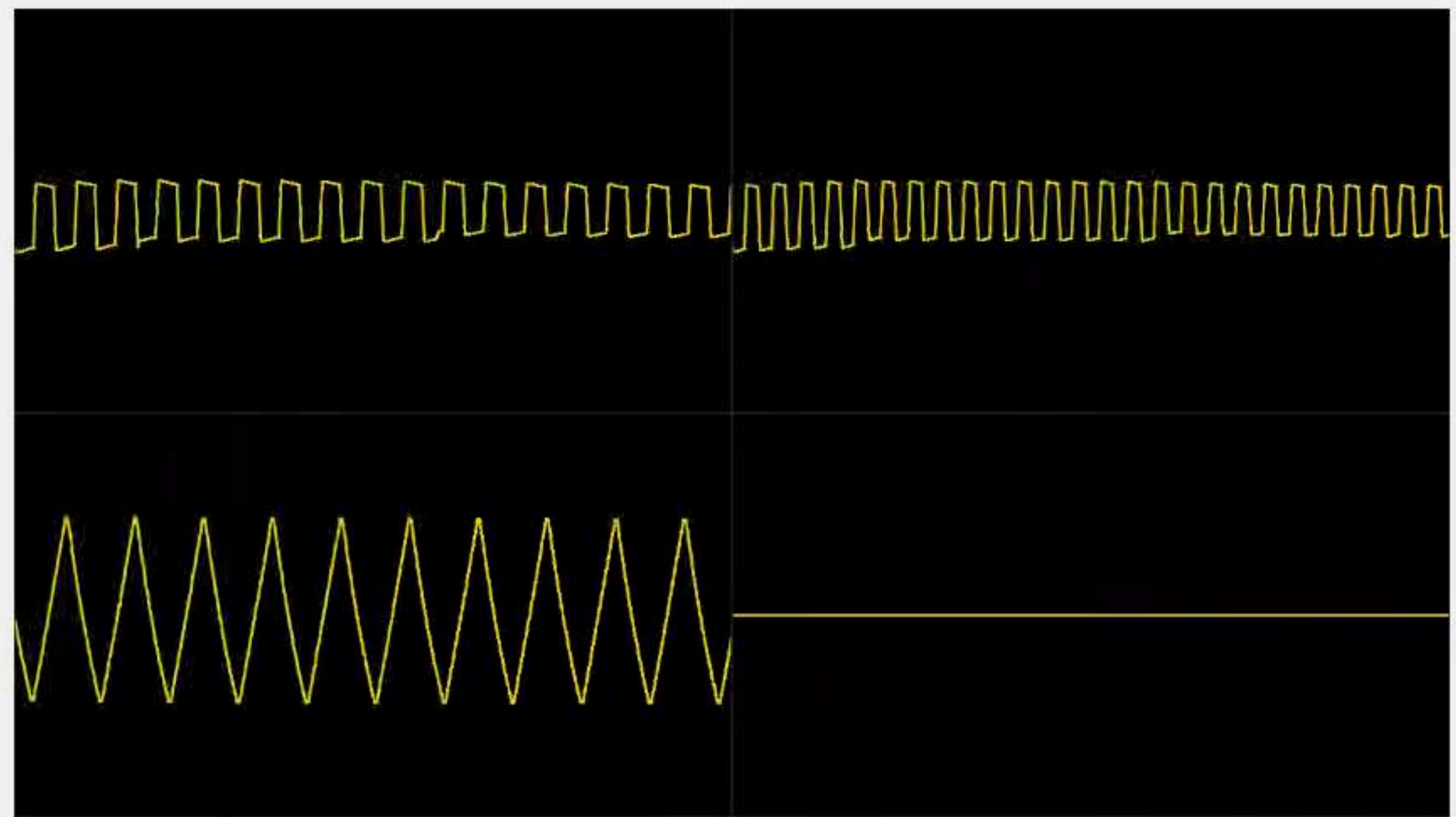


DPCM

percussions



NES hardware chip  
Ricoh RP2A03  
(5 channels)



Koji Kondo - "Super Mario Bros.  
(Theme)" -- Chiptune  
Visualization / NES NSF



1ucasvb



8,900 views



<https://www.youtube.com/watch?v=p34W4AsBh7I>

fortress\_of\_calamity.ftm [#1 New song] - FamiTracker

File Edit Module Instrument Tracker View Help

Octave 3 Follow-mode Row highlight, 1st 4 2nd 16

00 00 00 00 00

01 01 01 01 01

02 02 02 02 02

03 03 03 03 03

04 04 04 04 04

Song settings

Speed 6

Tempo 170

Rows 64

Frames 18

Song information

(title)

H\_Mister

Apr 2015

2A 00 - Lead/Bass

2A 03 01 - MM2 Style Kick (3-#)

2A 03 02 - MM9 Snare 5

2A 03 03 - Toms

Step 1

Key repetition

Songs: #1 New song

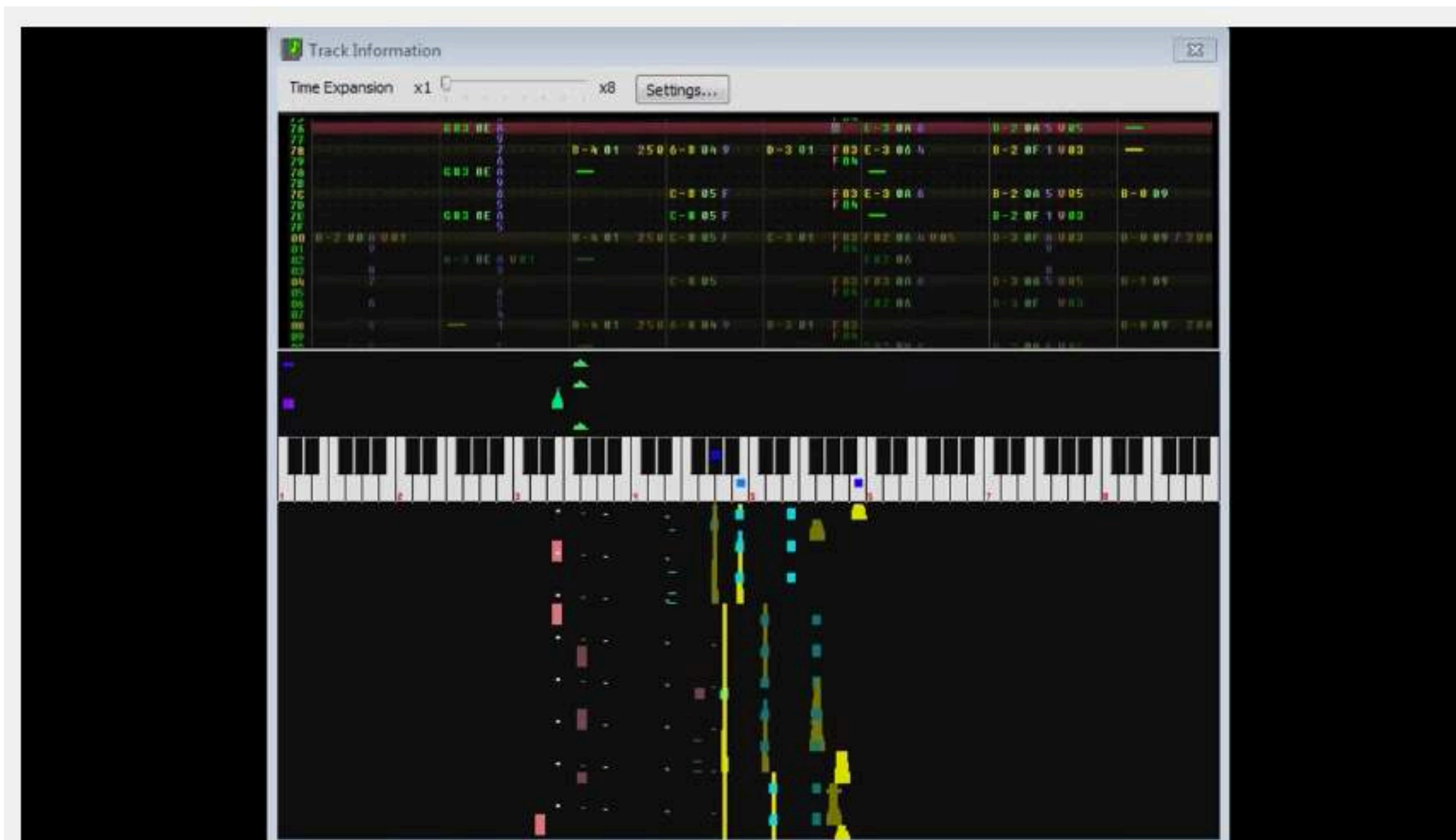
+ -  Change all

Lead/Bass

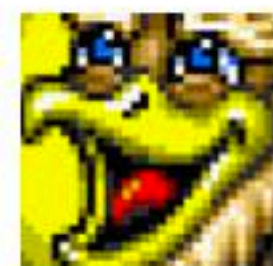
	Pulse 1	Pulse 2	Triangle	Noise	DPCM
15					
16	C- 4 00	G- 3 00	F- 3 00	4- # 01 B	
17	G- 3 00	A#3 00		D- # 01 9	
18	G- 3 00	G- 3 00	D- 3 00	D- # 01 9	
19	G- 3 00	G- 3 00	D- 3 00	D- # 01 9	
1A	F- 3 00	A#3 00	F- 3 00	3- # 02 A	
1B	F- 3 00	A#3 00	F- 3 00	3- # 02 A	
1C	F- 3 00	A#3 00	F- 3 00	3- # 02 A	
1D	F#3 00	G- 3 00	F#3 00	4- # 01 B	
1E	G- 3 00	A#3 00	G- 3 00	4- # 01 B	
1F	G- 3 00	A#3 00	G- 3 00	4- # 01 B	
20	G- 3 00	A#3 00	G- 3 00	4- # 01 B	
21		G- 3 00	A#3 00	D- # 01 9	
22		G- 3 00	A#3 00	D- # 01 9	
23		A#3 00	G- 3 00	3- # 02 A	
24	484	A#3 00	G- 3 00	3- # 02 A	
25		G- 3 00	A#3 00	4- # 01 B	
26		G- 3 00	A#3 00	4- # 01 B	
27		A#3 00		D- # 01 9	
28		A#3 00		D- # 01 9	
29		A#3 00		D- # 01 9	
2A		G- 3 00	G- 3 00	D- # 01 9	
2B		A#3 00		D- # 01 9	
2C		A#3 00		3- # 02 A	
2D		G- 3 00		4- # 01 B	
2E		G- 3 00		4- # 01 B	
2F		G- 3 00		4- # 01 B	
30	D- 4 00 400	A#3 00	F- 3 00	3- # 02 9	
31	C#4 00	G- 3 00	D- 3 00	D- # 01 9	
32	C#4 00	G- 3 00	D- 3 00	D- # 01 9	
33	C- 4 00	A#3 00	F- 3 00	3- # 02 A	
34	C- 4 00	A#3 00	F- 3 00	3- # 02 A	
35	A#3 00	G- 3 00	F#3 00	D- # 01 9	
36	A#3 00	G- 3 00	F#3 00	D- # 01 9	
37	A#3 00	G- 3 00	F#3 00	D- # 01 9	
38	A- 3 00	A- 3 00		3- # 02 A	
39	A- 3 00	A- 3 00		3- # 02 A	
3A	G- 3 00	F#3 00	D- 3 00	D- # 01 9	
3B	G- 3 00	F#3 00	D- 3 00	D- # 01 9	
3C	F- 3 00	A- 3 00	F- 3 00	3- # 02 A	
3D	F#3 00	F#3 00	F#3 00	3- # 02 A	
3E	F#3 00	F#3 00	F#3 00	3- # 02 A	
3F	F#3 00	F#3 00	F#3 00	3- # 02 A	

For Help, press F1

No expansion chip Instrument: 00 Octave: 3 60 Hz 170.00 BPM 00:03:60 42 / 00



## Famitracker - Daft Punk: Get Lucky (8-Bit VRC6 Remix)



Levi Davis



40,669 views



<https://www.youtube.com/watch?v=QJWBSTR248o>



**Evolution**

**1. “A game to learn toddlers how to code”**

## 2. “A puzzle game in a 8-bit RPG environment for toddlers.”

- Actually trains **logical thinking** to win and **creativity** to create new worlds
- Distributed to a dozen of testers early December  
[http://seriot.ch/mightybayard/mightybayard\\_0\\_3.zip](http://seriot.ch/mightybayard/mightybayard_0_3.zip)

[seriot.ch/mightybayard/m...](http://seriot.ch/mightybayard/m...)



3 Dec 2016



Mac ? Sérieux ? Pourquoi t'as pas fais iOS ?

3 Dec 2016

### 3. “A simple RPG for macOS”

- scrolling map, towns, shops, castles, friends, etc
- so many directions, making it right will take time
- “If I had time...” <- that’s interesting!
- Kid already found Zelda on SNES emulator :-]