Bubble Pop

Using Javascript and enchant.js

Game Design

Who are the Players?

What are the Rules?

What is Victory Condition?

Game Design

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1 player on an iPad.

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Who are the Players?

1 player on an iPad.

What are the Rules?

Pop Bubbles. Don’t pop bad bubbles.

What is Victory Condition?

Game Design

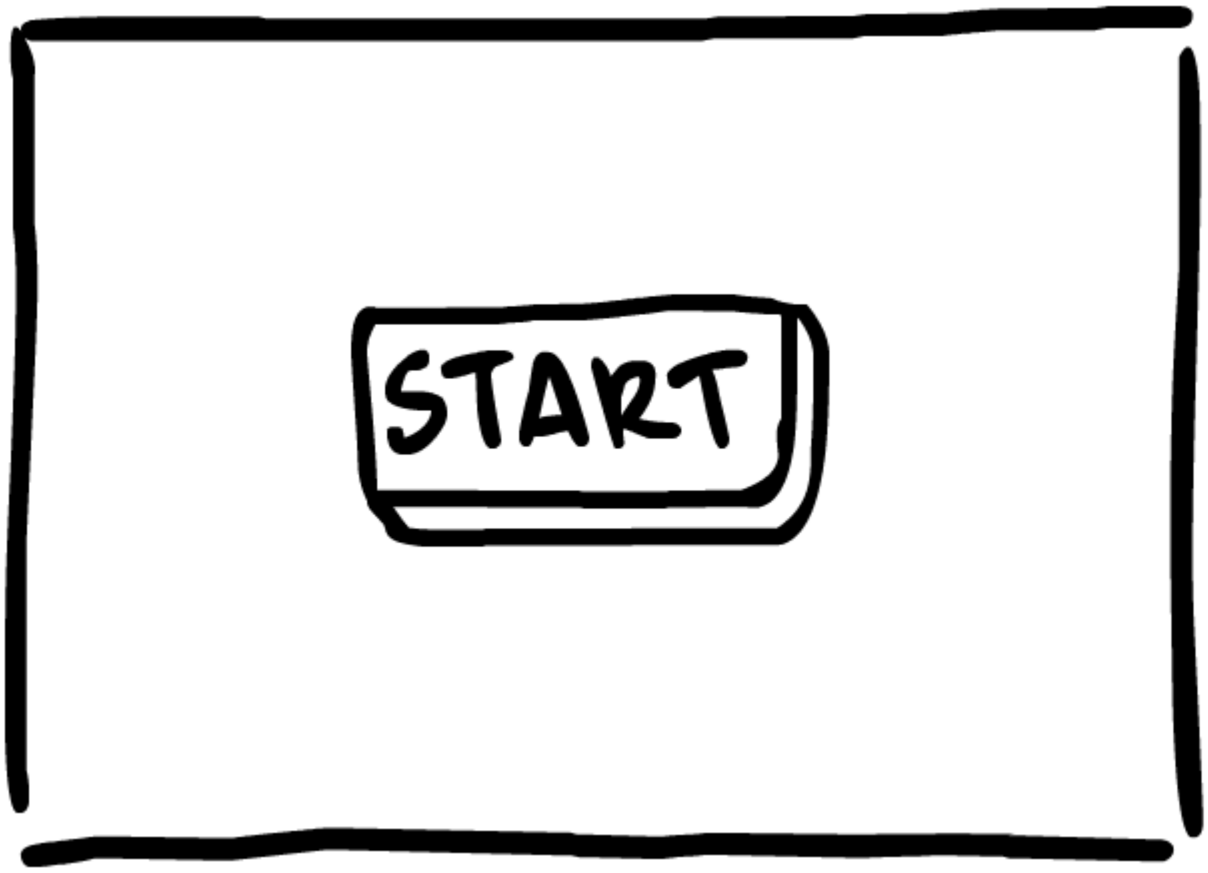
Who are the Players?
1 player on an iPad.

What are the Rules?
Pop Bubbles. Don’t pop bad bubbles.

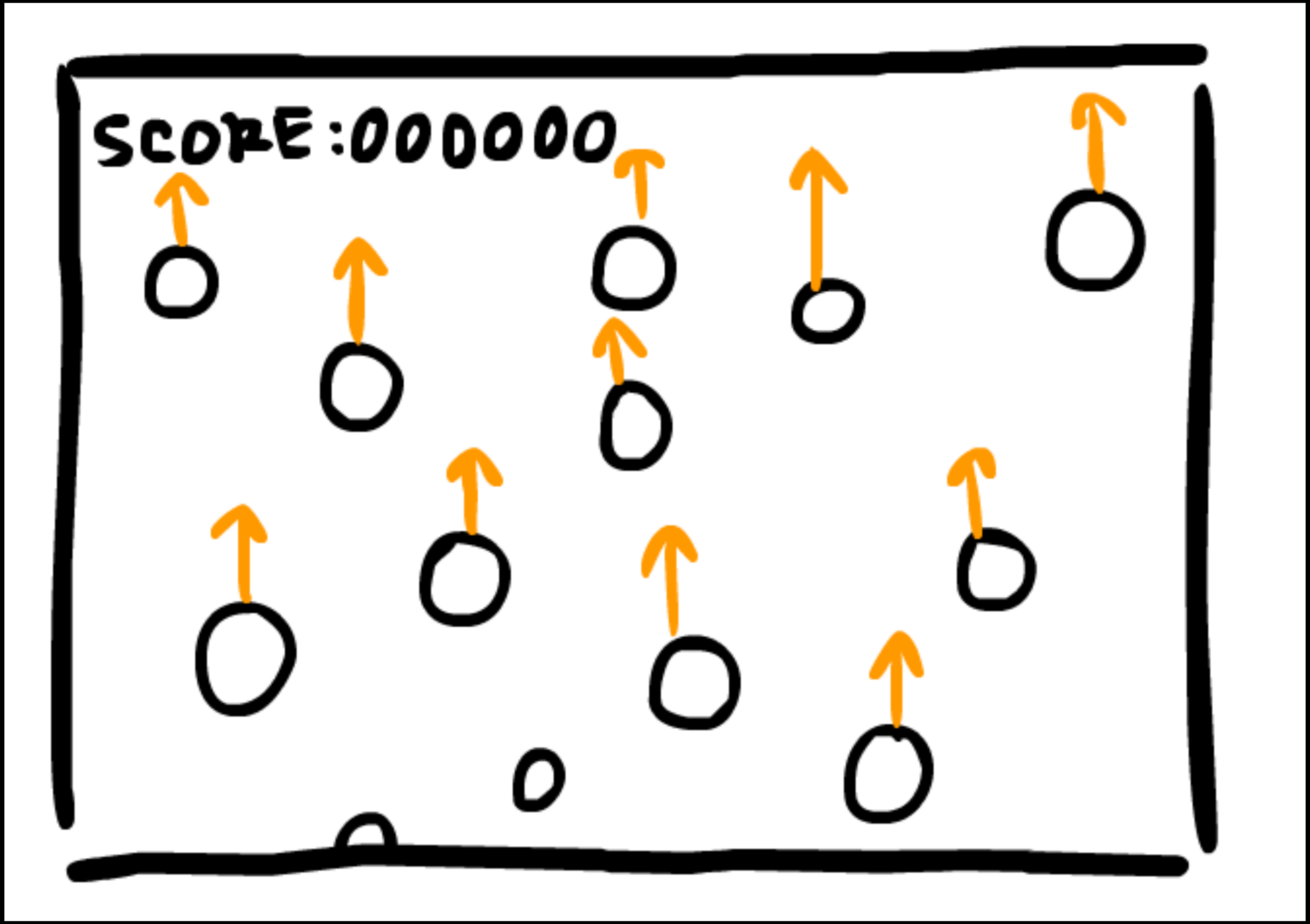
What is Victory Condition?
Get the highest score.

Game Design Wireframes

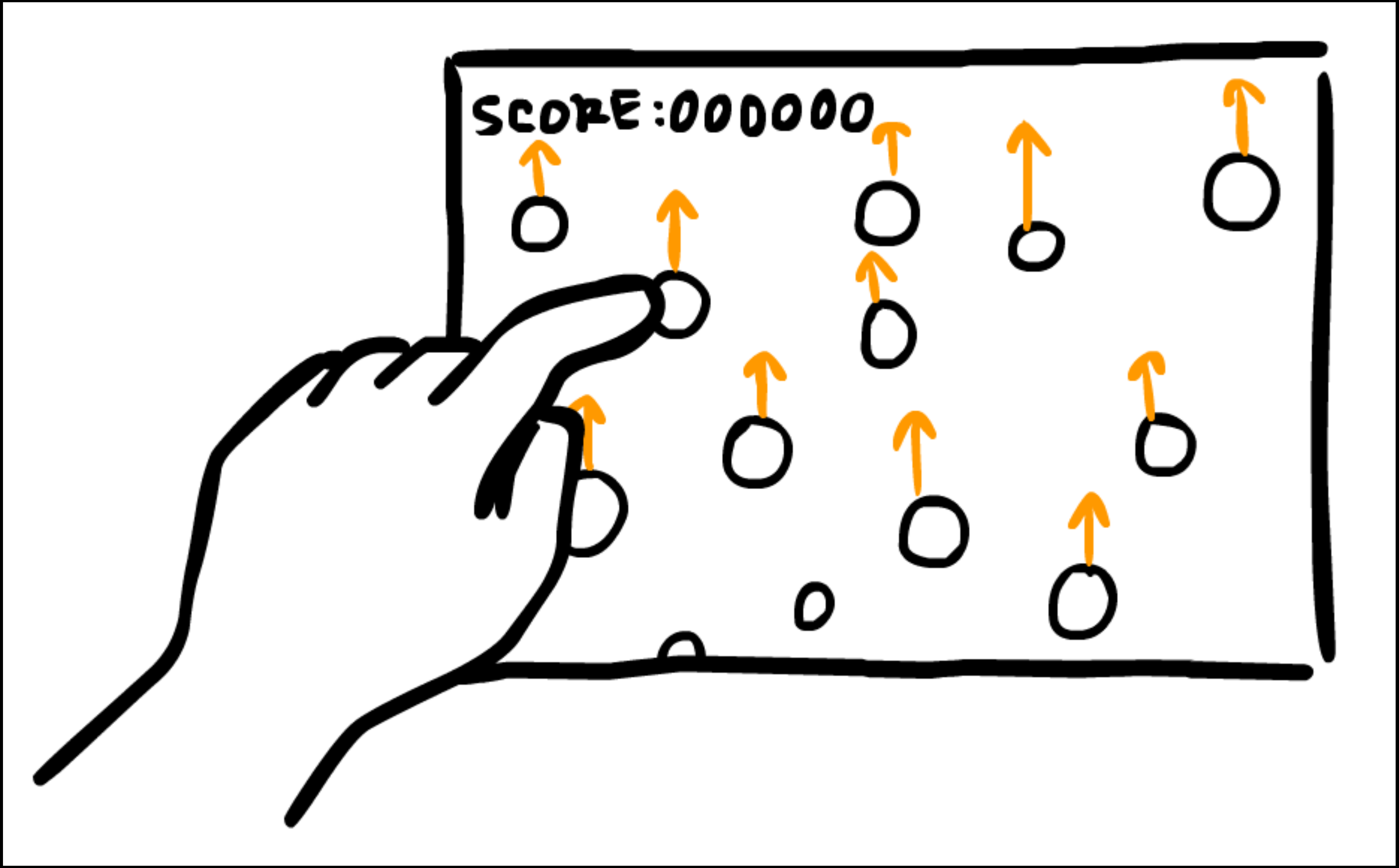
Sketch it out



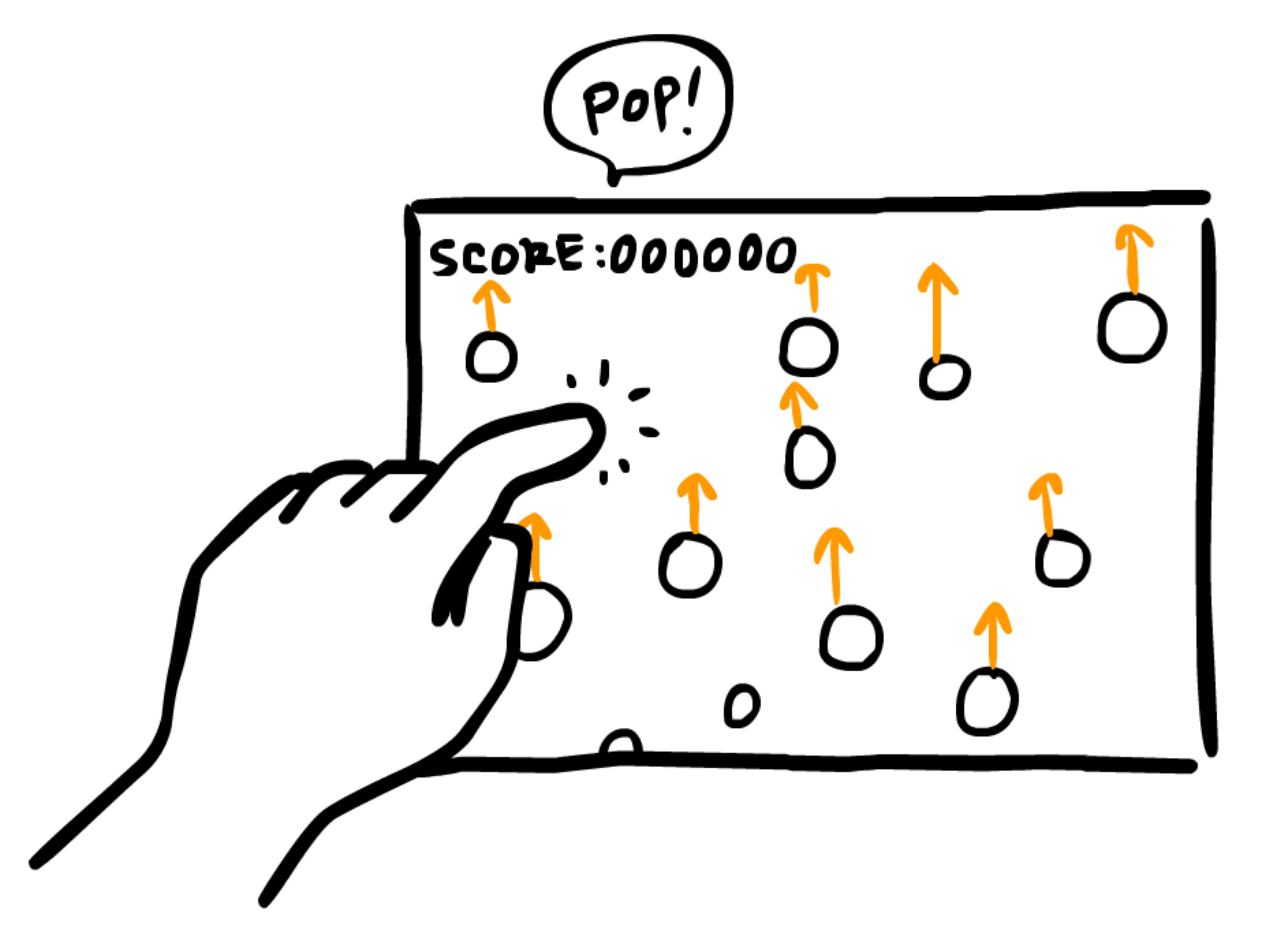
Begin with the "Start" screen



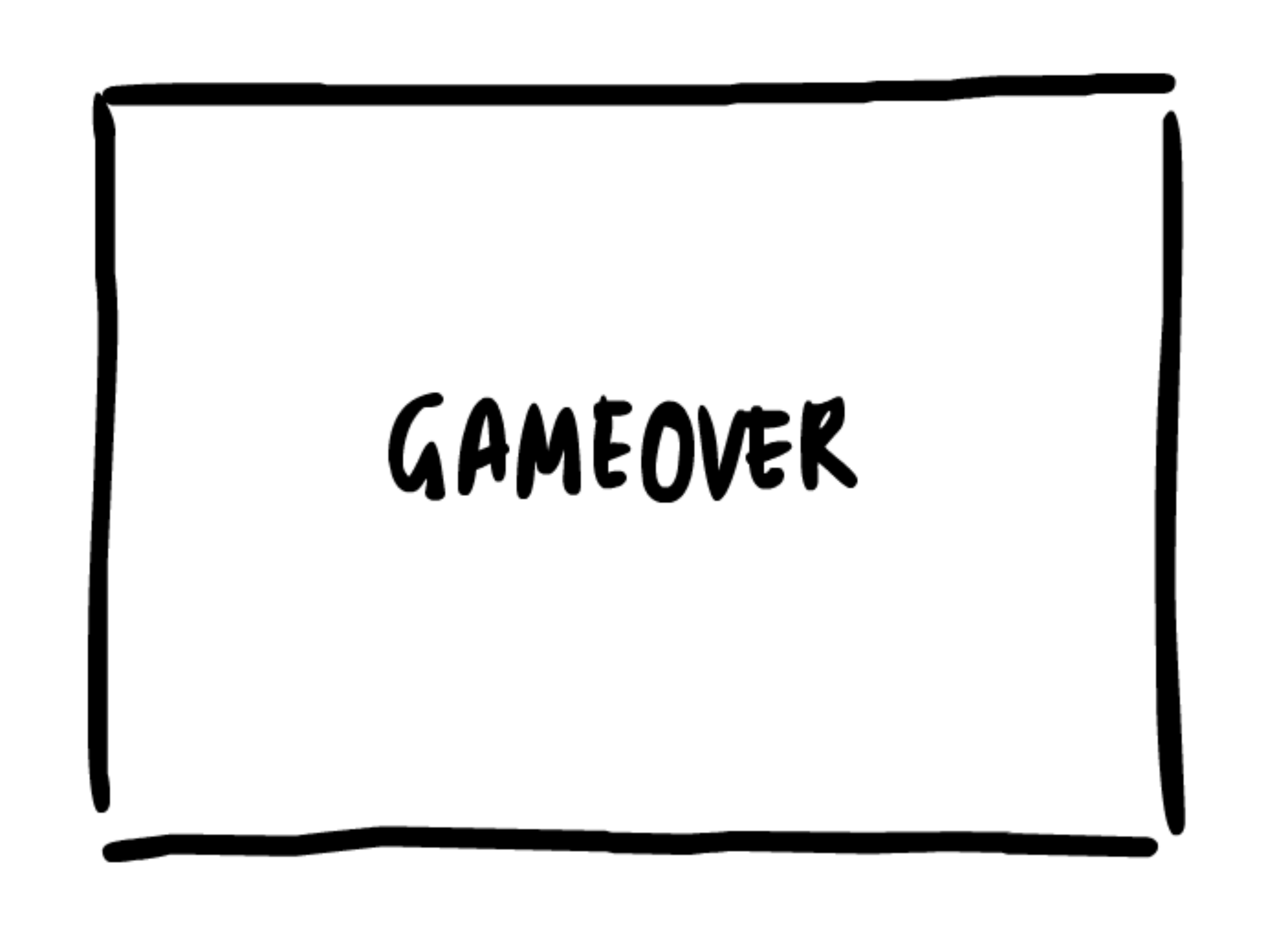
Make the "Game" screen



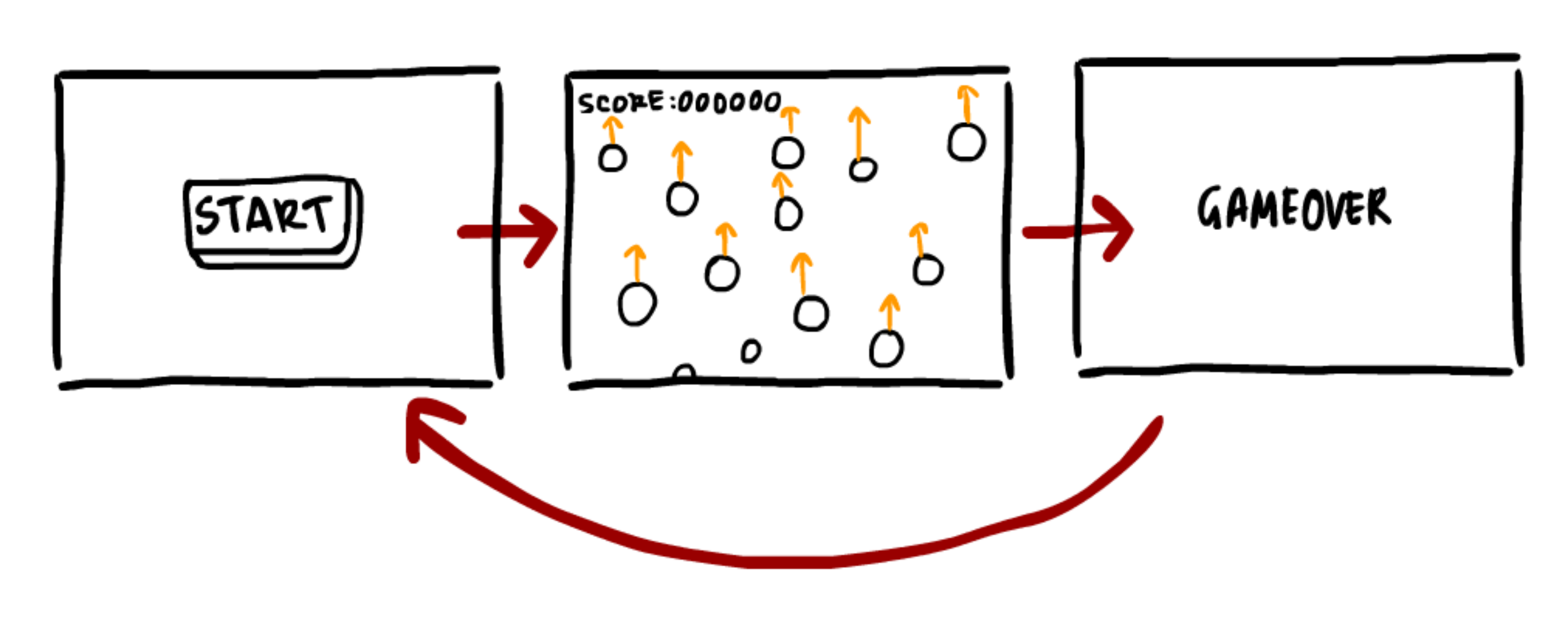
Sketch out the player controls and interactions



What happens when the player interacts



The "Game Over" screen



The entire game flow, showing all three screens

Let's start Coding!

Things we need to build this game

A Code Editor - Sublime Text

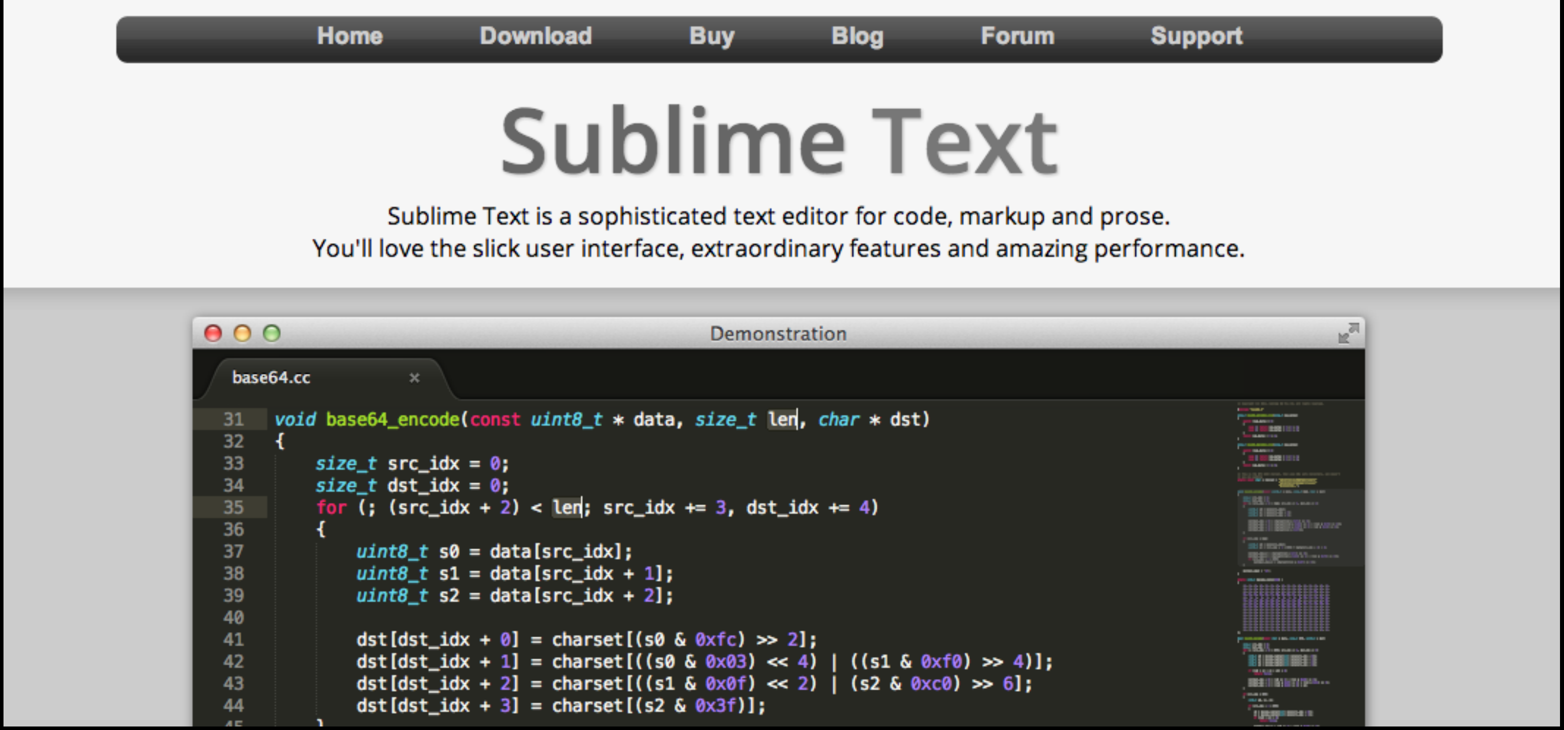
A Test environment - Google Chrome

A Game engine - Enchant.js

Assets - Images are included with this project

Sublime Text.app

sublimetext.com



Sublime Text

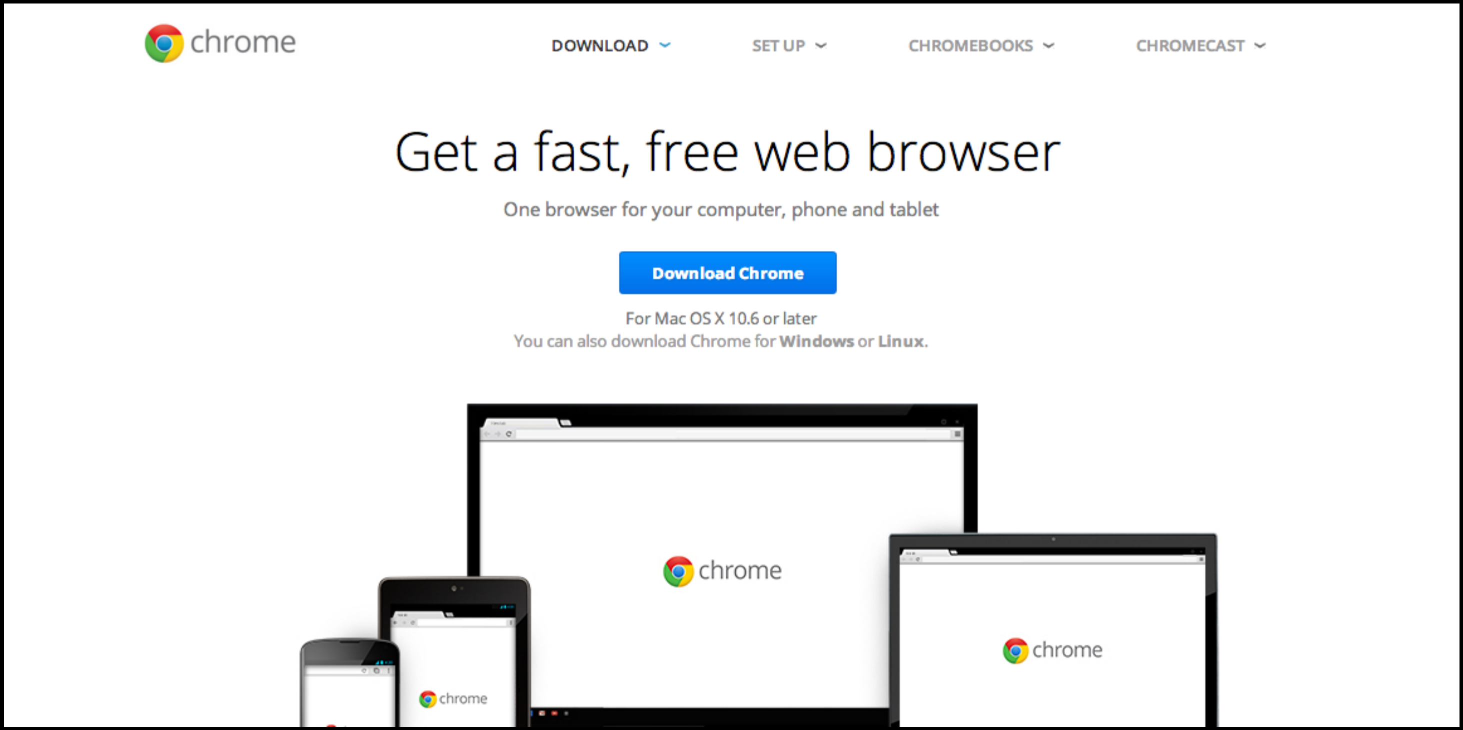
Sublime Text is a sophisticated text editor for code, markup and prose.
You'll love the slick user interface, extraordinary features and amazing performance.

```
void base64_encode(const uint8_t * data, size_t len, char * dst)
{
    size_t src_idx = 0;
    size_t dst_idx = 0;
    for (; (src_idx + 2) < len; src_idx += 3, dst_idx += 4)
    {
        uint8_t s0 = data[src_idx];
        uint8_t s1 = data[src_idx + 1];
        uint8_t s2 = data[src_idx + 2];

        dst[dst_idx + 0] = charset[(s0 & 0xfc) >> 2];
        dst[dst_idx + 1] = charset[((s0 & 0x03) << 4) | ((s1 & 0xf0) >> 4)];
        dst[dst_idx + 2] = charset[((s1 & 0x0f) << 2) | (s2 & 0xc0) >> 6];
        dst[dst_idx + 3] = charset[(s2 & 0x3f)];
```

Chrome

Use Google Chrome for your Test Environment!



chrome

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Get a fast, free web browser

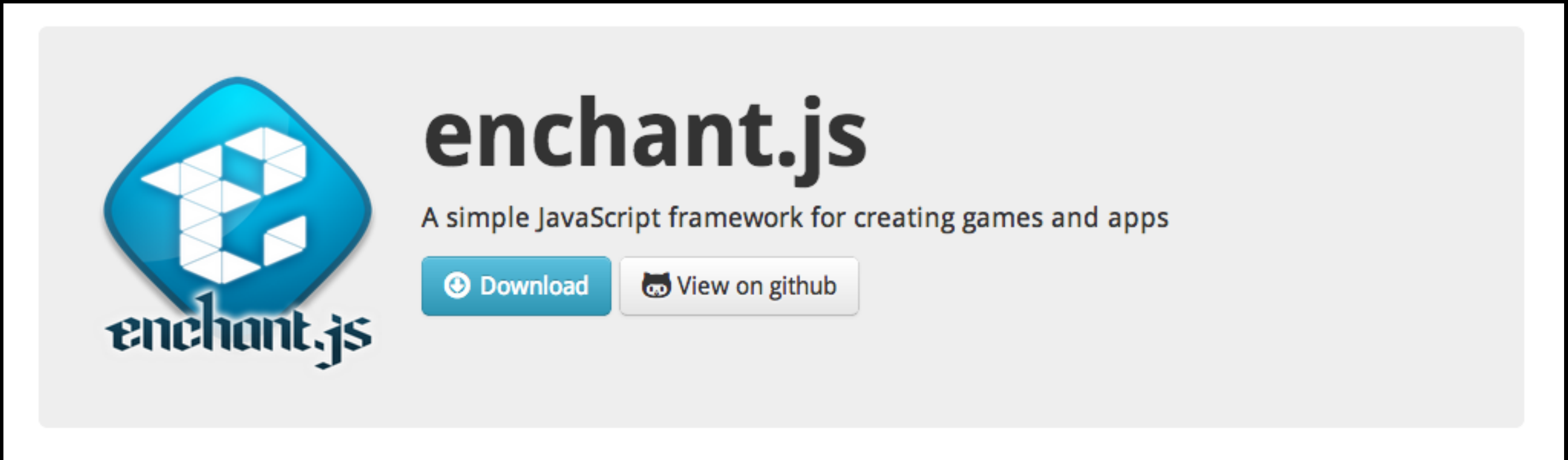
One browser for your computer, phone and tablet

Download Chrome

For Mac OS X 10.6 or later
You can also download Chrome for **Windows** or **Linux**.

Enchant.js

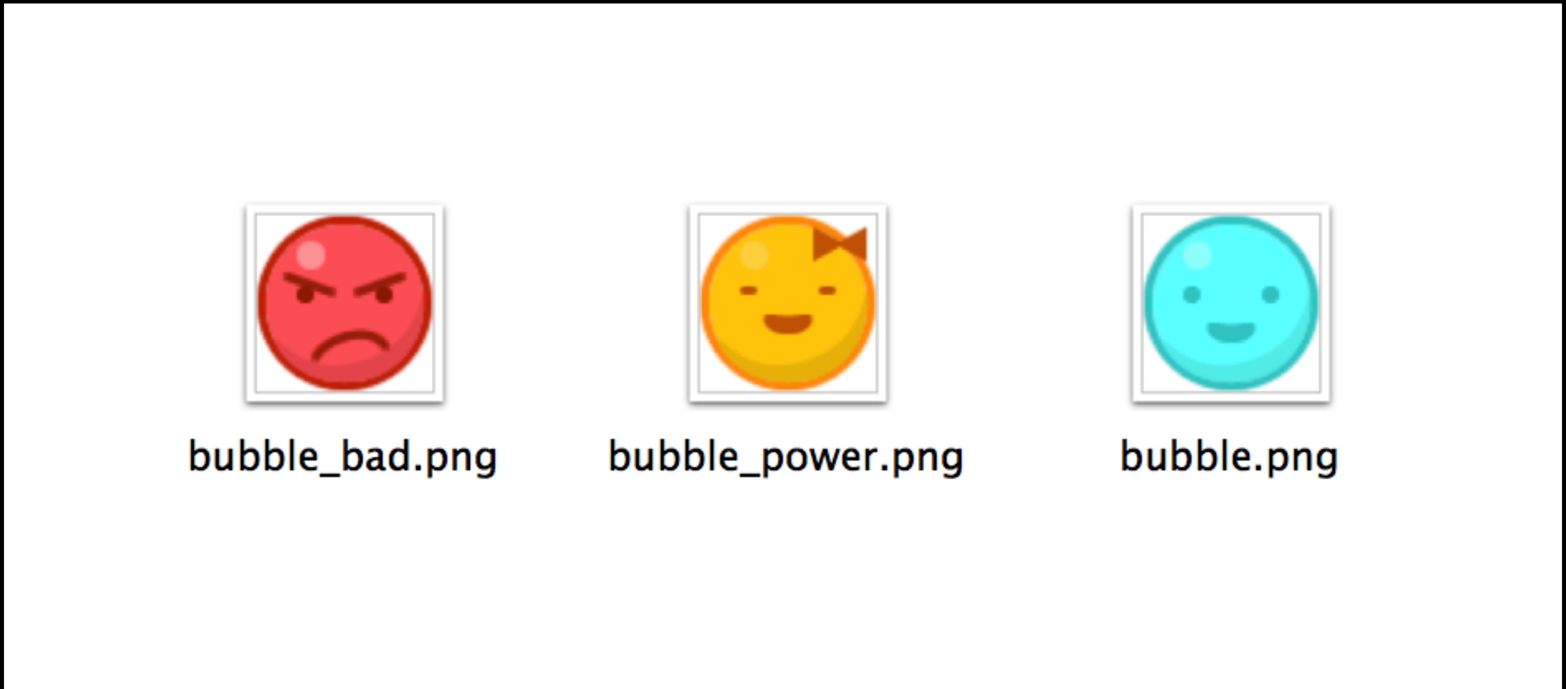
Go to enchantjs.com to find out more.



enchant.js

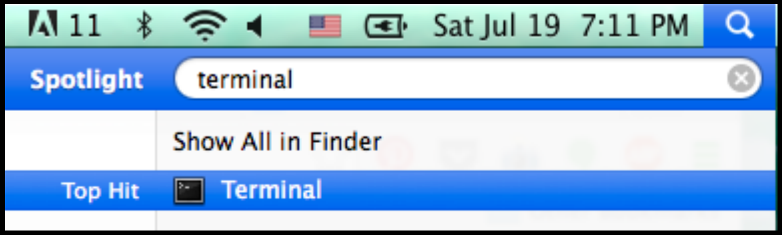
A simple JavaScript framework for creating games and apps

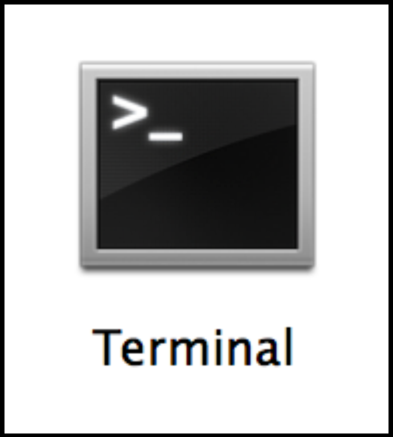
Assets



Open Terminal.app

Use Spotlight to find and open the **Terminal** app.





Type a command in Terminal.app

```
bash <(curl -s http://summer2014.gomagames.com/bubble/setup)
```

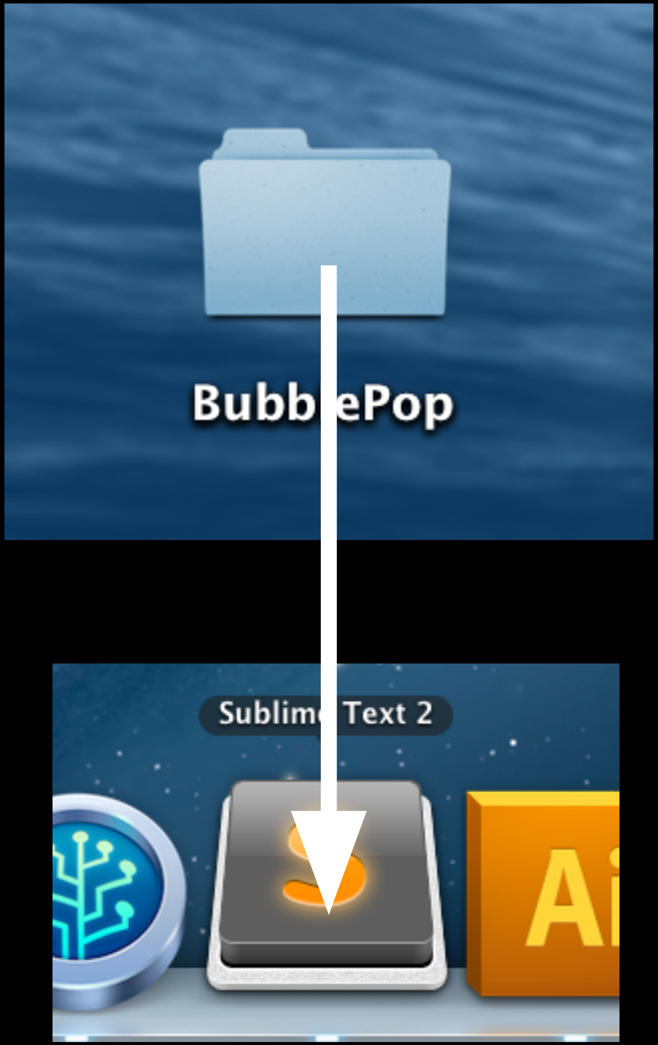
Then press Return.

Close the terminal window when it says `all done`

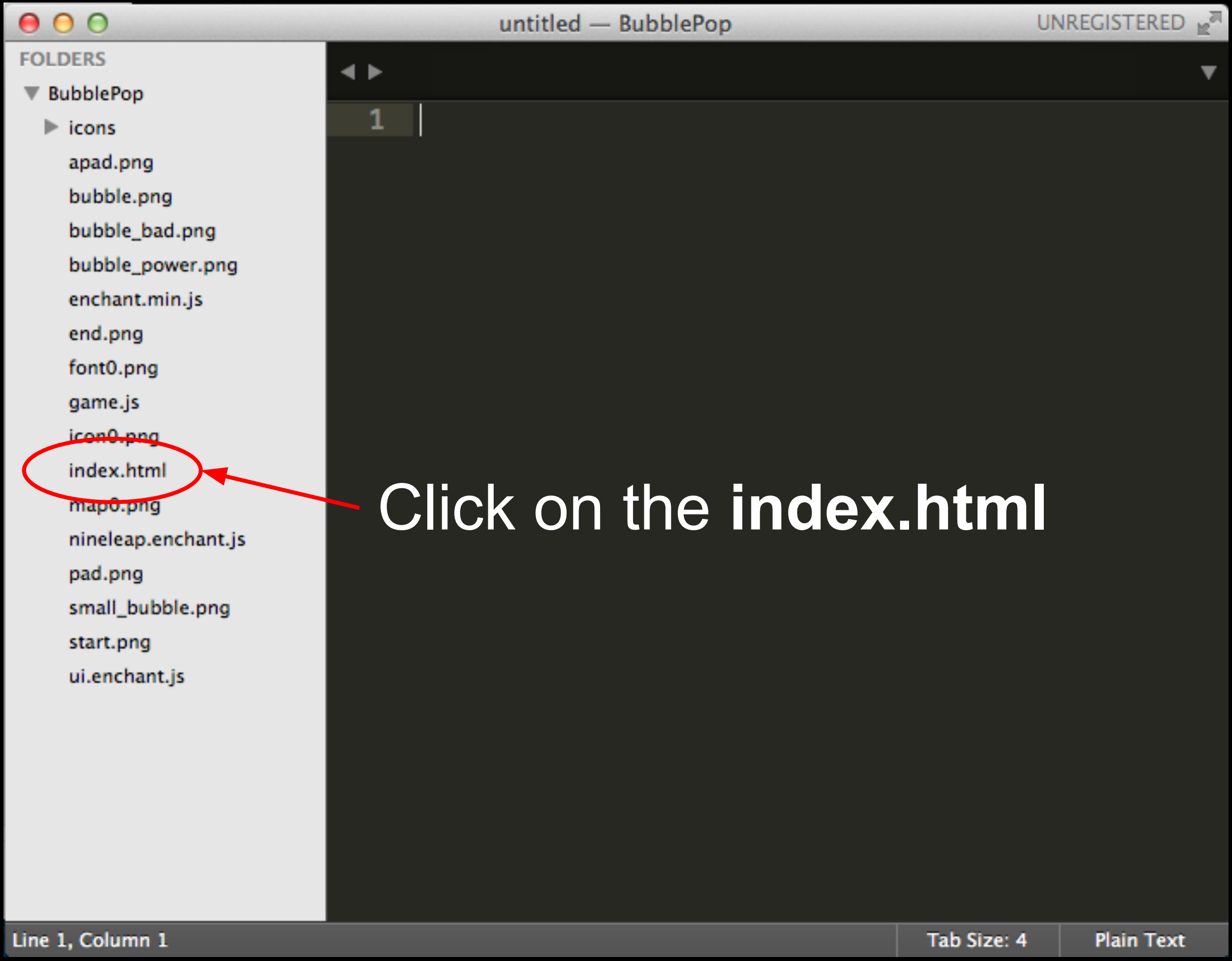
Open Project

- Find Your BubblePop folder on the Desktop

- Drag the BubblePop folder onto the SublimeText icon in your Dock.



Setup: Sublime Text



Click on the **index.html**

Add the Author’s name

Replace YOURNAME GAMETITLE with your own name and a game title. This is how your game will show up online.

```
<!-- AUTHOR: YOURNAME GAMETITLE -->
<!DOCTYPE html>
<html>
<head>
```

Use only letters (upper or lowercase), numbers and spaces. Do not use apostrophes, or any special characters.

Change the game name

Change GAME TITLE to whatever you want to call your game:

```
<title>GAME TITLE</title>
```

Include game engine scripts

Add the game engine libraries in the body of index.html.

```
<body>
  <script src="enchant.min.js"></script>
  <script src="nineleap.enchant.js"></script>
  <script src="ui.enchant.js"></script>
</body>
```

Step 4: Include your game code

After the game engine files, add a link to your game code.

```
<body>
  <script src="enchant.min.js"></script>
  <script src="nineleap.enchant.js"></script>
  <script src="ui.enchant.js"></script>
  <script src="game.js"></script>
</body>
```

Test Cycle

Right-Click on the **index.html** file.

Select **Open in Browser.**

You should see a **Blank Page**.

From now on, whenever you finish a step:

1. Edit Code in the file you are working on.
2. Save your File (**Command-S**).
3. Refresh Chrome (**Command-R**).

In SublimeText,
click on **game.js** to open it.

window.onload

The browser executes all code inside of the window.onload function after all the code and assets have been loaded.

This is important, just remember to keep your game code inside of this function.

Step 1 Find // #1 create the game object. Below it, define the variable named game and set the game dimensions.

```
// #1 create the game object
var game = new Game(440, 320);
```

Step 2 Find // #2 set float speed. Below the comment, set the float speed. Higher values = *faster float speed.*

```
// #1 create the game object
var game = new Game(440, 320);

// #2 set float speed
game.float_speed = 2;
```

Step 3 Find // #3 set spawn rate. Below the comment, set the bubble spawn rate. Higher values = *faster spawn rate.*

```
// #1 create the game object
var game = new Game(440, 320);

// #2 set float speed
game.float_speed = 2;

// #3 set spawn rate
game.spawn_rate = 1;
```

Step 4 Find // #4 total spawn rate Below the comment, set the total spawn rate. Higher values = *slower spawn rate.*

```
// #2 set float speed
game.float_speed = 2;

// #3 set spawn rate
game.spawn_rate = 1;

// #4 total spawn rate
game.total_spawn_rate = 60;
```

Step 5 Find // #5 preload assets. Below the comment, preload your game assets.

```
// #3 set spawn rate
game.spawn_rate = 1;

// #4 total spawn rate
game.total_spawn_rate = 60;

// #5 preload assets
game.preload('bubble.png');
```

Step 5

Save your file! (Command-S)
Refresh Chrome! (Command-R)

Step 5

Save your file! (Command-S)
Refresh Chrome! (Command-R)

The game loads and Start text appears.
Clicking on the Start text starts the game.

Event Handlers

Find the game.onload function. Inside it there is an enterframe event listener and handler. What does it do?

```
game.rootScene.addEventListener('enterframe',
   function() {
   // runs on every frame

}
```

Event Handlers

Find the game.onload function. Inside it there is an enterframe event listener and handler. What does it do?

It executes code on every frame.

```
game.rootScene.addEventListener('enterframe',
   function() {
   // runs on every frame

}
```

On every frame...

This is inside the event handler. What does it do?

```
if(Math.random() * game.total_spawn_rate
< game.spawn_rate){
   // #6 spawn bubble

}
```

If,...

On every frame...

This is inside the event handler. What does it do?

a random
number between
0 and 1

```
if(Math.random() * game.total_spawn_rate
< game.spawn_rate){
   // #6 spawn bubble


}
```

If, (a random number between 0 and 1)...

On every frame...

This is inside the event handler. What does it do?

multiplied by the
total spawn rate

```
if(Math.random() * game.total_spawn_rate
< game.spawn_rate){
  // #6 spawn bubble


}
```

If, (a random number between 0 and 1, multiplied by the total spawn rate)...

On every frame...

This is inside the event handler. What does it do?

```
if(Math.random() * game.total_spawn_rate
< game.spawn_rate){
   // #6 spawn bubble


}
```

is it less than the
spawn rate?

If, (a random number between 0 and 1, multiplied by the total spawn rate, is less than the spawn rate)...

On every frame...

This is inside the event handler. What does it do?

```
if(Math.random() * game.total_spawn_rate
< game.spawn_rate){
   // #6 spawn bubble


}
```

If, (a random number between 0 and 1, multiplied by the total spawn rate is less than the spawn rate), then run the following code inside this block.

Remember the variables we set?

```
game.total_spawn_rate = 60;
game.spawn_rate = 1;
```

If you imagine the variables as the numbers we set at the beginning of the document, it reads like this:

```
if(Math.random() * 60 < 1){
   // #6 spawn bubble


}
```

dodecahedron

This is like rolling a 60-sided die.

```
Math.random() * 60 < 1
```

tricotagon

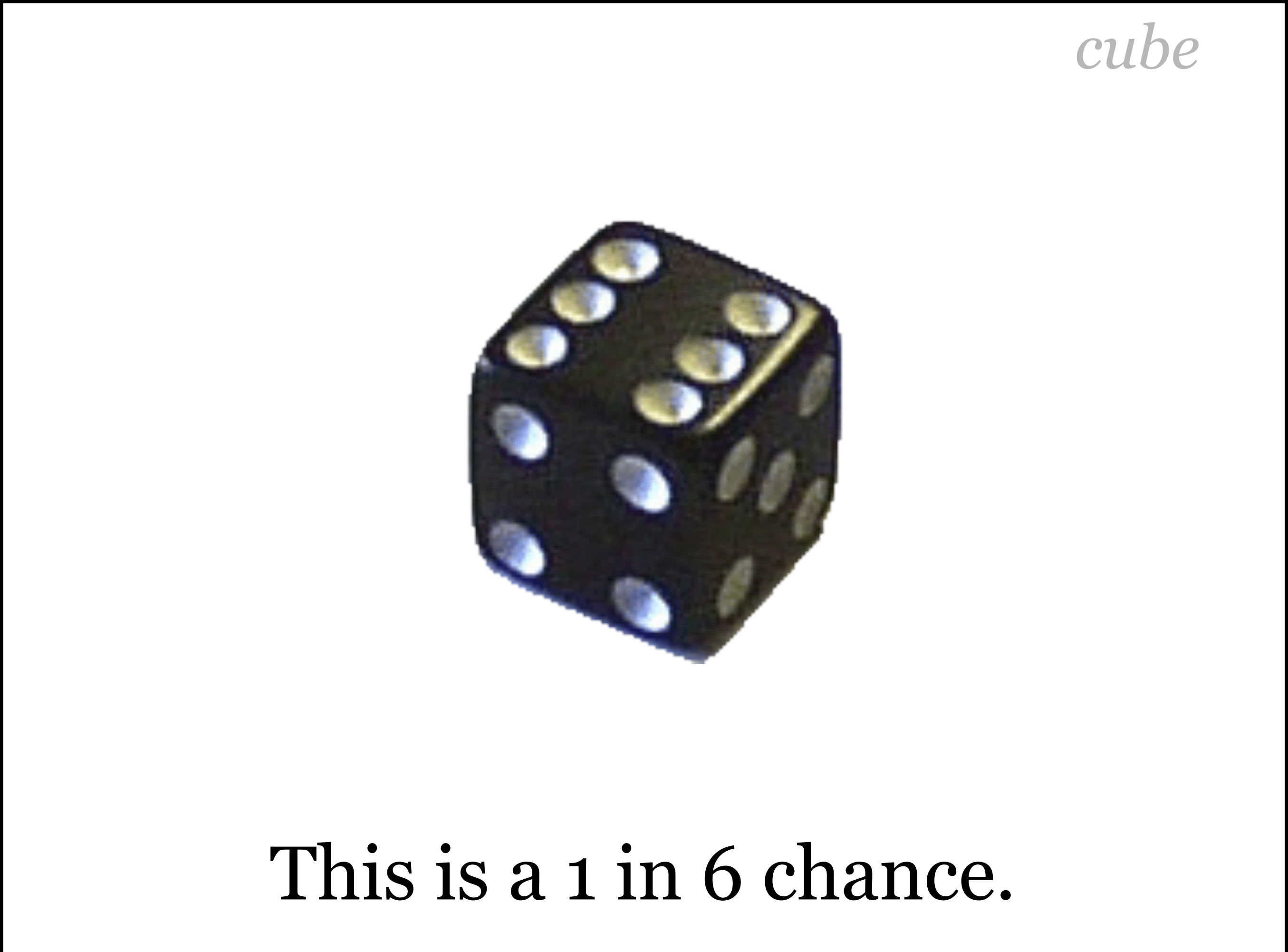
This is a 2 in 60 chance.

```
Math.random() * 60 < 2
```

tricotagon

or a 1 in 30 chance.

```
Math.random() * 60 < 2
```



cube

This is a 1 in 6 chance.

```
Math.random() * 60 < 10
```

Zocchihedron

This is a 1 in 100 chance.

```
Math.random() * 100 < 1
```

So, on every frame...

...there is a 1/60 chance something will happen.
Since the frame rate is 60, this random event happens 60 times every second.

```
if(Math.random() * game.total_spawn_rate
< game.spawn_rate){
   // #6 spawn bubble


}
```

Step 6

Find the comment // #6 spawn bubble

Spawn the bubble with a random x between 1 and 380, and a y of the bottom of the screen (320).

```
if(Math.random() * game.total_spawn_rate
< game.spawn_rate){
   // #6 spawn bubble
   var bubble = new Bubble(Math.random() * 380, 320);
}
```

Step 6

Save your file! (Command-S)
Refresh Chrome! (Command-R)

Step 6

Save your file! (Command-S)
Refresh Chrome! (Command-R)

Bubbles now float up the screen!

Step 7a

Inside the Bubble class definition, find comment // #7 make bubbles increase in speed and add an event listener that makes future bubbles increase in speed by .025, and and also spawn faster by .125

```
// #7 make bubbles increase in speed
this.addEventListener('touchstart', function(){
   game.float_speed += .025;
   game.spawn_rate += .125;
});
```

Step 7b

Make a new line after the line where you increase the spawn rate. Add code that removes a bubble when tapped.

```
// #7 make bubbles increase in speed
this.addEventListener('touchstart', function(){
   game.float_speed += .025;
   game.spawn_rate += .125;
   game.rootScene.removeChild(this);
});
```

Step 7

Save your file! (Command-S)

Refresh Chrome! (Command-R)

Step 7

Save your file! (Command-S)
Refresh Chrome! (Command-R)

Now bubbles start increasing in speed and spawn rate after a while.

Do the Self-Directed Tutorial to...

1. Set variable speeds for bubbles to float
2. Add scoring & the victory condition
3. Add powerups
4. Add bad bubbles
5. Deploy to iPad

Open another tab in Chrome and go to stem.gomagames.com

Click on the link to **BubblePop** and follow the instructions to complete these sections.

Play the game on your iPad

Visit summer2014.gomagames.com on iPad.

Click on your **name** to access your game.

Click the **bookmark icon** and add the game to your homescreen.

Exit the browser.

Click on the icon to your game.