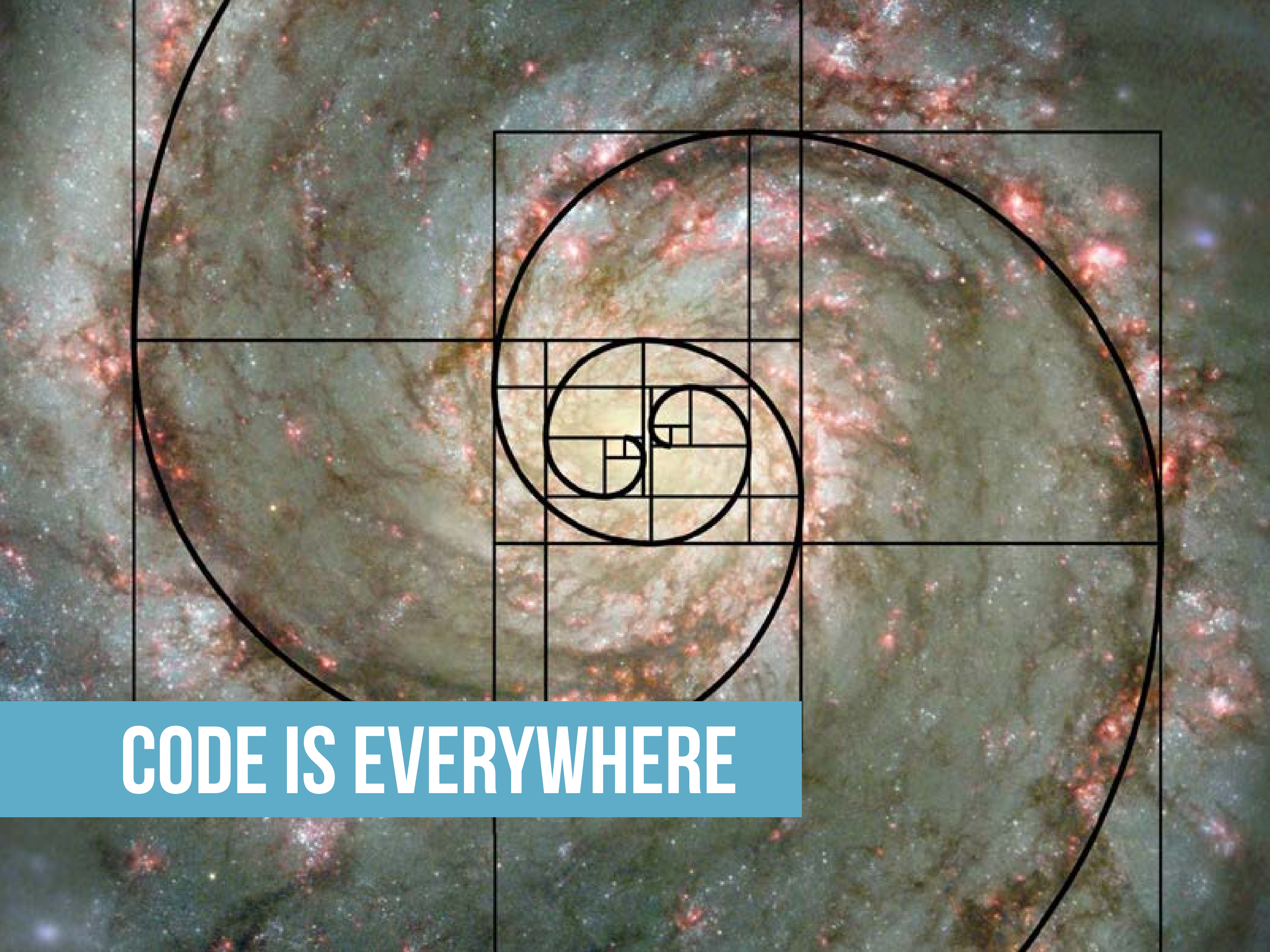
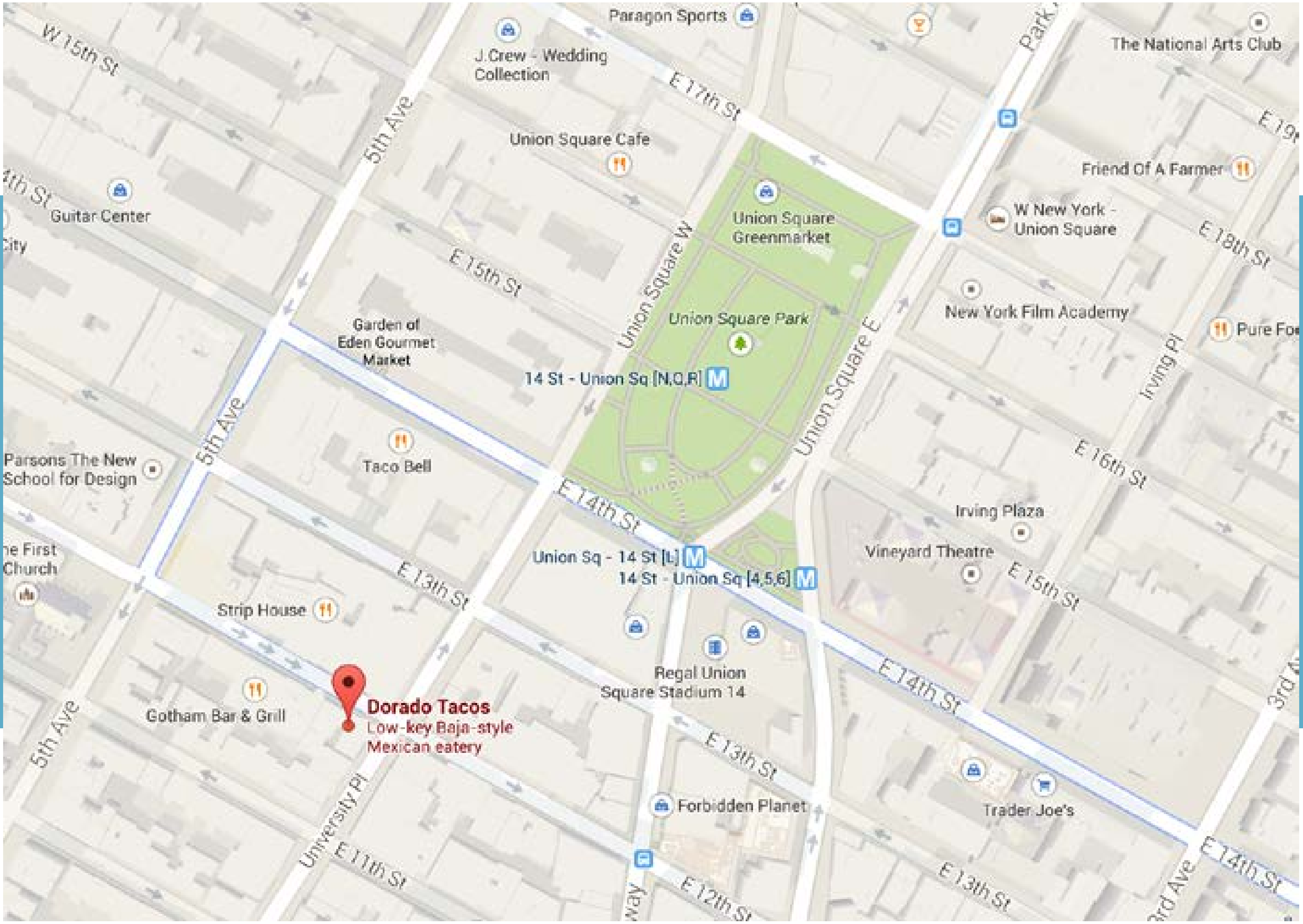
CODE

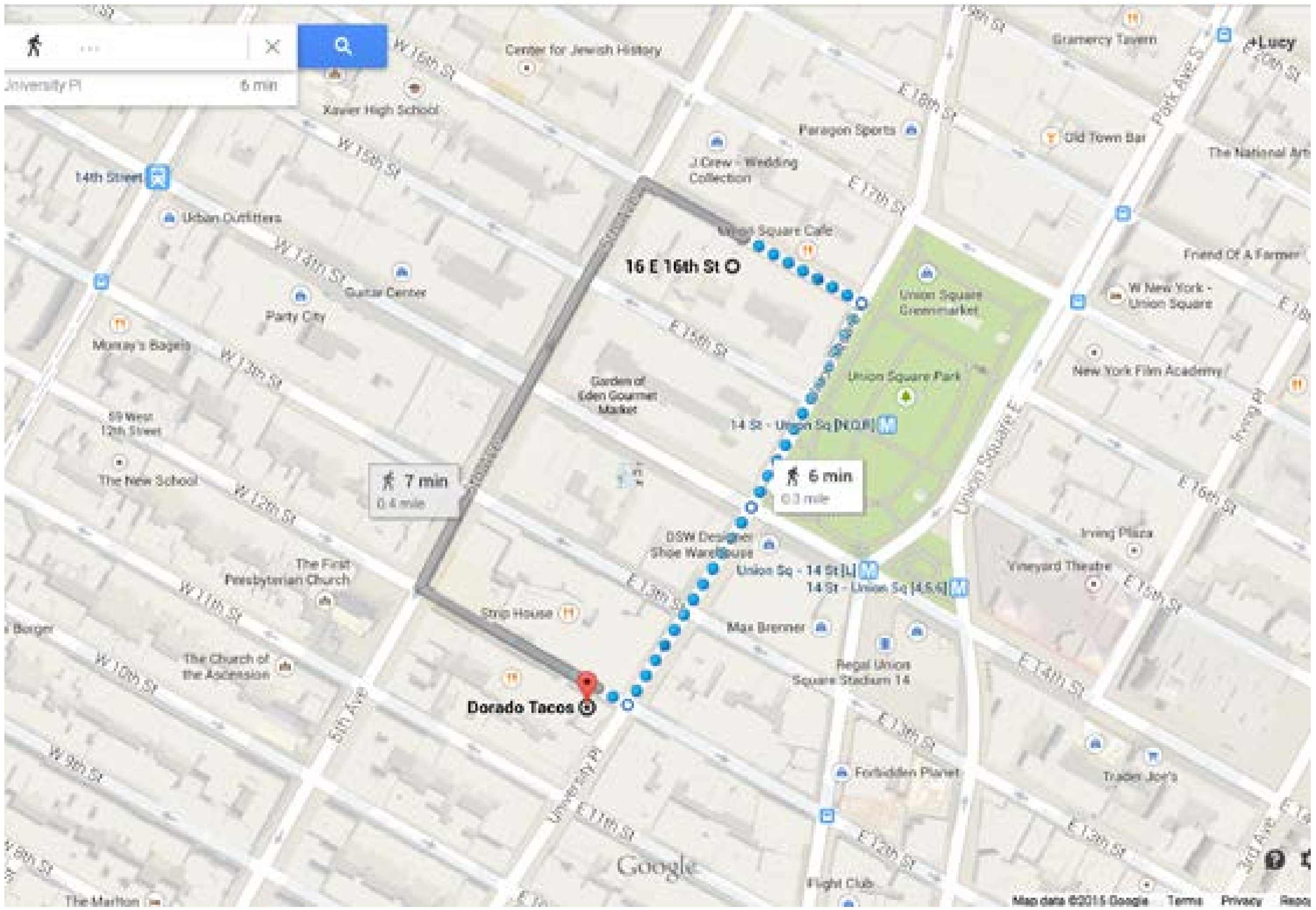


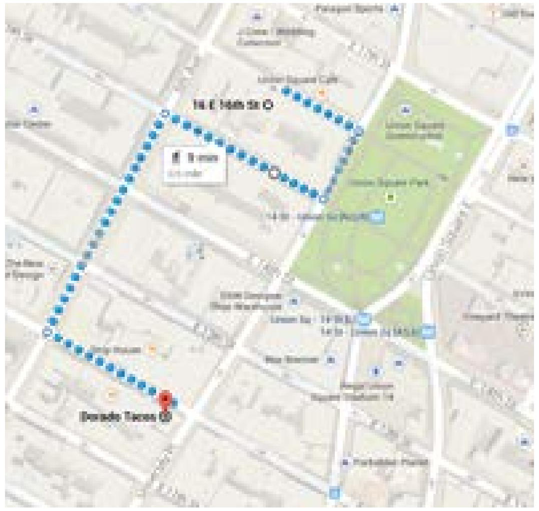
CODE IS EVERYWHERE

(Duplo to Duplo)
(Lego to Duplo already supported by manufacturer)
(Lego to Duplo already supported by manufacturer)
(Lincoln Logs to Lincoln Logs)
Duplo®
Fischertechnik
Gears! Gears! Gears!®
K'Nex®
Krinkles®
Lego®
Lincoln Logs

SO LET'S CODE.


Paragon Sports
The National Arts Club
W 15th St
J.Crew - Wedding Collection
E 17th St
Park
E 19th
5th Ave
Union Square Cafe
Friend Of A Farmer
4th St
Guitar Center
Union Square Greenmarket
W New York - Union Square
E 18th St
City
E 15th St
Union Square W
Union Square Park
New York Film Academy
Pure Fo
Garden of Eden Gourmet Market
Irving Pl
14 St - Union Sq [N,Q,R]
5th Ave
Union Square E
Taco Bell
E 16th St
Parsons The New School for Design
E 14th St
Irving Plaza
he First Church
Union Sq - 14 St [L]
14 St - Union Sq [4,5,6]
Vineyard Theatre
E 13th St
E 15th St
Strip House
Regal Union Square Stadium 14
E 14th St
3rd
Gotham Bar & Grill
Dorado Tacos
Low-key Baja-style Mexican eatery
5th Ave
E 13th St
University Pl
Forbidden Planet
Trader Joe's
E 11th St
way
E 12th St
E 13th St
3rd Ave
E 14th St


University Pl 6 min
16 E 16th St
Dorado Tacos
7 min
0.4 mile
6 min
0.3 mile
Union Square Park
Union Square Greenmarket
Map data ©2015 Google

16 E 16th St
Dorado Tacos

16 E 16th St
Dorado Tacos

16 E 16th St

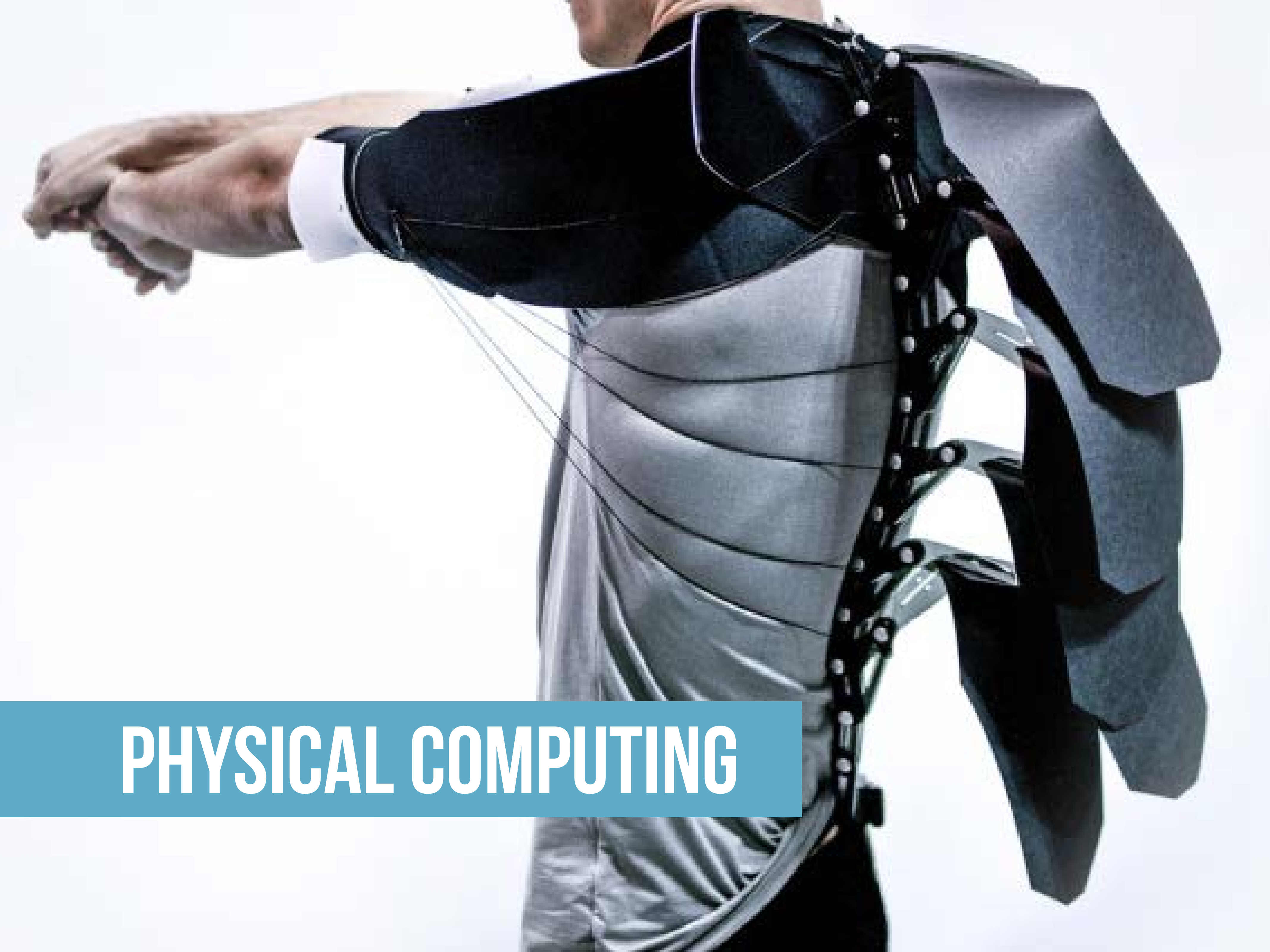
16 E 16th St
12 min
0.6 mile
Union Square Park

16 E 16th St
10 min
0.5 mile
Union Square Park

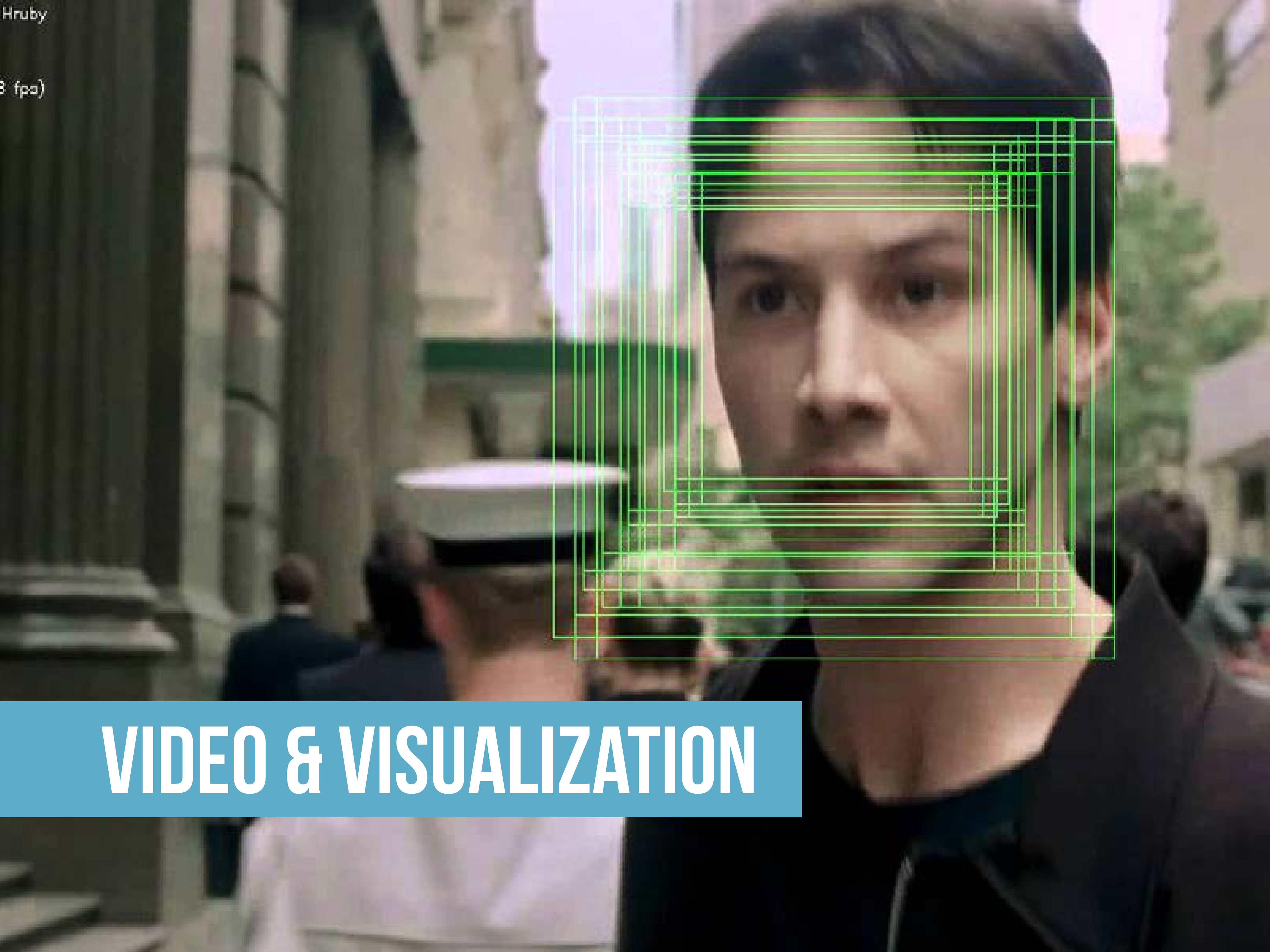
WAFFLES.

Processing

GAMES

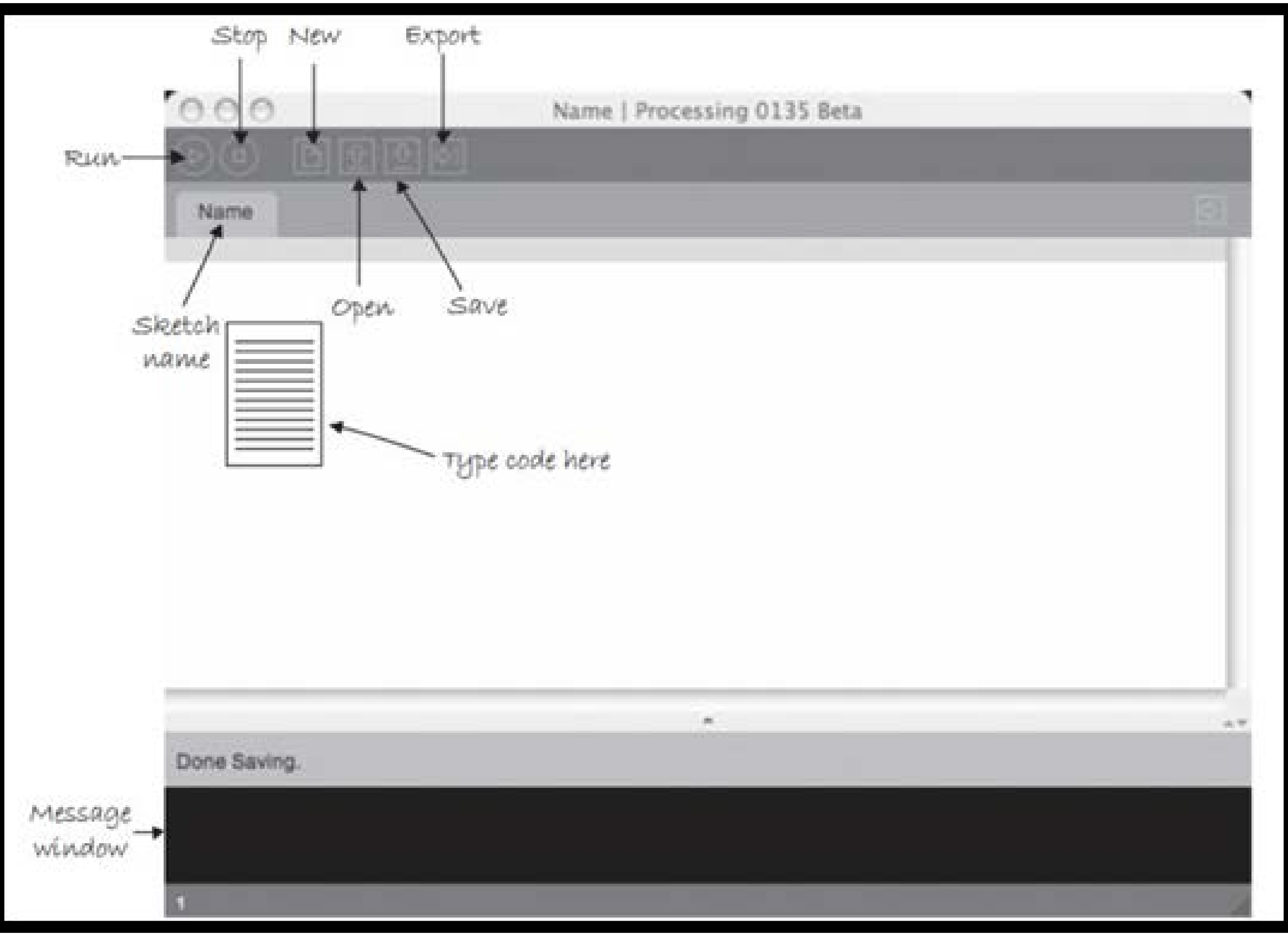


PHYSICAL COMPUTING

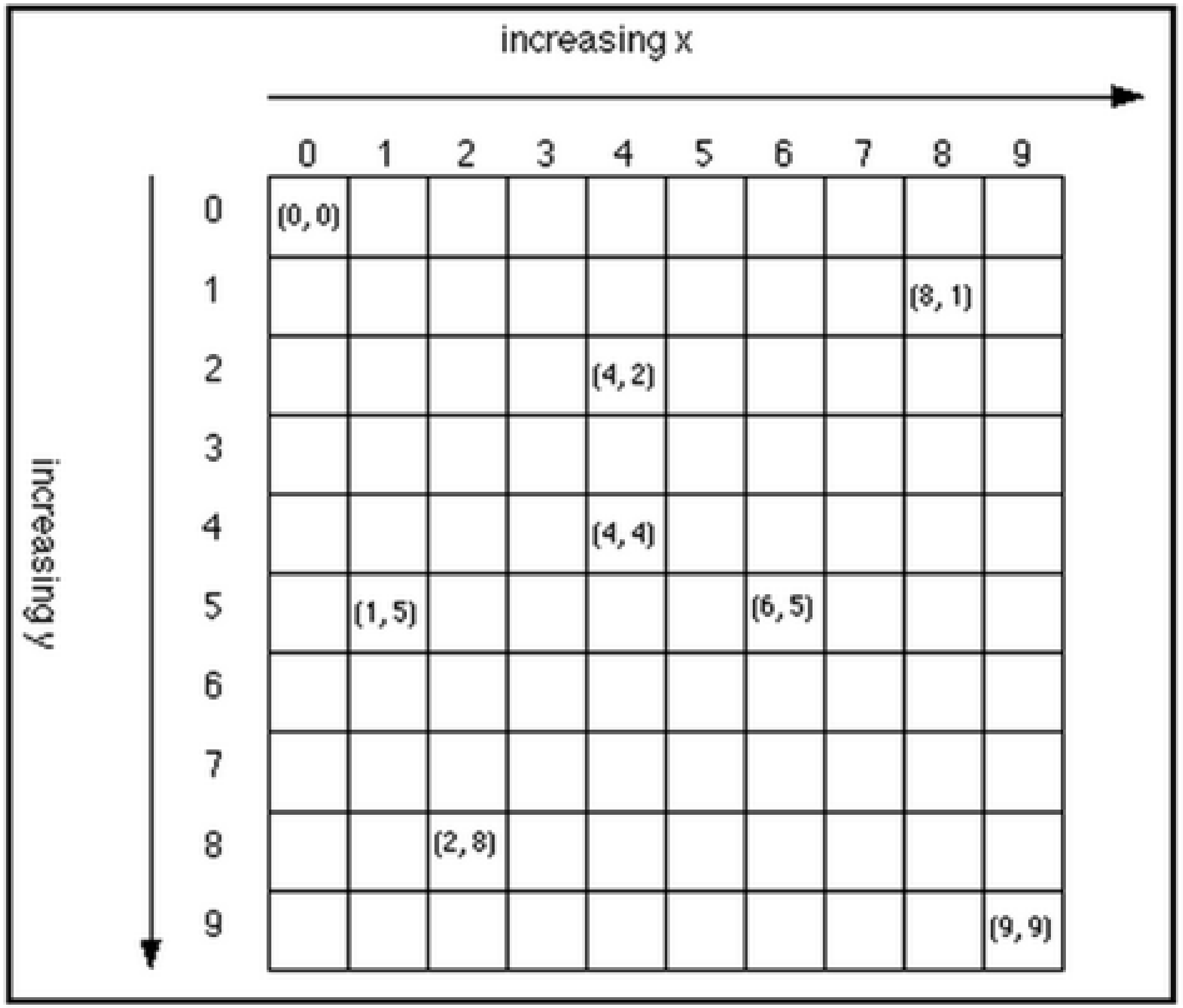


VIDEO & VISUALIZATION

WWW.PROCESSING.ORG


Stop
New
Export
Name | Processing 0135 Beta
Run
Name
Sketch name
Open
Save
Type code here
Message window

Done Saving.


increasing x
increasing y
0 1 2 3 4 5 6 7 8 9
0 1 2 3 4 5 6 7 8 9
(0, 0)
(8, 1)
(4, 2)
(4, 4)
(1, 5)
(6, 5)
(2, 8)
(9, 9)

BASIC COMMANDS

SIZE OF CANVAS

```
size ( w, h );
```

BACKGROUND COLOR

```
background ( r, g, b );
```

or

```
background ( r, g, b, a );
```

w: width
h: height

r: red value
g: green value
b: blue value
a: alpha value (opacity)

RECTANGLES

rect (x, y, w, h);

ELLIPSES

ellipse (x, y, w, h);

LINES

line(x_1, y_1, x_2, y_2);

x: starting x position
y: starting y position

w: width
h: height

x_1: starting x position
y_1: starting y position

x_2: ending x position
y_2: ending y position

SHAPES!

FILL COLOR

fill (greyscale);

or

fill (r, g, b);

or

fill (r, g, b, a);

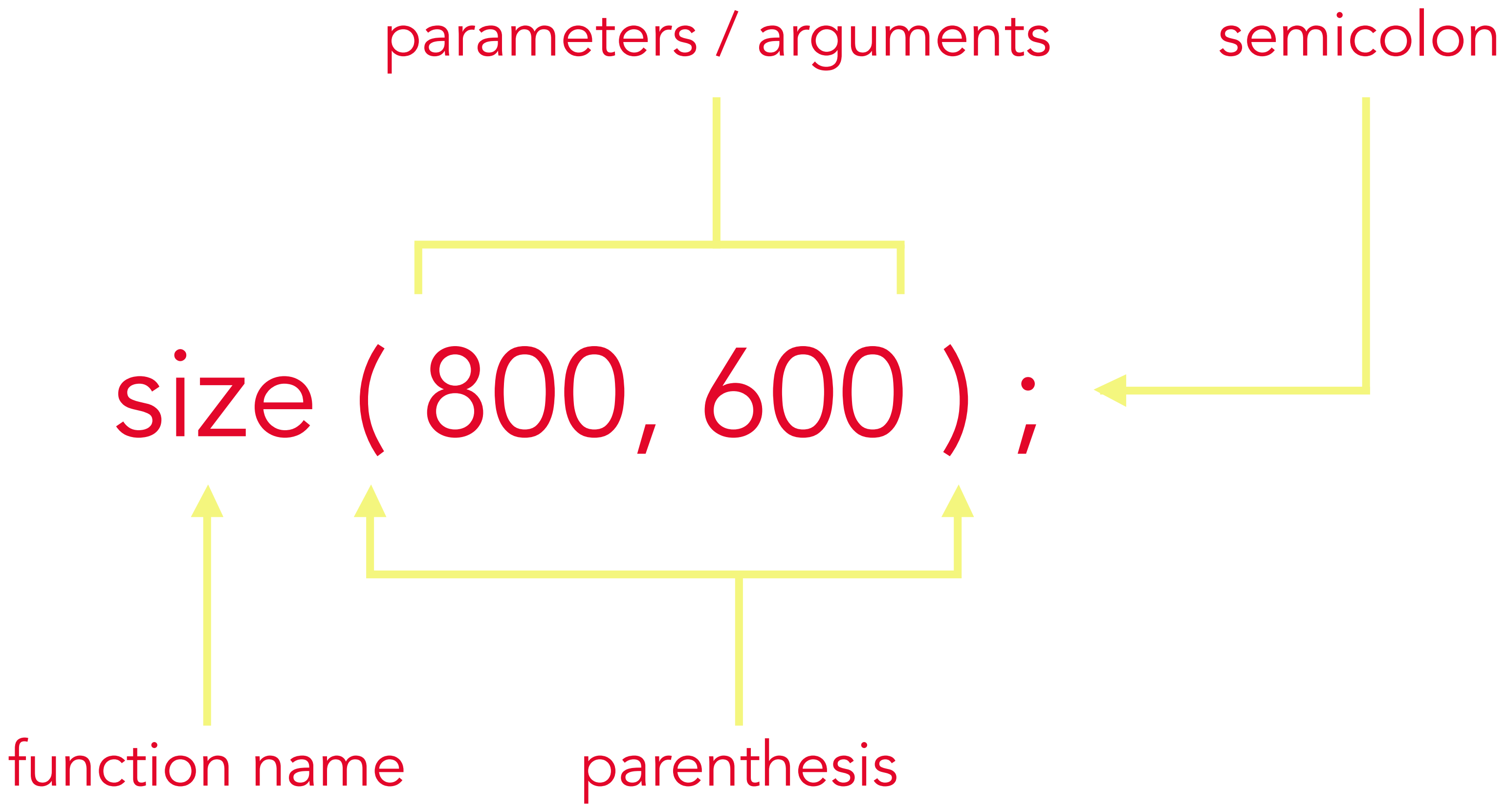
NO FILL

noFill ( );

r: red value
g: green value
b: blue value
a: alpha value (opacity)

greyscale: one value between 0 - 255

SHAPE ATTRIBUTES



```
size ( 800, 600 ) ;
```

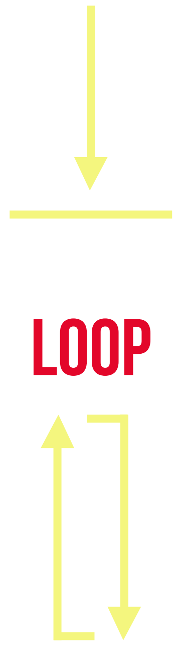
SYNTAX

SYNTAX

```
declaration;

void setup ( ) {
     // comments
     code goes here;

}

void draw ( ) {
     // comments
     code goes here;
}
```

ONCE

ONCE



```
void setup ( ) {
      size ( 480, 120 );
      smooth ( );
}

void draw ( ) {
      if ( mousePressed ) {
            // fill ( random(255), random(255), random(255) );
            fill ( 0 );
      } else {
            // fill ( random(255), random(255), random(255) );
            fill(255);
      }
      ellipse( mouseX, mouseY, 80, 80 );
}
```

SYNTAX

VARIABLES

VARIABLES STORE VALUES

With variables, you can have one name that refers to one specific value, and you can refer back to it throughout your sketch. It makes things SO much easier.

Technically:
"A variable is a named pointer to a location in the computer's memory where data is stored. Since computers only process information one instruction at a time, a variable allows a programmer to save information from one point in the program and refer back to it at a later time."

String mouseRat = "Mouse Rat is the best band in the world.";

VARIABLES CAN CHANGE

So variables store values.

But what's really cool, is that you can CHANGE these values while your sketch is running.

Thus, how a mousePressed function can change the fill color of a circle.

VARIABLES

DATA TYPES

int

whole numbers (0, 1, 55, 2359, etc)

float
numbers with decimal points
(22.37, 62.1, etc)

string
letters & characters,
declared in quotation marks ("champion")

boolean
true or false

color
by default,
an rgb value (r, g, b)

VARIABLES

VARIABLES MUST HAVE

TYPE
as in, what kind of value it will store.

NAME
the term you will use to reference the value throughout your sketch.

NAMING TIPS & CONVENTIONS

AVOID KEY WORDS
avoid words that Processing itself already has definitions and functions associated with, such as "mouseX"

CONNECTION WITH PURPOSE
this is so you can easily know what you're refering to later

USE CAMELCASE
don't start names with capital letters, use the camelCase naming convention

DECLARATIONS

```
int w;                                  //declare a variable for x
float h;                                //declare a variable for y
```

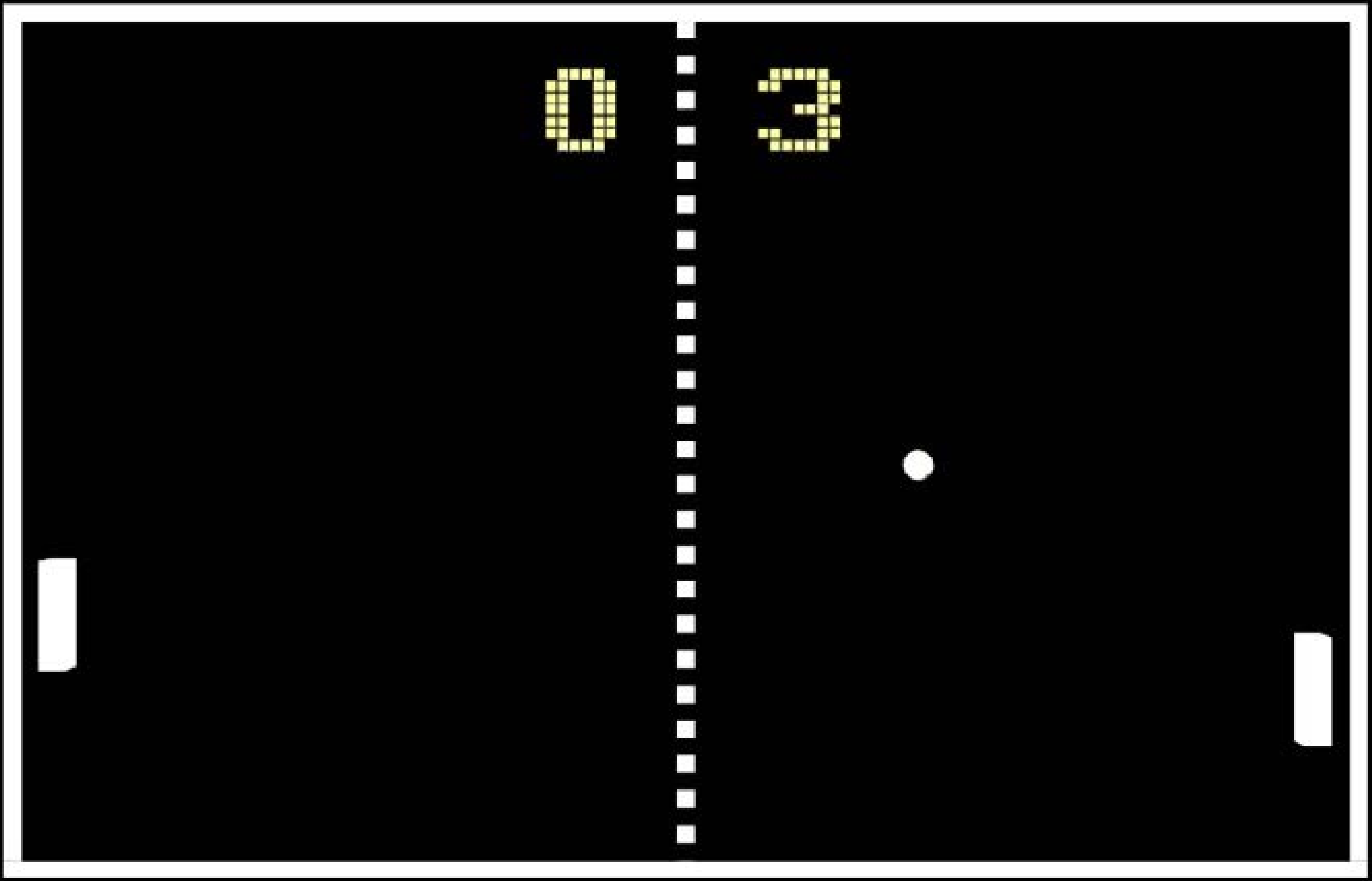
INITIALIZED IN SETUP

```
void setup ( ) {
        size ( 500,500 );
        w = 20;                         //initialize x to 20
        y = 5.3;                        //initialize y to 5.3
}
```

IMPLEMENTED IN DRAW

```
void draw ( ) {
        ellipse ( 50, 200, w, h );      //draw a circle
        rect ( 100, 100, 30, 50 );      //draw a rectangle
}
```

STRUCTURE


0
3

POSSIBLE PONG VARIABLES

player one x position
player one y position

player two x position
player two y position

player one score
player two score

ball x postion
ball y position
ball direction

BUILT-IN SYSTEM VARIABLES

mouseX
mouseY

width
height

displayWidth
displayHeight

frameCount

VARIABLES

OPERATORS FOR SIMPLE MATH

+	/
-	%
*	=

operators are symbols that represent operations
use them to increment and change variables
in the draw loop

OPERATORS

use these guys to print to your console and find out what’s happening while you’re running your sketch.

```
println ( );

print ( );
```

DEBUGGING

REVIEW

ALL THE THINGS

MAKE

SOMETHING COOL

Draw a scene or character using what we learned in class.

BONUS

INTERACTIVE & CHANGING OVER TIME

Doing both may or may not get you a prize.

You should absolutely do one.

HOMEWORK

LIL' SEBASTIAN

THINKS CODE IS COOL