Day 2

Conditionals

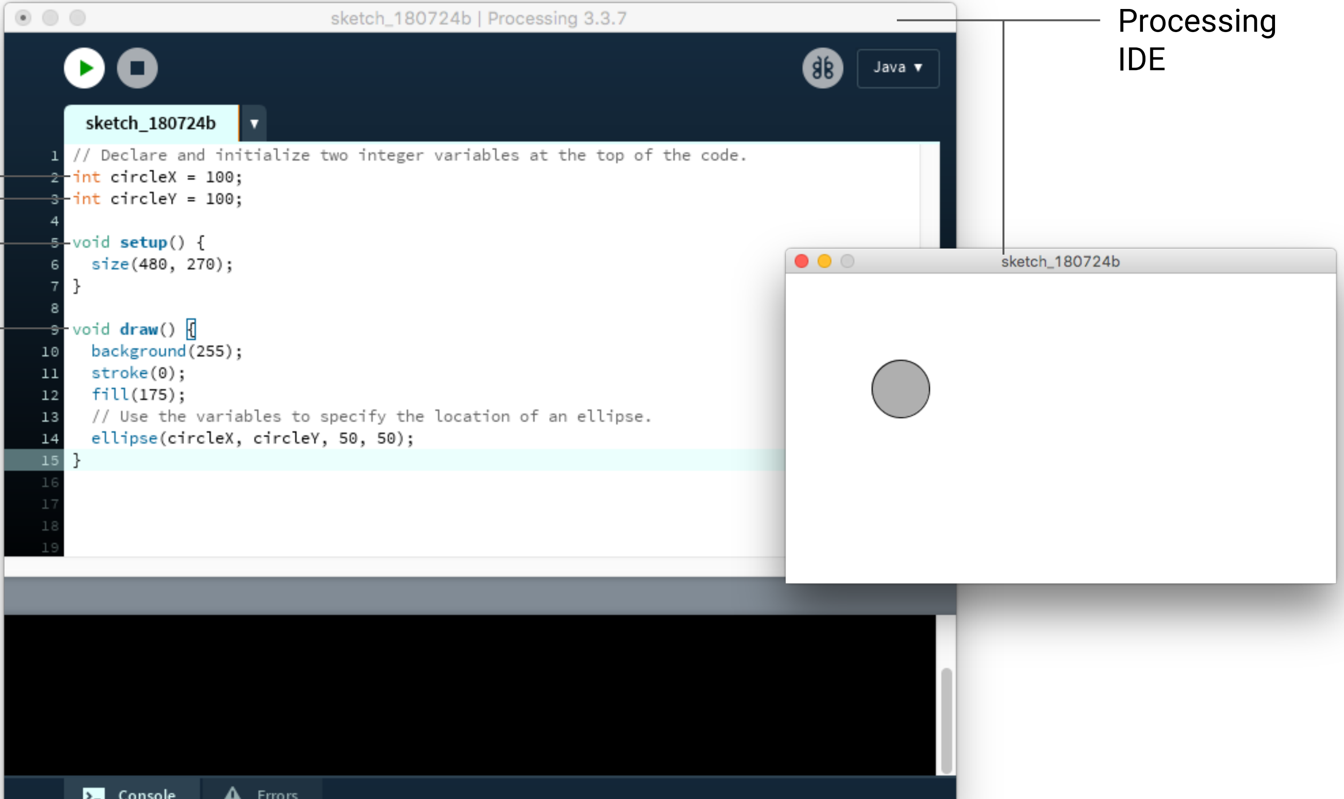
Agenda

1. Recap
2. Conditional Statements
3. Boolean Expressions
   a. Booleans
   b. Logical Operators
   c. Relational Operators
4. More Conditionals
   a. Else If
   b. Not
   c. Nested Statement

RECAP

- Variables
- Functions
- Pseudocode
- setup() and draw()

RECAP



```
// Declare and initialize two integer variables at the top of the code.
int circleX = 100;
int circleY = 100;

void setup() {
  size(480, 270);
}

void draw() {
  background(255);
  stroke(0);
  fill(175);
  // Use the variables to specify the location of an ellipse.
  ellipse(circleX, circleY, 50, 50);
}
```

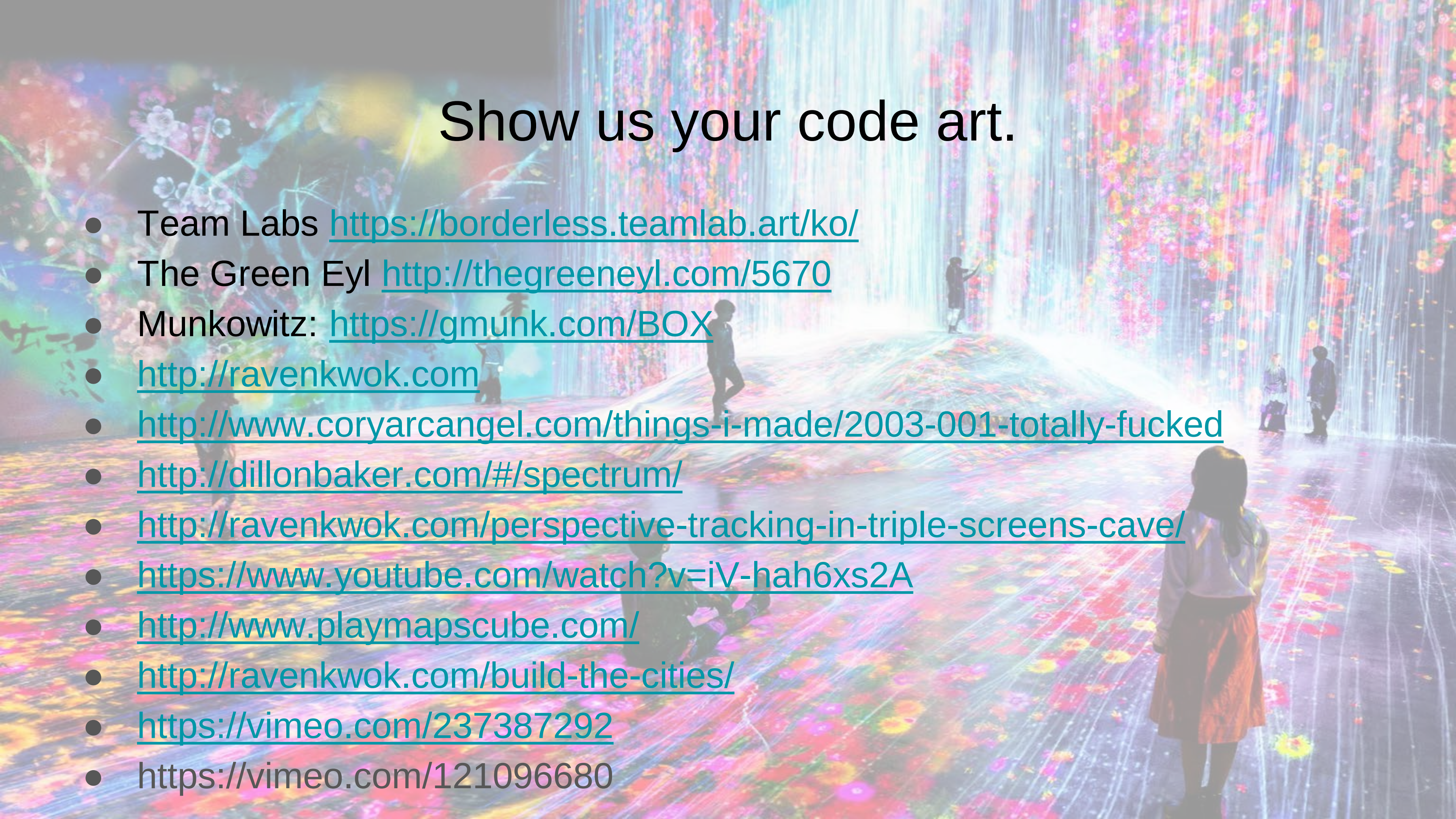
Variables

Functions

Processing IDE

Live Code: Using Variables

- Use color changer variables that paint bubbles with different colors



Show us your code art.

- Team Labs https://borderless.teamlab.art/ko/
- The Green Eyl http://thegreeneyl.com/5670
- Munkowitz: https://gmunk.com/BOX
- http://ravenkwok.com
- http://www.coryarcangel.com/things-i-made/2003-001-totally-fucked
- http://dillonbaker.com/#/spectrum/
- http://ravenkwok.com/perspective-tracking-in-triple-screens-cave/
- https://www.youtube.com/watch?v=iV-hah6xs2A
- http://www.playmapscube.com/
- http://ravenkwok.com/build-the-cities/
- https://vimeo.com/237387292
- https://vimeo.com/121096680

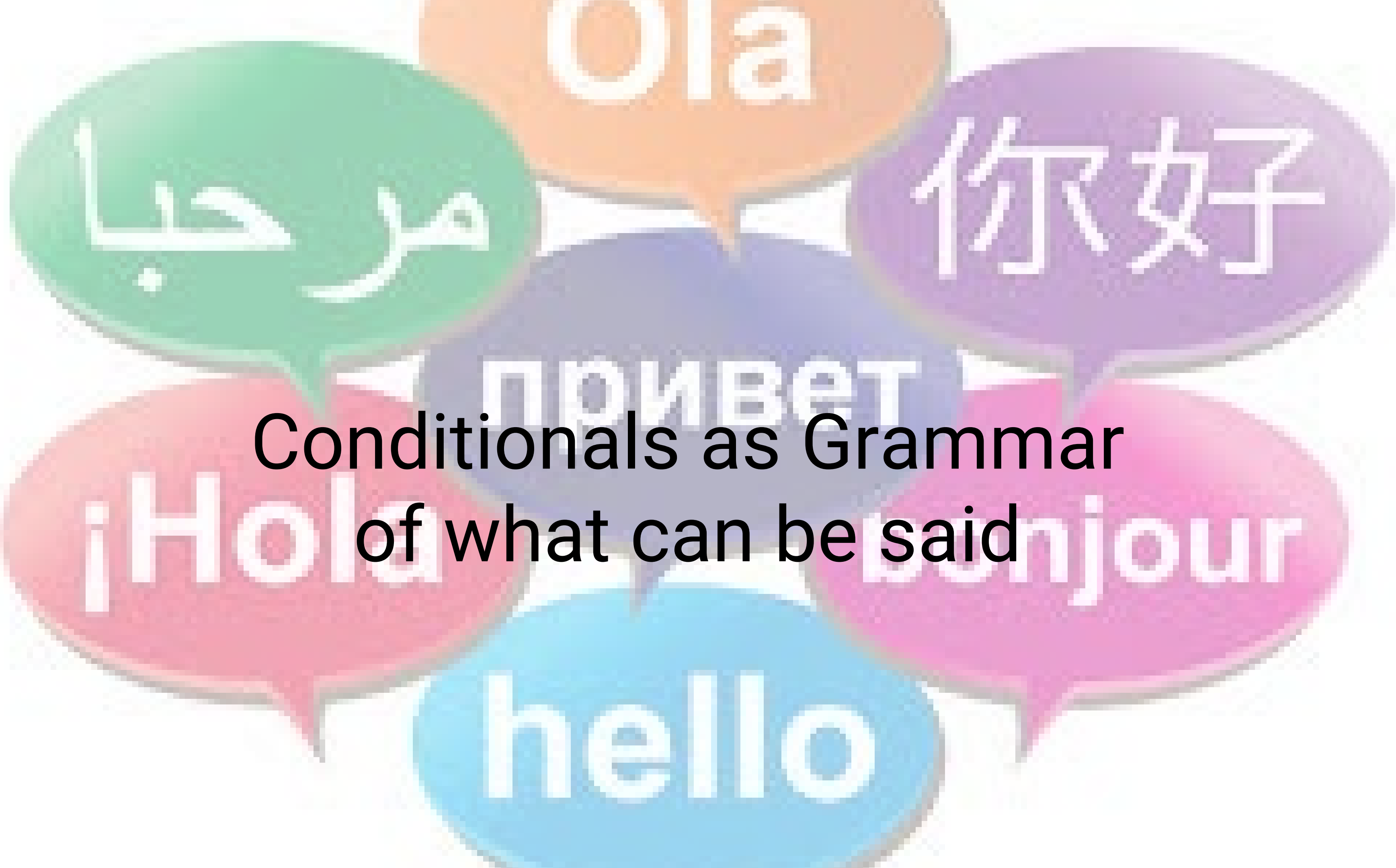
Show us your code art.

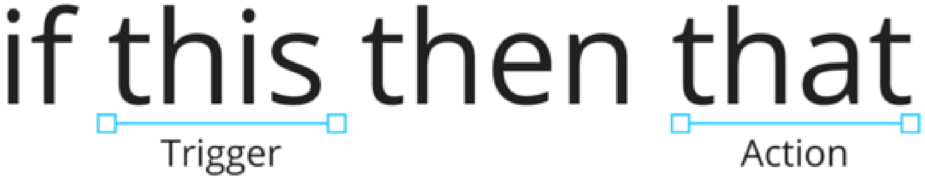
- https://www.youtube.com/watch?v=rn6gR1R0xUk
- https://www.openprocessing.org/sketch/453716
- https://interview.ueno.co/
- https://alimurtaza.net/Perceptive-Objects-MFA-Thesis

- https://frm.fm/a/refik_anadol/engram_special_edition_a
- http://designcollector.net/likes/melting-memories-by-refik-anadol

Conditionals

Conditionals as Grammar of what can be said





if this then that

Trigger

Action

If I am hungry, then I will eat the food.

If I am hungry, then I will eat the food.

Otherwise (else), I will not eat.

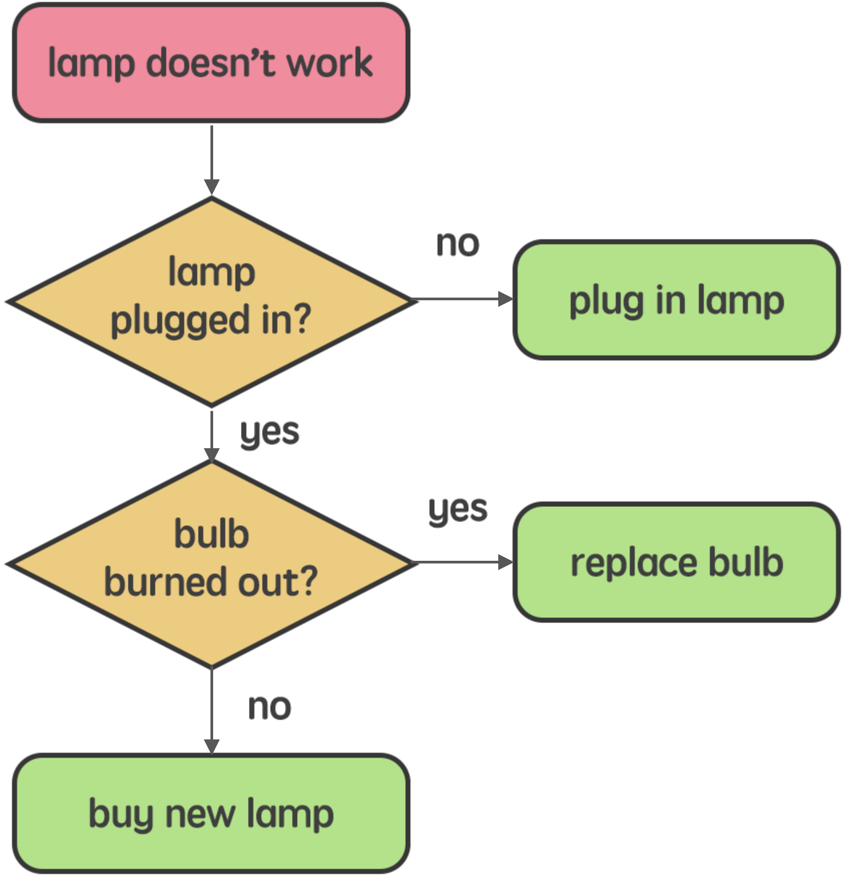
If I am hungry, then I will eat the food.

Otherwise, I will not eat.

If I am hungry, then I will eat the food.

Otherwise ("else"), I will not eat.

Conditionals lead to a flow chart representation.



Grammar of language

Booleans

True or False

Boolean Variables

```
boolean isHungry = true;
```

```
if (isHungry){
        // “I will eat the
food”
}
else {
        // “I will not eat”
}
```

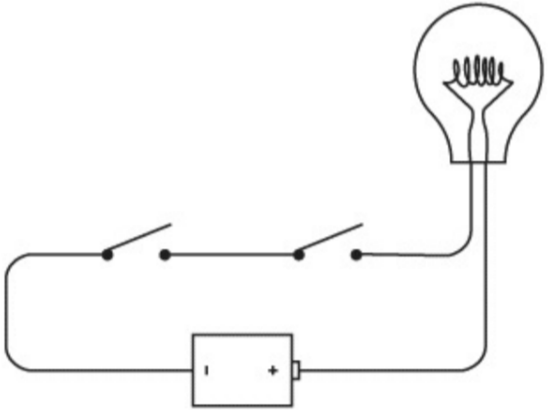
Logical Operators

If I am thirsty and I feel hot, I will drink cold water.

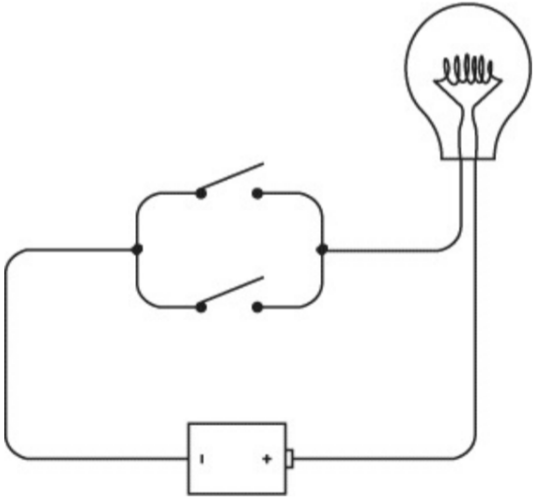
```
if (isThirsty && isHot){

        // if “thirsty” AND “hot” are both true, do the following:
        // “I will drink cold water”

}

if (isThirsty && isCold){

        // if “thirsty” AND “cold” are both true, do the following:
        // “I will drink hot tea”

}

// Note: if one is true and the other is false, then the if statement will not run
```

If I am tired or it is late, I will go to sleep.

```
if (isTired || isLate){

        // if "tired" is true or "late" is true, then do the following:
        // "I will go to sleep"

}

// Note: if one is true and the other is false, then the if statement will still
run
```



AND logic



OR logic

Relational Operators

Operator	Meaning	Example
<	“less than”	if (x < 10) { //do something }
<=	“less than or equal to”	if (x >= 15) { //do something }
>	“greater than”	if (x > 3) { //do something }
>=	“greater than or equal to”	if (x >= 7) { //do something }
==	“equal to”	if (x == 18) { //do something }

== vs. =

==
(Check equality)

Double equal sign compares two values and returns true if they are equal.

Asks a question

```
if (x == 10) {
  // do this
}
```

"Is x equal to ten?"

=
(Assign)

Single equal sign sets a variable equal to a value.

Does not ask a question

```
x = 32;
```

"Set x equal to 32."

CORRECT

INCORRECT

```
if(x == 10){
          if(x = 10){

 // do this
           // do this

}
                              }
```

Exercise: Boolean Expressions

- With a partner, write down questions that will serve as the condition of different results, and use logical operators or relational operators to rewrite these questions

Is 2 equal to 2? (2 == 2)

true

Is 5 less than 8? (5 < 8) true

Is 5 greater than 10? (5 >= 10)

false

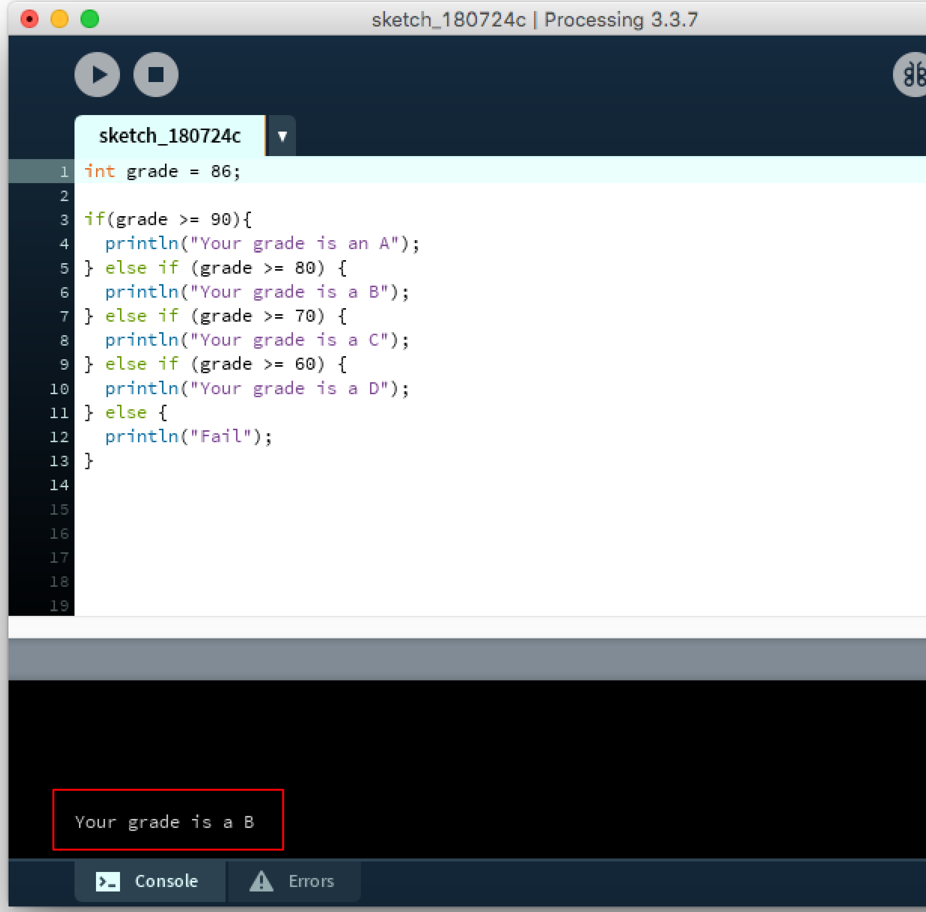
Show your pseudocode.

- crazy ass pseudocode
- self introduction.

BREAK!!!

Else If

```
int grade = 86;

if(grade >= 90){
  // “Your grade is an A”;
} else if (grade >= 80) {
  // “Your grade is a B”;
} else if (grade >= 70) {
  // “Your grade is a C”;
} else if (grade >= 60) {
  // “Your grade is a D”;
} else {
  // “Fail”;
}
```

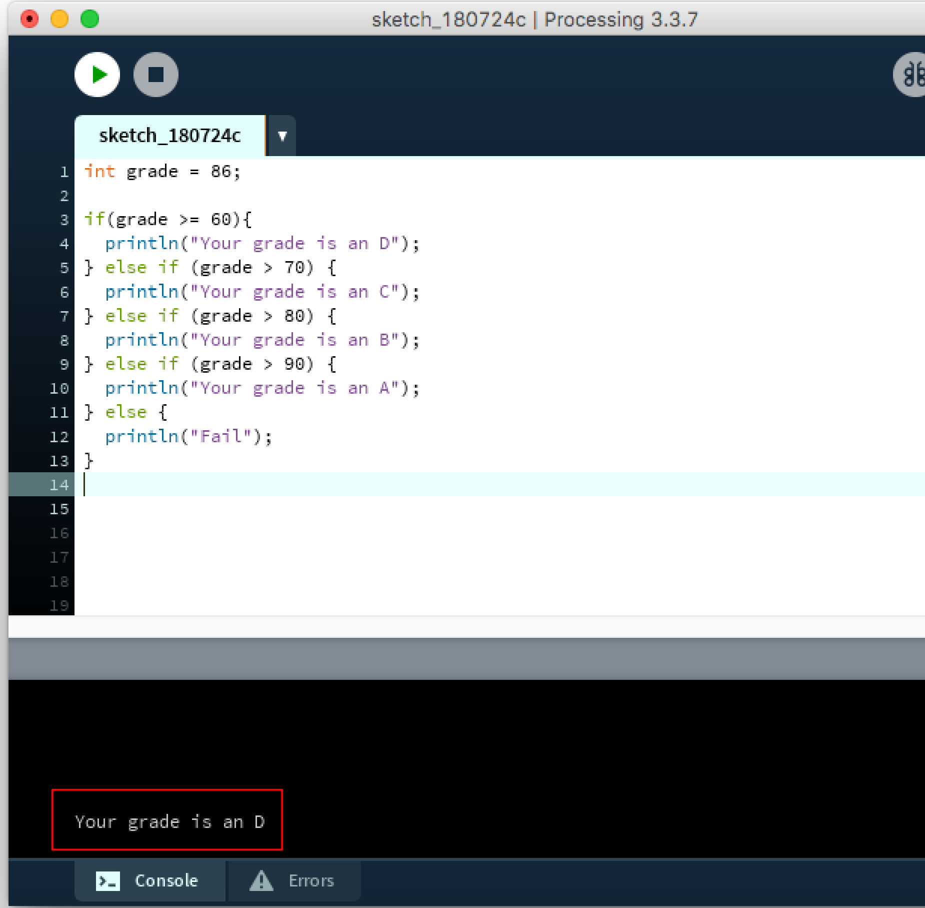


```
int grade = 86;

if(grade >= 90){
  println("Your grade is an A");
} else if (grade >= 80) {
  println("Your grade is a B");
} else if (grade >= 70) {
  println("Your grade is a C");
} else if (grade >= 60) {
  println("Your grade is a D");
} else {
  println("Fail");
}
```

```
Your grade is a B
```

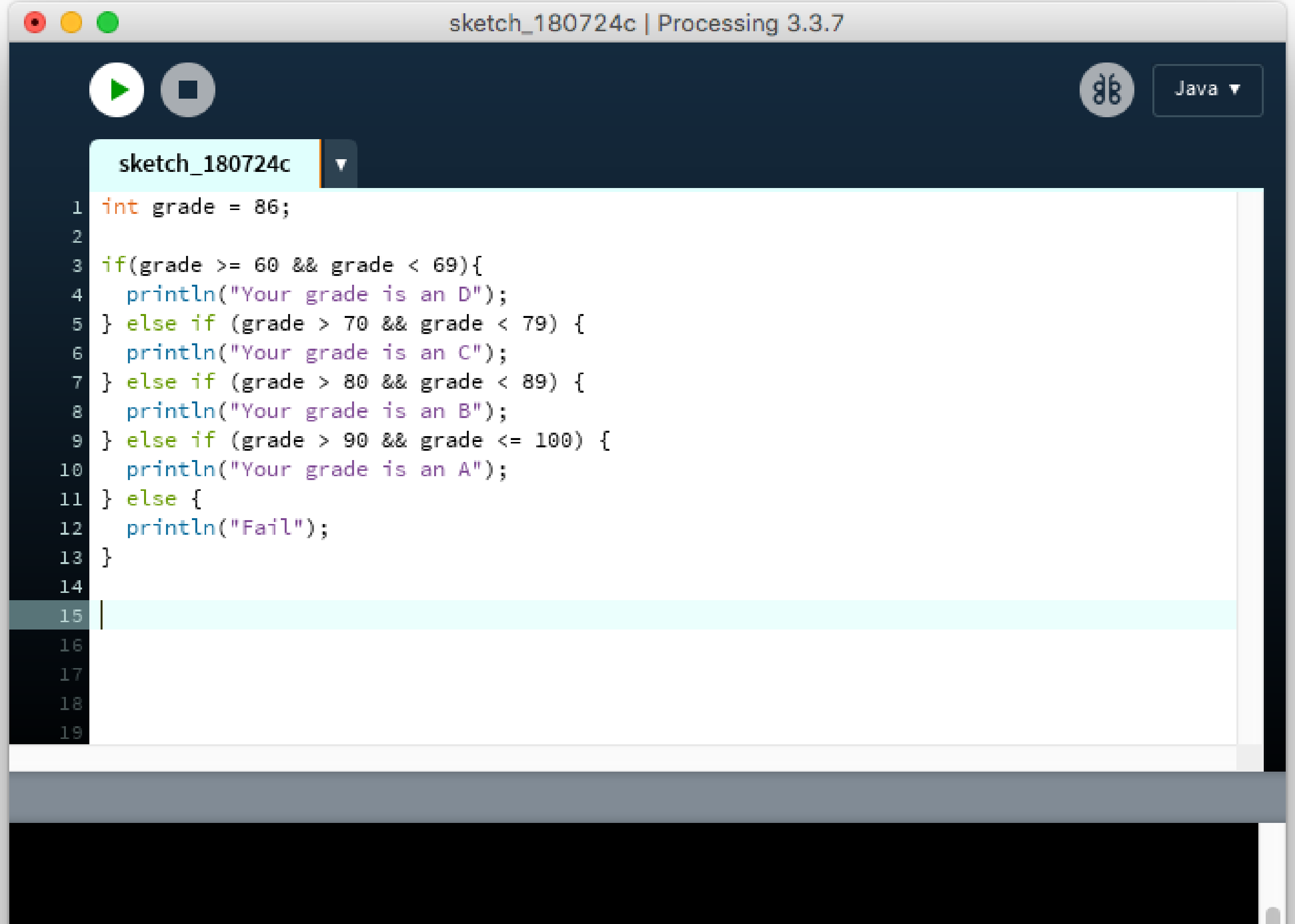
Else If

```
int grade = 86;

if(grade >= 60){
  // “Your grade is an D”;
} else if (grade > 70) {
  // “Your grade is a C”;
} else if (grade > 80) {
  // “Your grade is a B”;
} else if (grade > 90) {
  // “Your grade is a A”;
} else {
  // “Fail”;
}
```



```
int grade = 86;

if(grade >= 60){
  println("Your grade is an D");
} else if (grade > 70) {
  println("Your grade is an C");
} else if (grade > 80) {
  println("Your grade is an B");
} else if (grade > 90) {
  println("Your grade is an A");
} else {
  println("Fail");
}
```

```
Your grade is an D
```



```
int grade = 86;

if(grade >= 60 && grade < 69){
  println("Your grade is an D");
} else if (grade > 70 && grade < 79) {
  println("Your grade is an C");
} else if (grade > 80 && grade < 89) {
  println("Your grade is an B");
} else if (grade > 90 && grade <= 100) {
  println("Your grade is an A");
} else {
  println("Fail");
}
```

Exercise: A Bouncing Ball Problem

- With a partner, write down the pseudocode of Processing drawing a ball on the screen
- Go through the process and think of the conditionals that will be involved when the ball hits the edge
- Make the ball bounces back when hitting the edge

- Live code

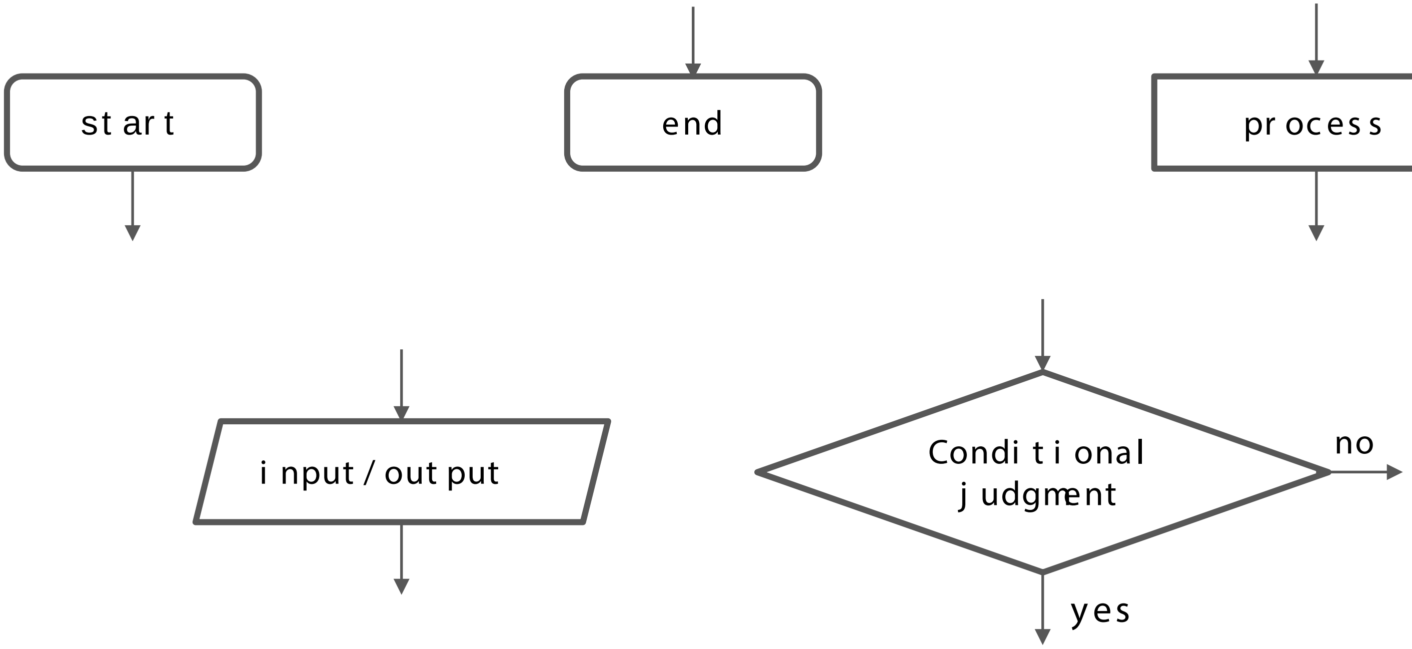
NOT Operator

```
int x = 10;

boolean isEqualTen = (x == 10);
boolean b = true;

if (isEqualTen && b){
        // do this
}

// same as...
if (isEqualTen == true && b == true) {
        // do this
}
```

```
int x = 10;

boolean isEqualTen = (x == 10);
boolean b = false;

if (isEqualTen && !b){
        // do this
}
```

```
int x = 10;

boolean isEqualTen = (x == 10);
boolean b = true;

if (isEqualTen == true) {
        If (b == true) {
        // action if x equals to 10 and b is true
    } else {
        // action if x equals to 10 and b is not true
    }
} else {
        If (!b == true) {
        // action if x does not equal to 10 and b is not true
    } else {
        // action if x does not equal to 10 and b is true
    }
}
```

Flow Chart



start

end

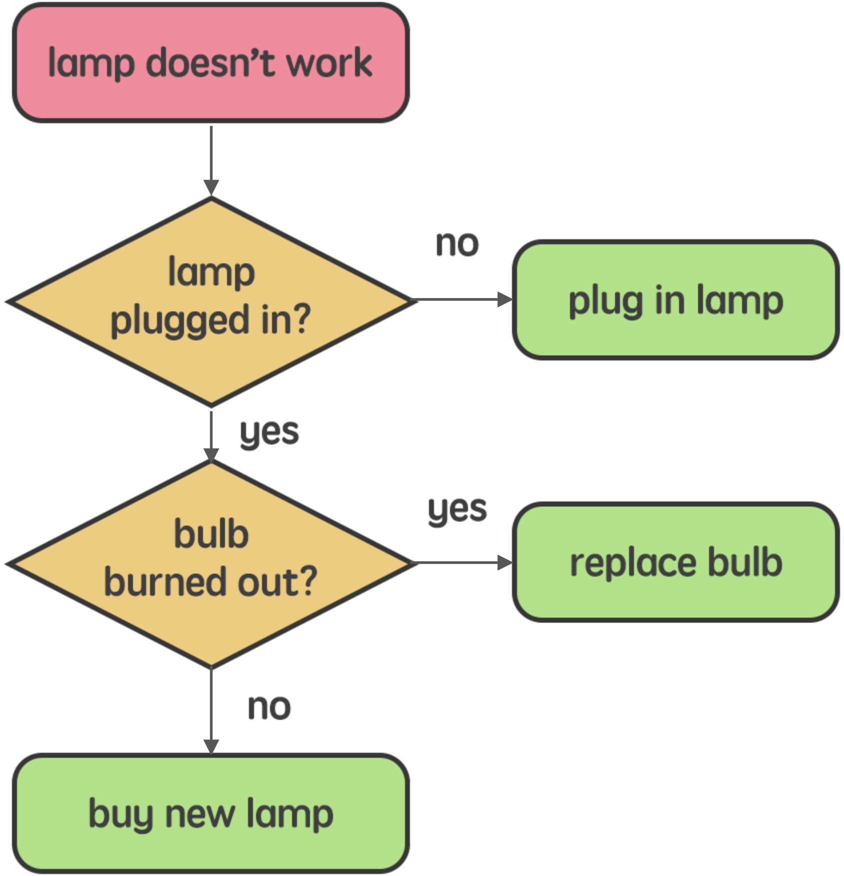
process

input / output

Conditional judgment

no

yes



lamp doesn’t work

lamp plugged in?

no

plug in lamp

yes

bulb burned out?

yes

replace bulb

no

buy new lamp

Homework

Make a flowchart!

Ideas:

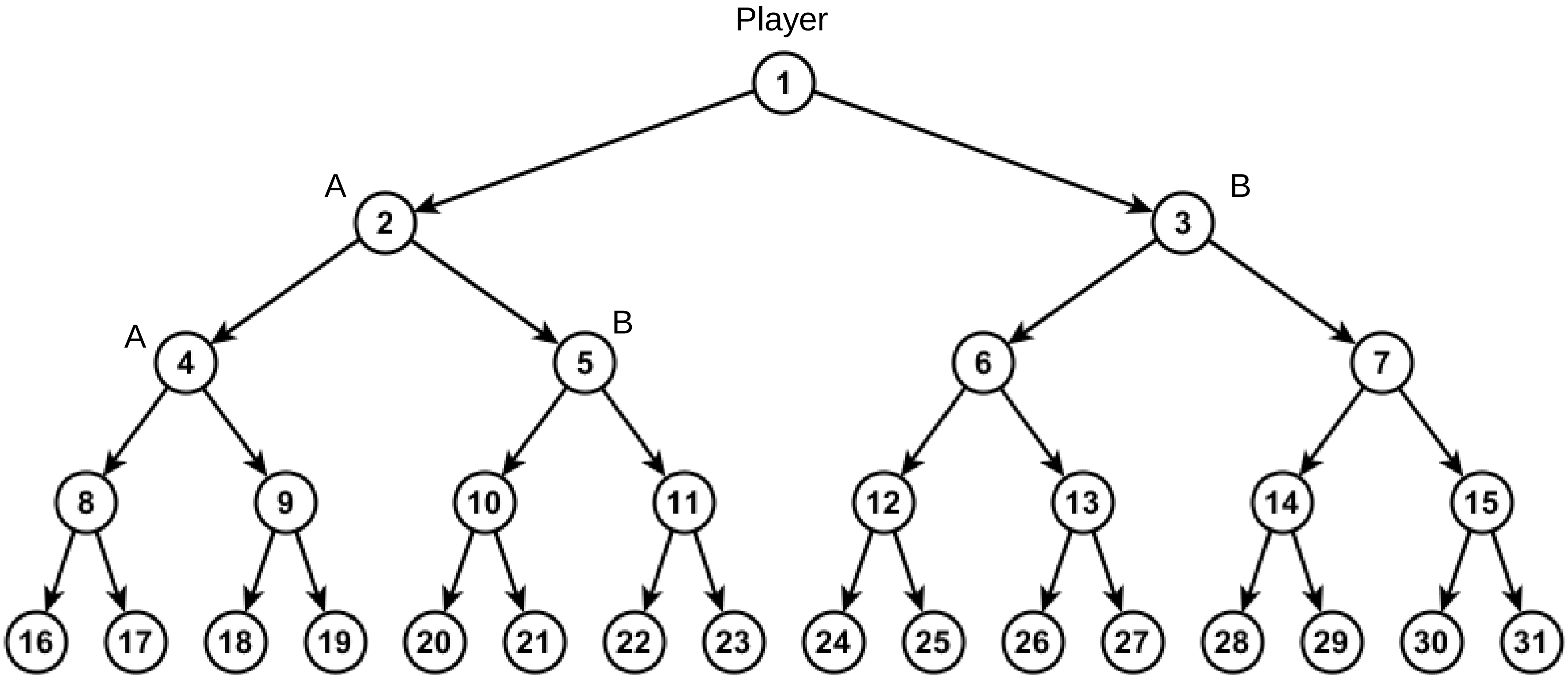
- Think of an important decision
- Examples: expiration date on milk, how to cross the street
- Inspiration

Try not to plan out the result - instead, let the look happen naturally with exploration!

Midterm - Text Adventure

// Also known as Interactive Fiction.
// Conveys a game’s story through the use of text.
// Player utilizes typed instructions as the response
// Content/storyline is the key
// Due Tomorrow - write a story and draw the flowchart of different stages

Examples: http://www.raylc.org/utophin/utophin.html


Player
1
A
2
B
3
A
4
B
5
6
7
8
9
10
11
12
13
14
15
16
17
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