

Creative Coding

Repetitive Tasks, Loops, Conditionals

COD 207 - Week 04 Class →

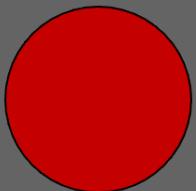


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Structure

Inline functions



```
1  function setup() {  
2      createCanvas(400, 600);  
3  }  
4  
5  function draw() {  
6      background(100, 100, 100);  
7  
8      fill(200, 0, 0);  
9      circle(300, 300, 100);  
10     }  
11 }
```

Rendering, Built-in & Inline Functions

```
1  function setup() {  
2      // Creates the application window params: width=600, height=600  
3      createCanvas(600, 600);  
4  }  
5  
6  function draw() {  
7      // Set the background color of the window params: Red: 100, Green: 20, Blue: 20  
8      // R,G,B values must be between 0 - 255  
9      background(100,20,20);  
10 }
```

Variables

Declare a variable, if you type the same number more than twice.

💩 BAD

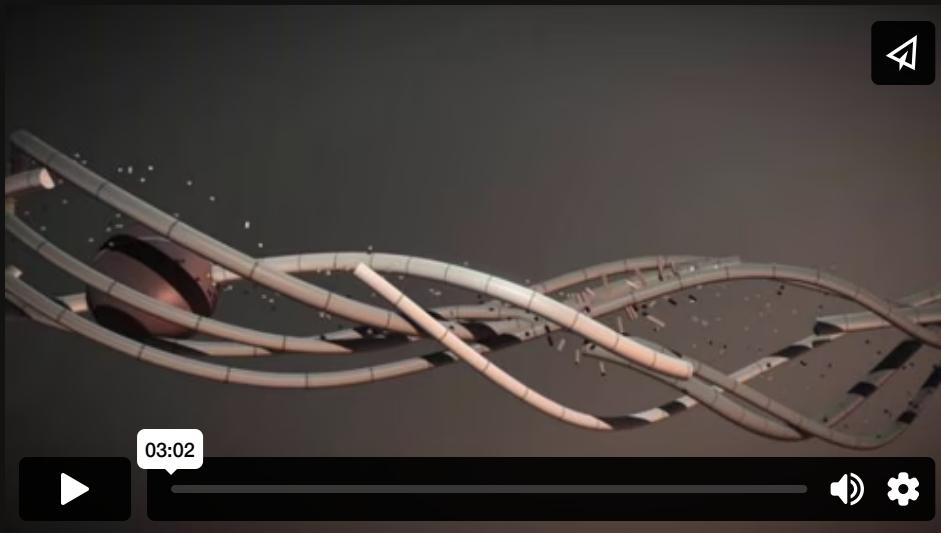
```
1      // position the elements in the middle
2      circle(200, 220, 300);
3      circle(200, 220, 250);
4      circle(200, 220, 200);
5      circle(200, 220, 150);
6      circle(200, 220, 100);
7      circle(200, 220, 50);
```

😍 GOOD

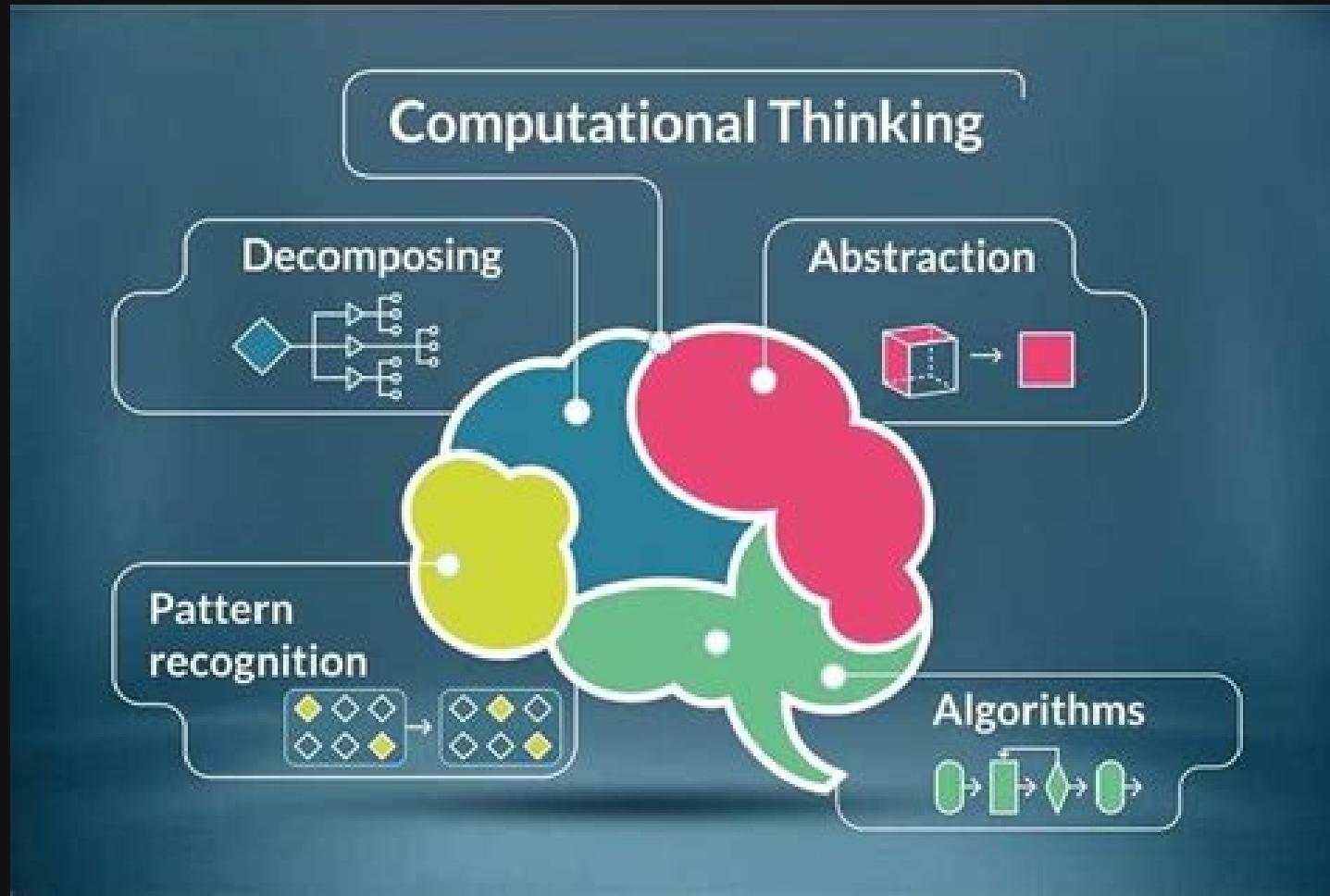
```
1      // define position values for x and y axis
2      var xpos = 200;
3      var ypos = 220;
4      // position the elements in the middle
5      circle(xpos, ypos, 300);
6      circle(xpos, ypos, 250);
7      circle(xpos, ypos, 200);
8      circle(xpos, ypos, 150);
9      circle(xpos, ypos, 100);
10     circle(xpos, ypos, 50);
```

Quayola

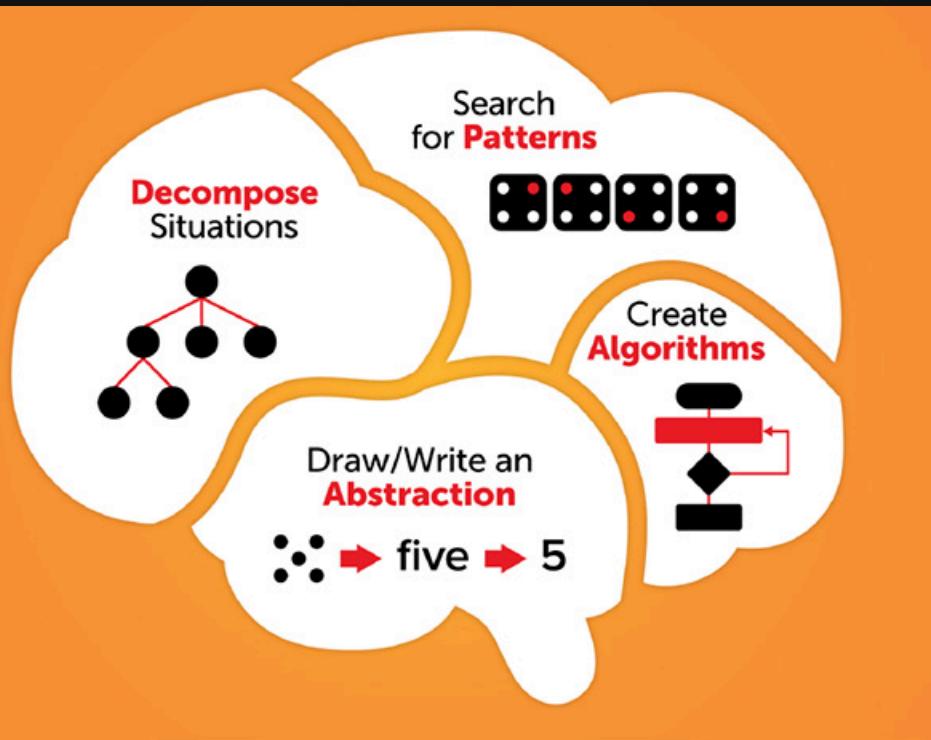
Realtime sound visualisation made with custom software "Partitura" Sound by Telefon Tel Aviv



🔗 [vimeo link](#)



Computational Thinking Framework



- 1 Decomposition
- 2 Pattern Recognition
- 3 Abstraction
- 4 Algorithm

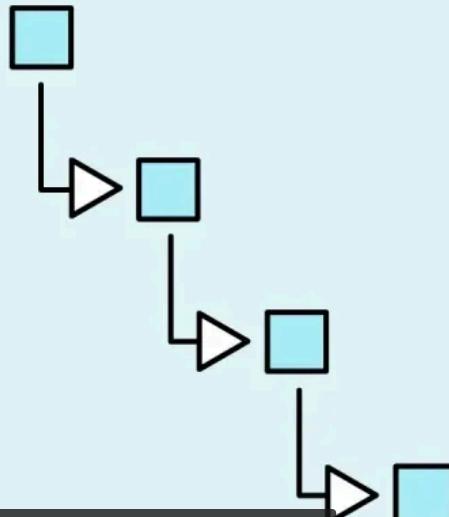
Computer Science Basics

1 Sequences, 2 Selection, and 3 Loops



Computer Science Basics: Sequences, Selections, and Loops

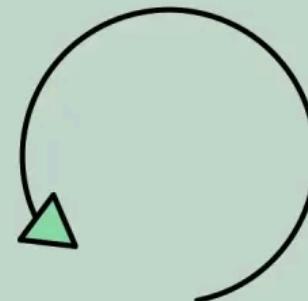
SEQUENCES



SELECTIONS

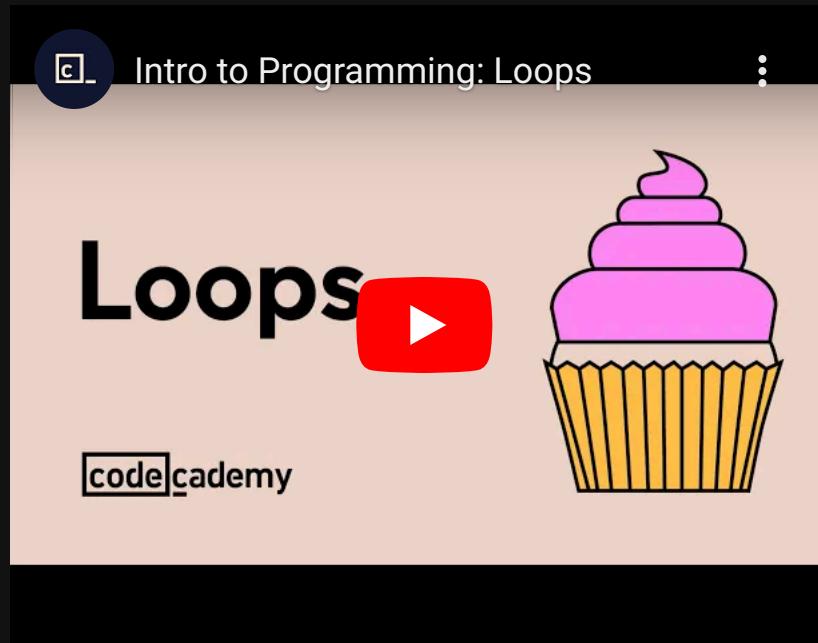


LOOPS



Paylaş

What are loops in coding?



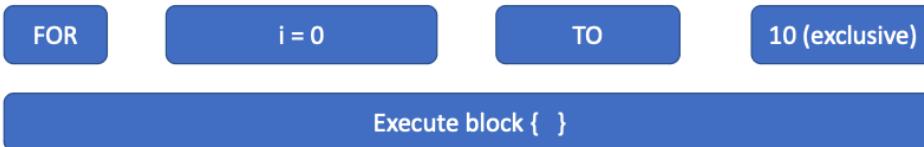
for loops

Repeats a section of code or code-block a limited number of times. Three steps of creating for loops;

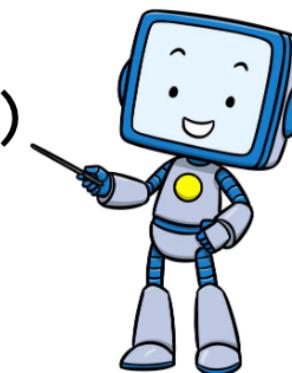
- 1 Create a counter variable.
- 2 Set the repetition count.
- 3 Set the counter behaviour. Is it gonna increase one by one, two by two, etc...

for loops in p5JS

Reading the *for* loop the easy way...



```
for(let i = 0; i < 10; i++)  
{  
    print("Hello World");  
}
```



**Replace the `print("...")`
function with a shape**

Do you see a single shape? Where are the other shapes?

Open the black box

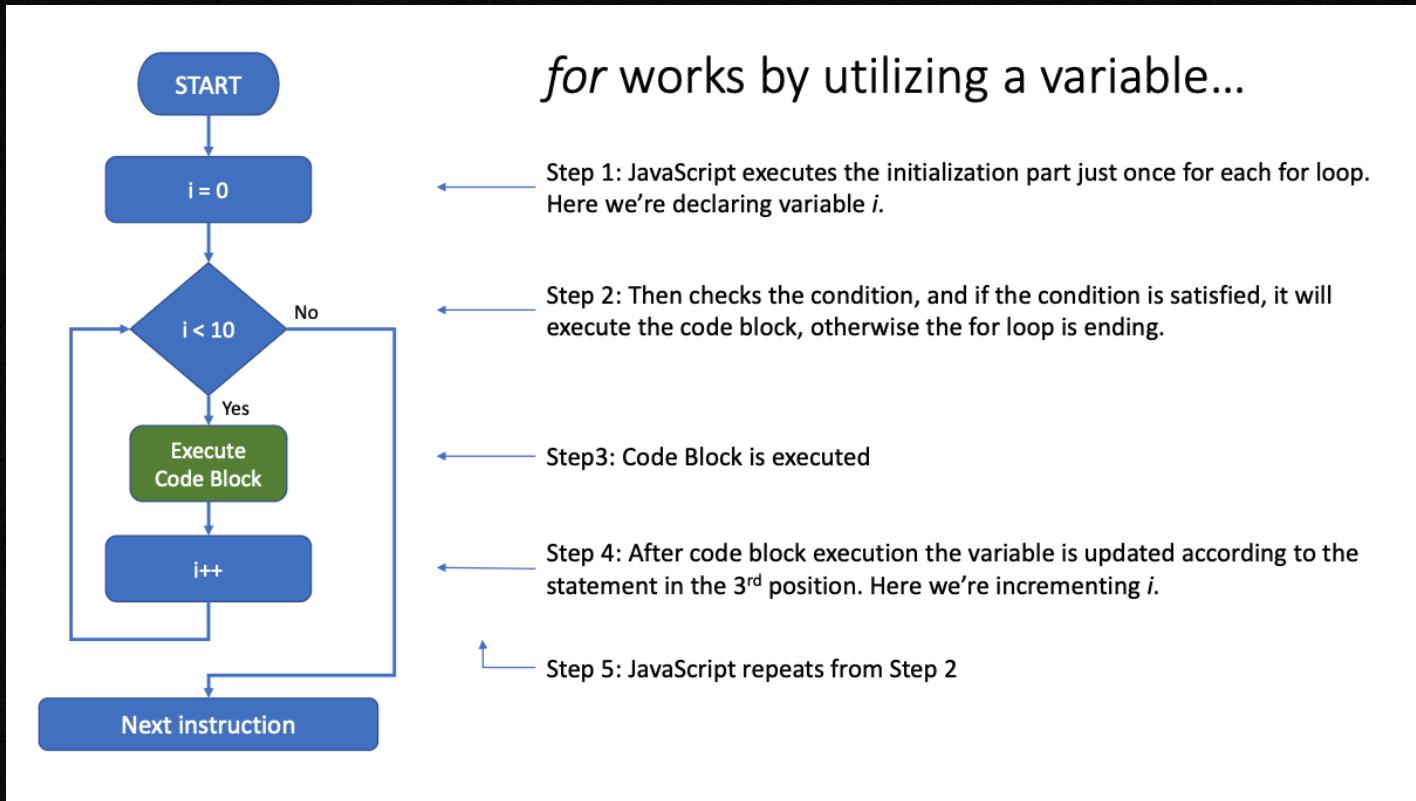
for is executing the code block for $i = 0 \dots 10$ (exclusive)

```
for(let i = 0; i < 10; i++)  
{  
    ...  
    ...  
}  
  
repeat these lines as  
long as  $i$  is less than 10
```

initialization condition variable update (increment)

$i = 0$ execute {...}
 $i = 1$ execute {...}
 $i = 3$ execute {...}
 $i = 4$ execute {...}
 $i = 5$ execute {...}
 $i = 6$ execute {...}
 $i = 7$ execute {...}
 $i = 8$ execute {...}
 $i = 9$ execute {...}

Open the black box



Access the counter variable to modify the repeating code

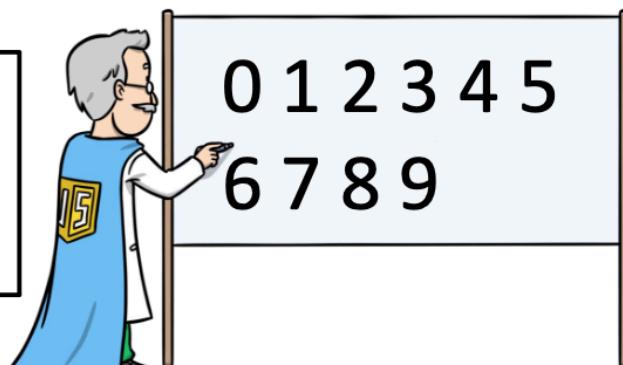
Use the counter variable `i` as a dynamic value.

Accessing for loop variable inside the code block

- Did you know that you can make use of the for variable inside the code block?
- The code block is executed n times, and each time i has a different value:

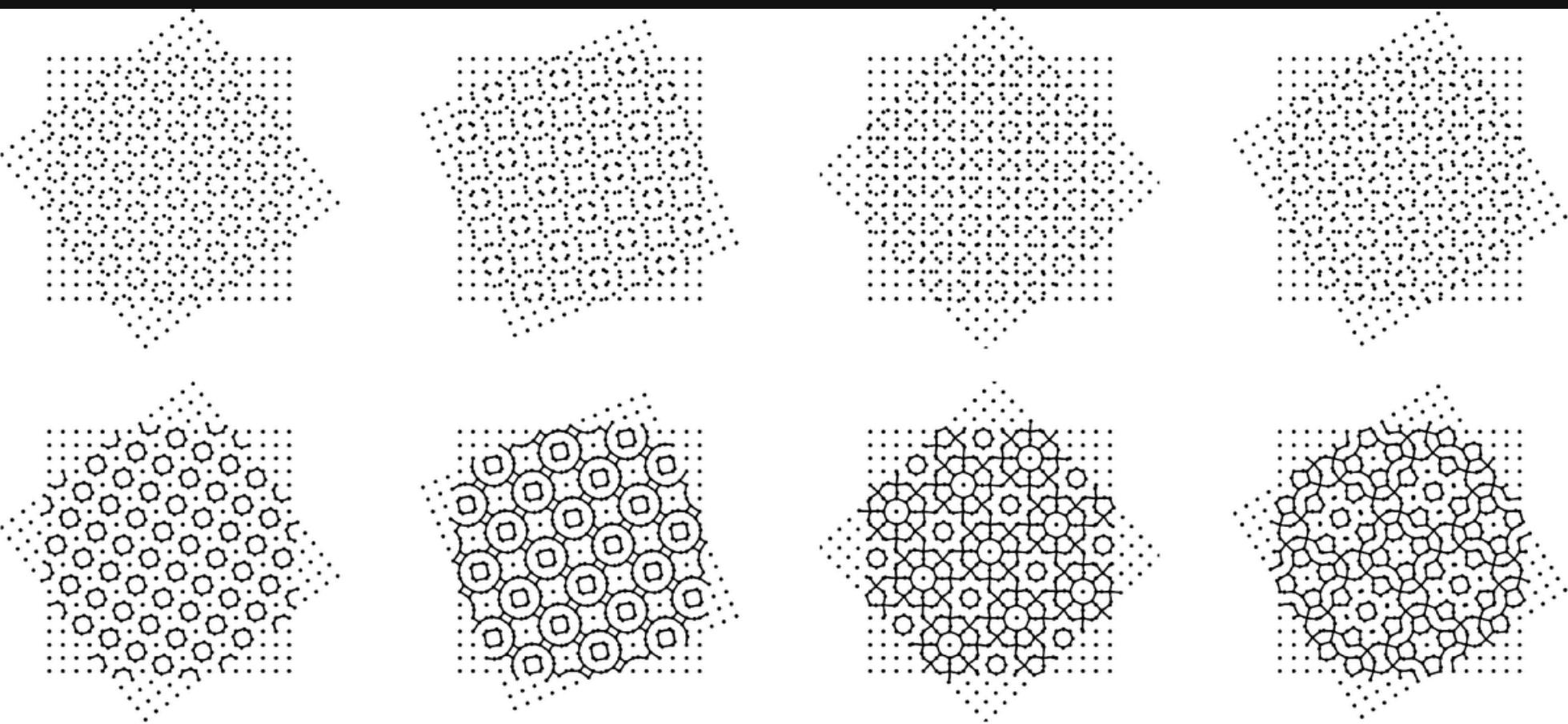
`i = 0 then execute {...}`
`i = 1 then execute {...}`
`i = 2 then execute {...}`
...

```
for(let i = 0; i < 10; i++)  
{  
    println(i);  
}
```



Rewrite the following code using a `for` loop

```
1      function setup() {
2          createCanvas(600, 600);
3      }
4
5      function draw() {
6          background('#e1e1e1');
7          // define position values for x and y axis
8          var xpos = 200;
9          var ypos = 220;
10         // position the elements in the middle
11         circle(xpos, ypos, 350);
12         circle(xpos, ypos, 300);
13         circle(xpos, ypos, 250);
14         circle(xpos, ypos, 200);
15         circle(xpos, ypos, 150);
16         circle(xpos, ypos, 100);
17         circle(xpos, ypos, 50);
18     }
```



3/4

5/12

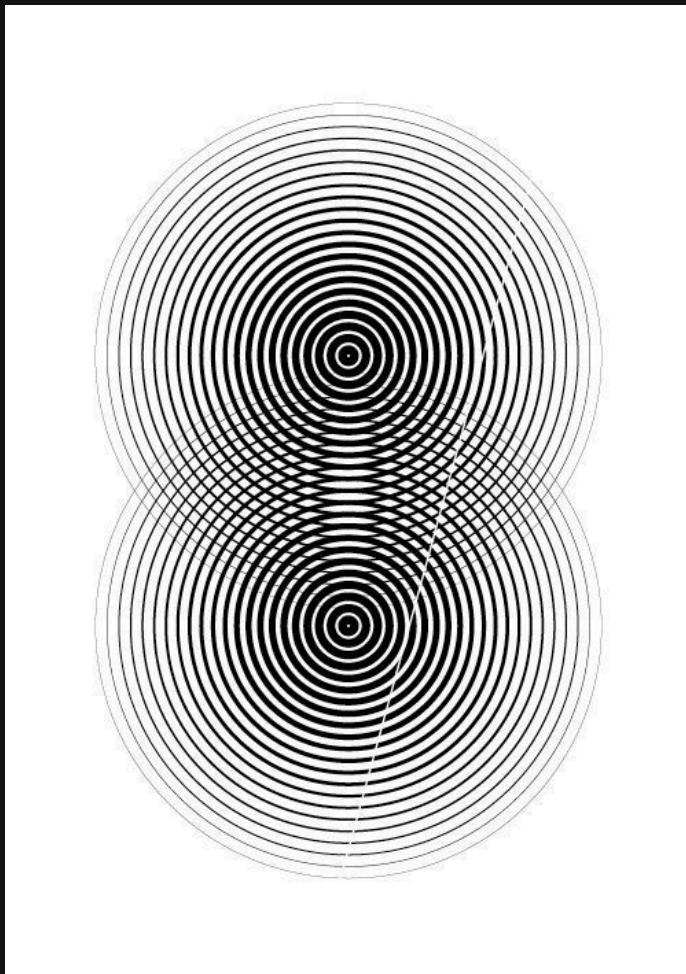
20/21

28/45



BREAK

12 mins.



→ Review the examples on
Pinterest

Conditionals

if/else statements

Introducing *if* statement

```
if ( condition )
{
    instruction 1
    instruction 2
    ...
}
```



```
if (a > 0)
{
    println("a is ", a);
    println("positive");
}
```

Don't type this yet. Just analyze the syntax.

if statement makes possible to execute a block of instructions (aka *code block*) only if a certain condition is valid.

If the condition is not valid, the instructions between curly braces are not executed.

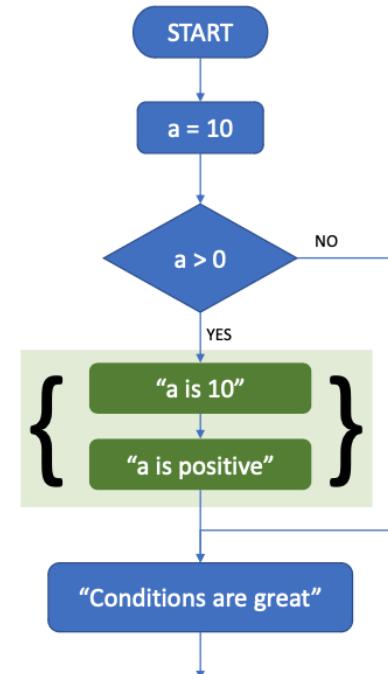
Set a Condition in p5JS

Deciding with *if*...

```
let a = 10;  
  
if (a > 0)  
{  
    println("a is ", a);  
    println("a is positive");  
}  
  
println("Conditions are great");
```



- Type carefully this small program and then run it. What is the output?
- Now modify the first line of code, and instead of 10 put there a negative number. What do you see now?



If condition == false

What else?

```
let a = -2;

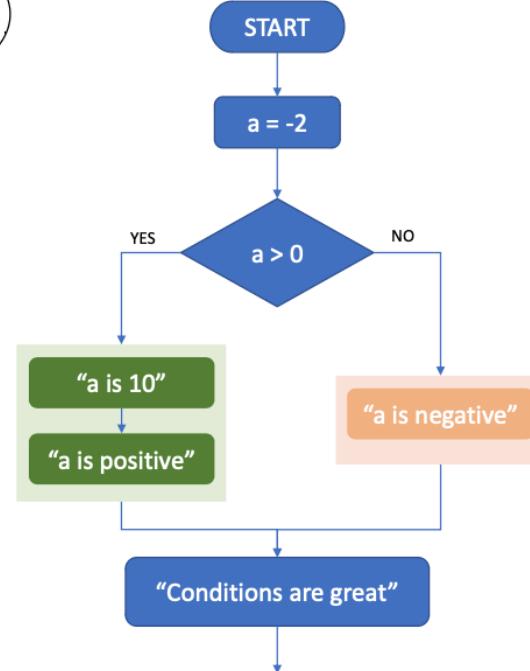
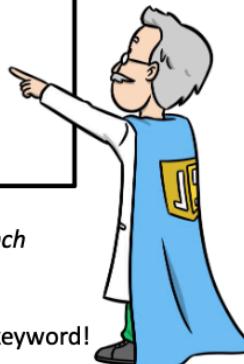
if (a > 0)
{
    println("a is ", a);
    println("a is positive");
}

else
{
    println("a is negative");
}

println("Conditions are great");
```



else block is executed if the if one is not



- Modify the program to include also an *else branch* followed by a new code block
- Don't use any parenthesis or symbol after else keyword!

Practice

Write the appropriate if conditions in place of `...` line in your code.

Exercise: Rating system

Let's build a simple rating system using `if` / `else-if` statements.

The program needs to display the appropriate message based on the actual rating from variable `rating`

```
let rating = 5;  
...  
    println("Excellent!!!");    ← If rating is 5!  
...  
    println("Good");           ← If rating >= 4  
...  
    println("Average");        ← If rating >= 3  
...  
    println("Below average");  ← Otherwise
```



Excellent!!!



Cyclic motion with If Statement

Move the second group of circles using if statements

Assignment 1

1. Choose a Moire Pattern or create by yourself.
2. Write-down the Computational Thinking Analysis of the pattern **2 0** PTS
3. Canvas size 600 x 600 px **5** PTS
4. Use `for` loops **3 0** PTS
5. Use variables **1 0** PTS
6. Use comments in your code **1 0** PTS
7. tidy up the code **1 0** PTS
8. ! Submit the openprocessing link **5** PTS
9. ! Submit the sketch source code as zip file as well **5** PTS
10. ! Submit the reference image as well **5** PTS

Reference

Examples on [Pinterest](#), [Wikipedia](#), [Tutorial Video](#)

Assignment 2

Due to next class review the following links

 Read the tutorial [∅](#)

 Watch the video [∅](#).

 Then watch the following tutorial [∅](#)