

Creative Coding

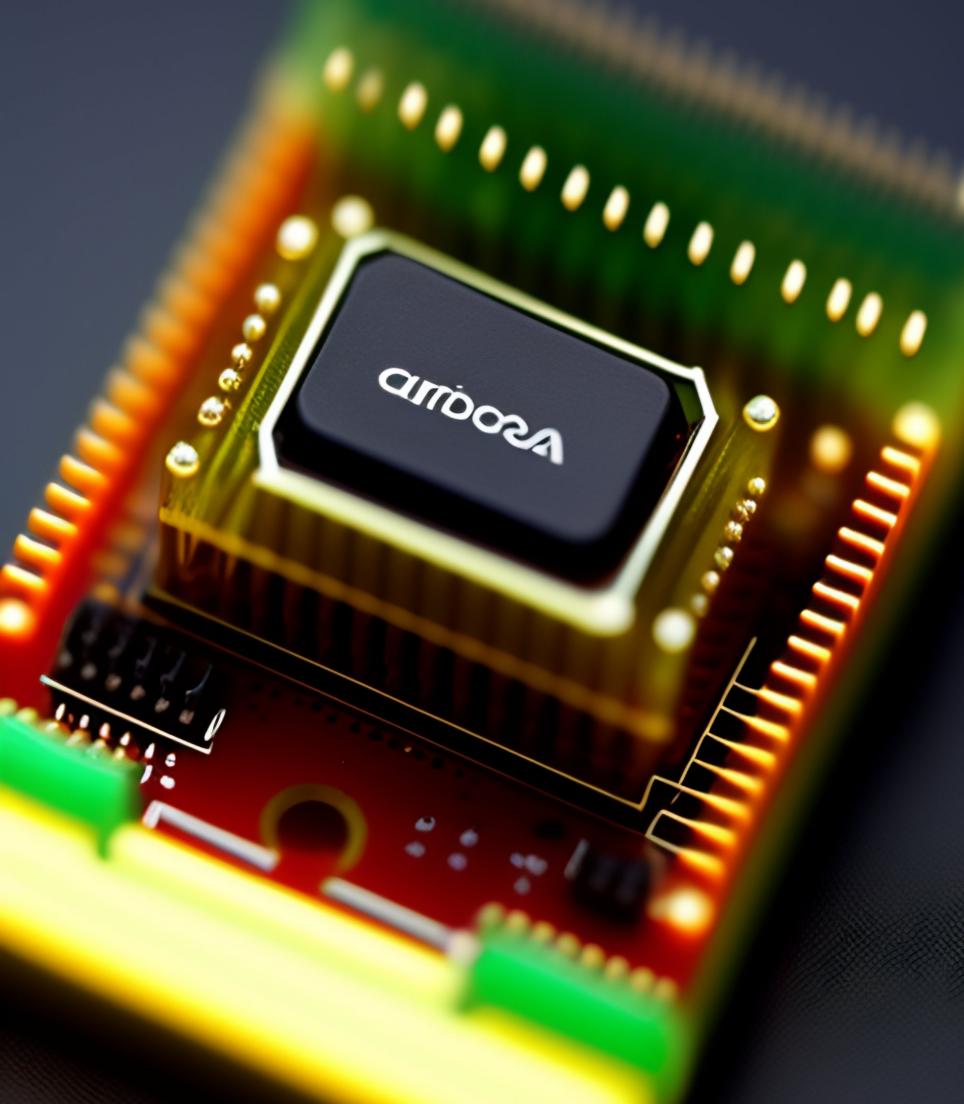
Intelligence Through Conditionals & Loops

COD 207 - Week 06 Class →



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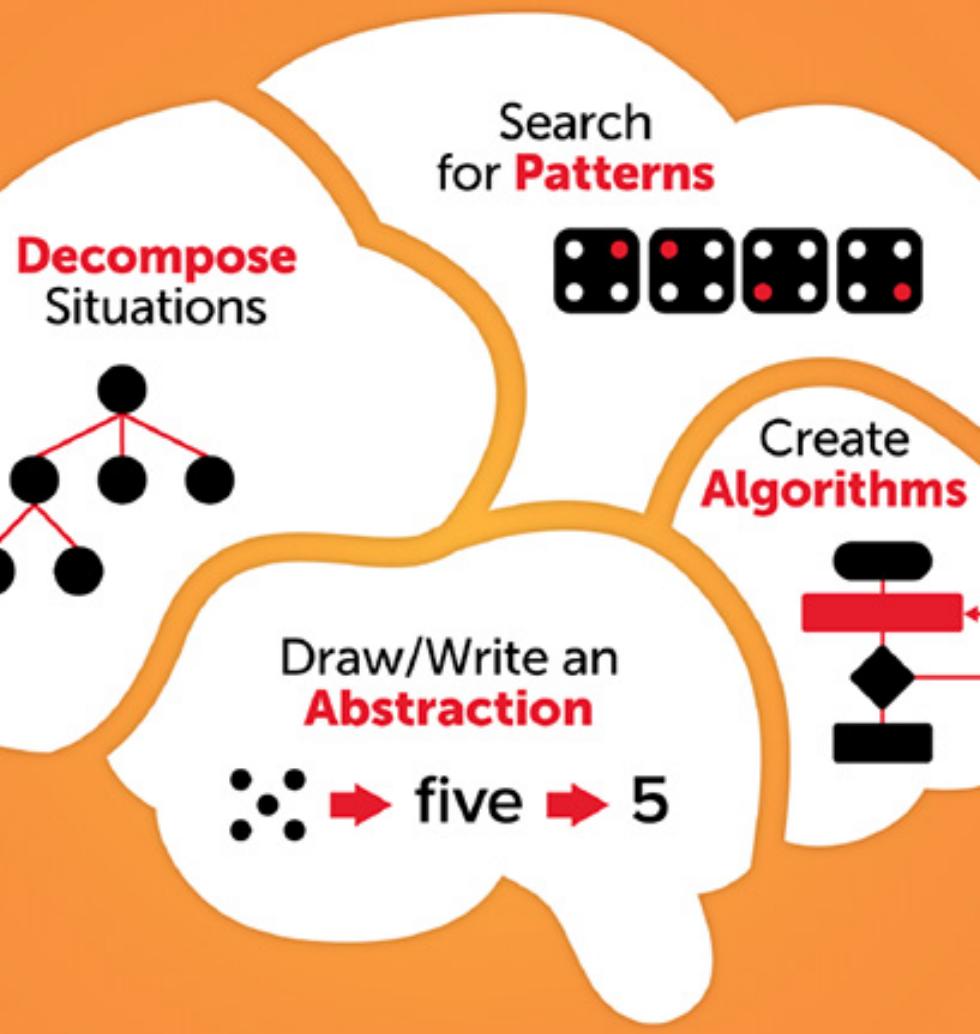
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Wrap-up (Summary)

Things we learn about P5JS programming language.

- Cartesian Coordinate System (How canvas positioning works)
- Variables
- Drawing simple shapes
- Computational Thinking Method as problem solving



Computational Thinking Framework

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

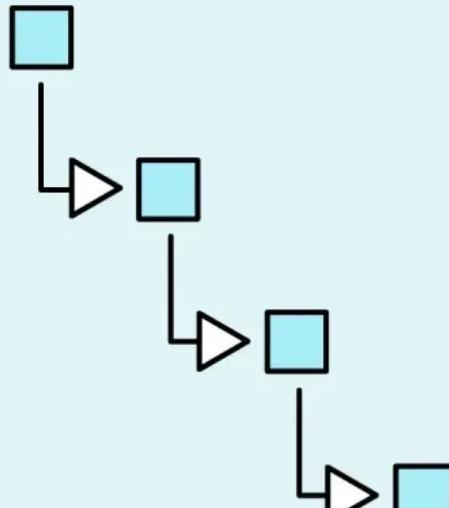
Computer Science Basics

1 Sequences, 2 Selection, and 3 Loops

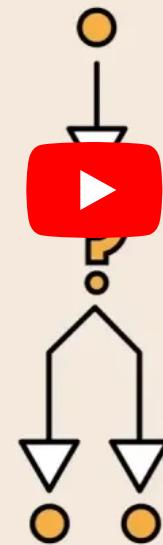


Computer Science Basics: Sequences, Selections, and Loops

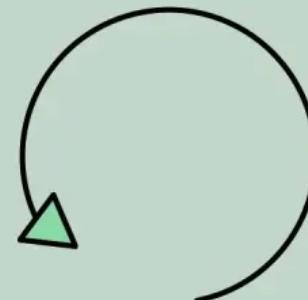
SEQUENCES



SELECTIONS



LOOPS



Conditionals

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.

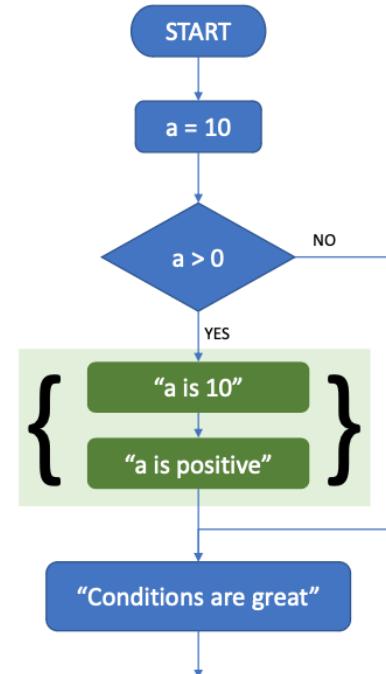
Set a Condition in p5JS

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;

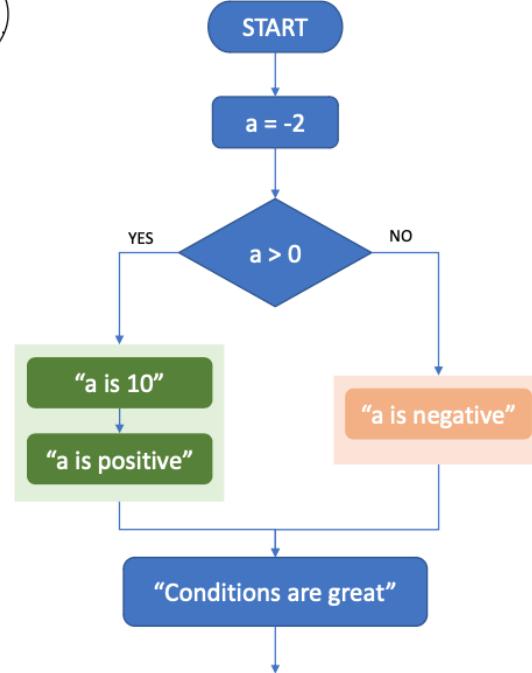
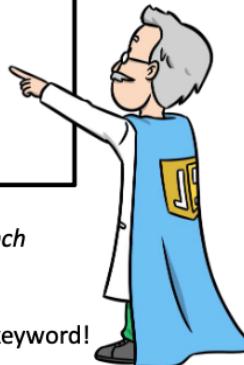
if (a > 0)
{
    println("a is ", a);
    println("a is positive");
}

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!!!



"First, solve the problem.

Then, write the code."

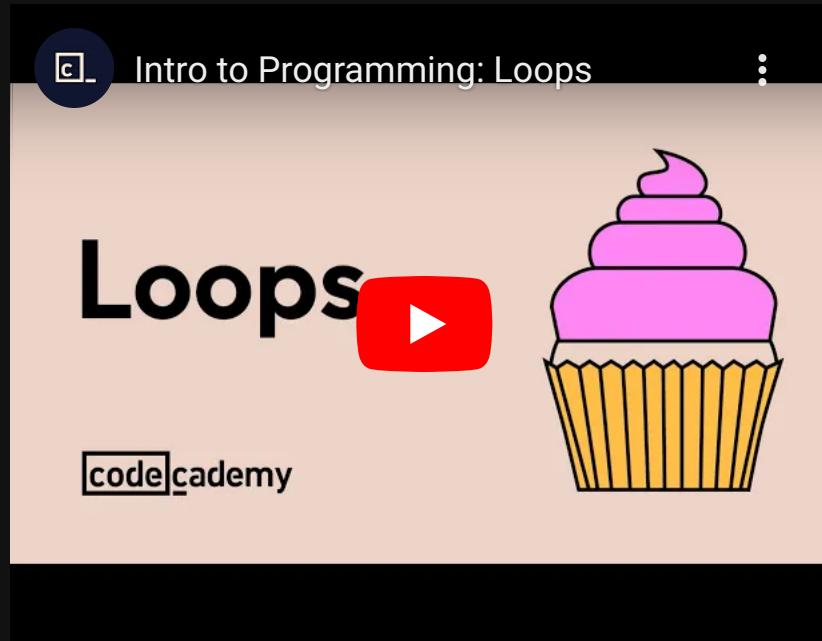
John Johnson



BREAK

10 mins.

What are loops in coding?



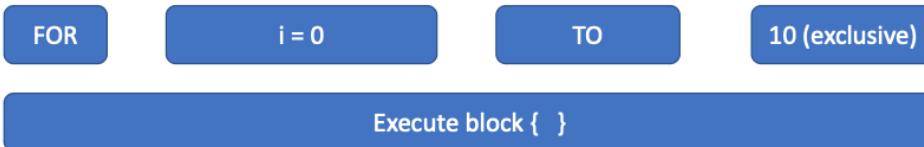
for loops

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

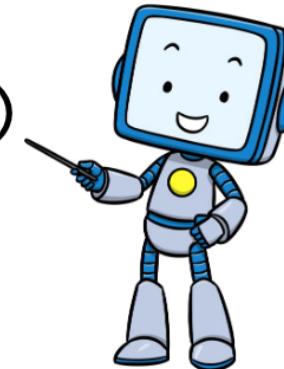
- 1 Create a counter variable.
- 2 Set the repetition count.
- 3 Set the counter behaviour. Is it gonna increase one by one, two by two, etc...

for loops in p5JS

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



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



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

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

Open the black box

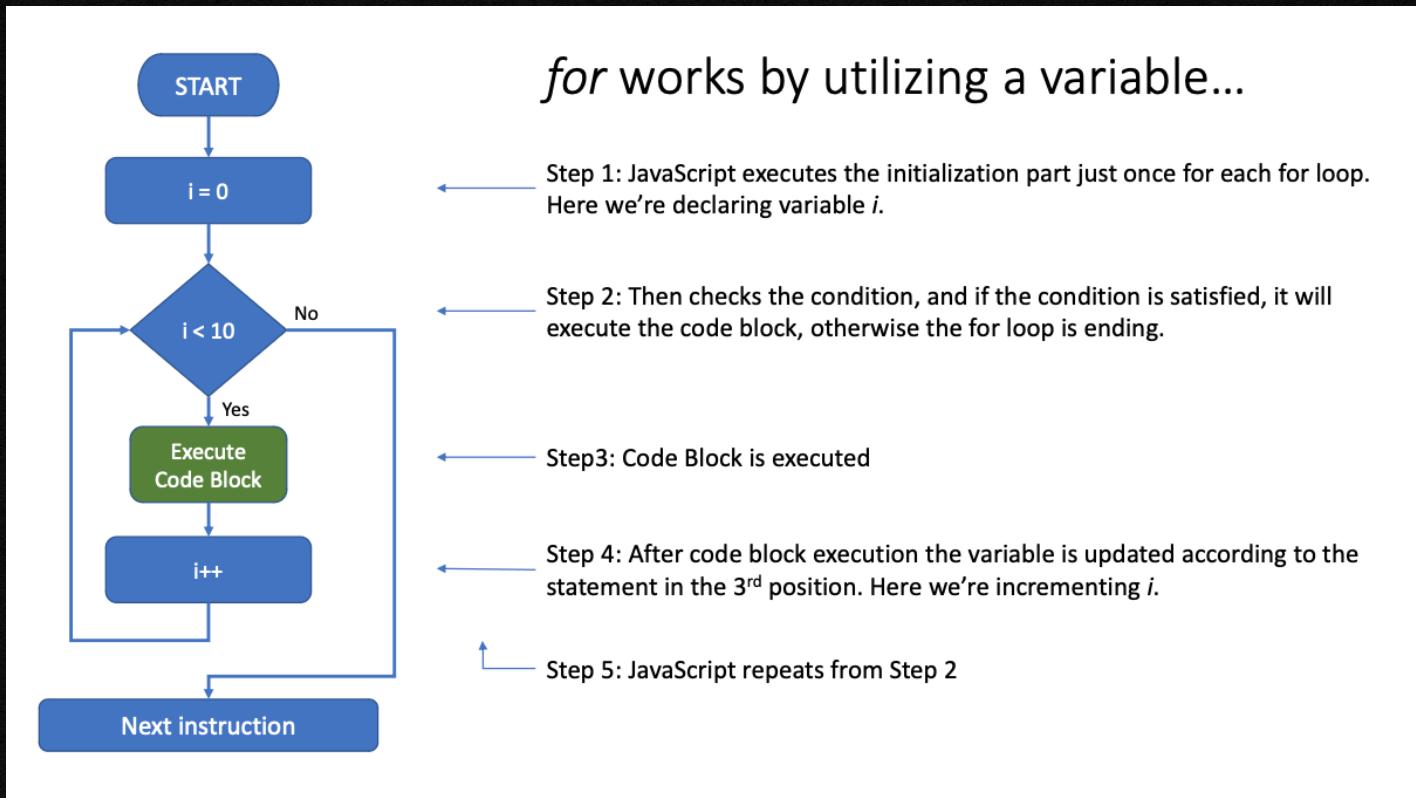
for is executing the code block for $i = 0 \dots 10$ (exclusive)

```
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

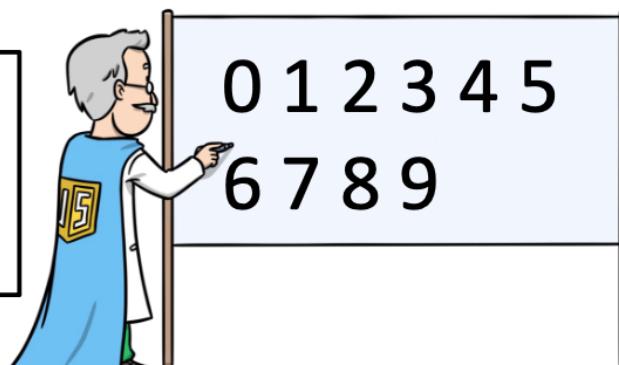
Use the counter variable `i` as a dynamic value.

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);  
}
```



Tutorial

link to openProcessing 

Assignments

1. Make a 3 x 3 grid.
2. Canvas size must be 600 x 600 px.
3. Each grid must be a square with the same width and height in px.
4. There must be 100 px margin from top-right-bottom-left sides of the canvas. 3 x 3 must be in the middle of the canvas.
5. Draw circles in the middle of each grid in random size between of your choice in min and max value. But if the size of the circle is higher than the grid size write a condition for that.
6. You must use variables (10 pts)
7. You must use for loops (10 pts)
8. You must use conditions (10 pts)
9. Submit the openprocessing link (5 pts)
10. Submit the sketch source code as zip file as well (5 pts)
11. Read the attached document.