



JS LOOPS

Repeating Code

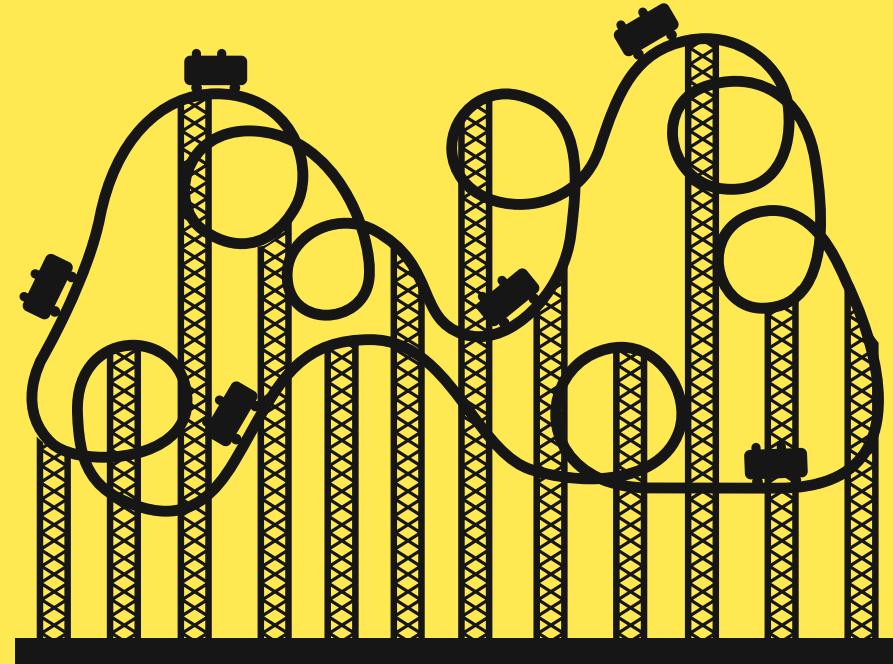
GOALS

- Write for loops
- Write while loops
- Avoid infinite loops!
- Iterate over arrays and objects

LOOPS

Doing things repeatedly

- Loops allow us to repeat code
 - "Print 'hello' 10 times"
 - Sum all numbers in an array
- There are multiple types:
 - for loop
 - while loop
 - for...of loop
 - for...in loop



FOR LOOPS



FOR LOOPS

```
for (  
    [initialExpression];  
    [condition];  
    [incrementExpression]  
)
```

FOR LOOPS



start at 1

stop at 10

add 1 each time

```
for (let i = 1; i <= 10; i++) {  
    console.log(i);  
}
```

ANOTHER EXAMPLE



```
for (let i = 50; i >= 0; i -= 10) {  
    console.log(i);  
}  
//50  
//40  
//30  
//20  
//10  
//0
```

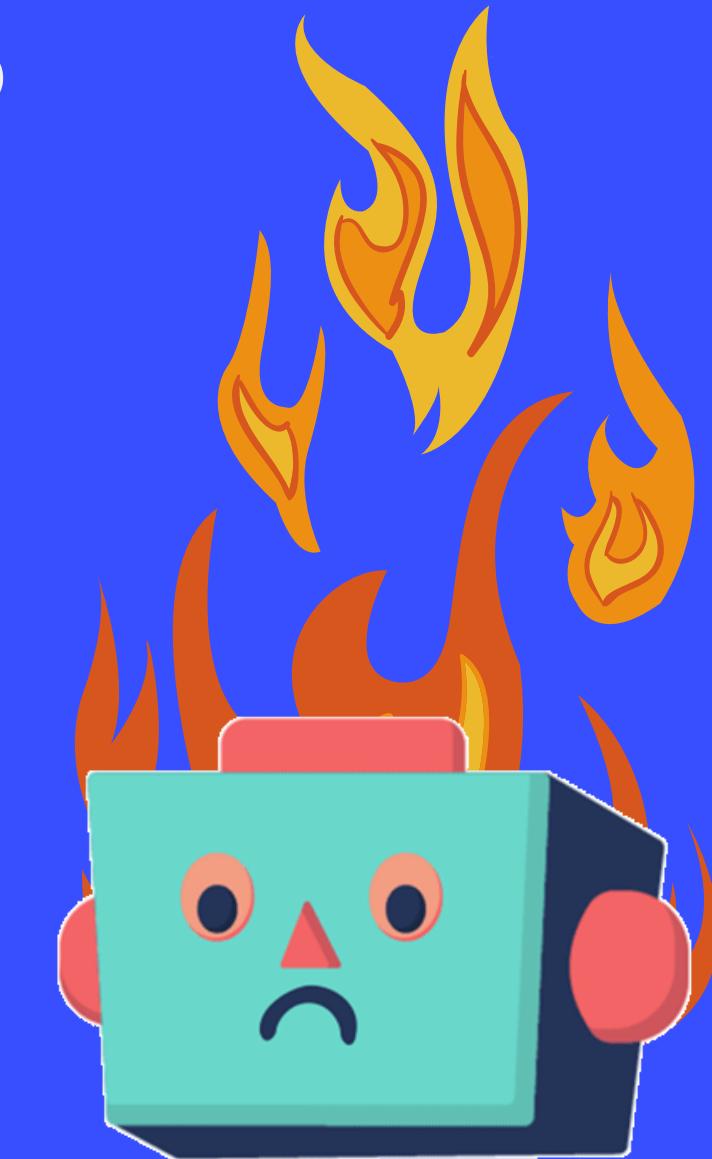
- Start *i* at 50
- Subtract 10 each iteration
- Keep going as long as *i* \geq 0

INFINITE LOOPS



```
//DO NOT RUN THIS CODE!
for (let i = 20; i >= 0; i++) {
    console.log(i);
} //BADDDED!!!
```

BAD!



FOR LOOPS + ARRAYS

To loop over an array, start at 0 and continue to the last index (length-1)



```
const animals = [ 'lions', 'tigers', 'bears' ];

for (let i = 0; i < animals.length; i++) {
    console.log(i, animals[i]);
}

//0 'lions'
//1 'tigers'
//2 'bears'
```

NESTED LOOPS



```
let str = 'LOL';
for (let i = 0; i <= 4; i++) {
  console.log("Outer:", i);
  for (let j = 0; j < str.length; j++) {
    console.log('  Inner:', str[j]);
  }
}
```

```
Outer: 0
Inner: L
Inner: 0
Inner: L
Outer: 1
Inner: L
Inner: 0
Inner: L
Outer: 2
Inner: L
Inner: 0
Inner: L
Outer: 3
Inner: L
Inner: 0
Inner: L
Outer: 4
Inner: L
Inner: 0
Inner: L
```

WHILE LOOPS

A while loop continues to run as long as its test condition is true



```
let num = 0;  
while (num < 10) {  
    console.log(num);  
    num++;  
}
```

0

1

2

3

4

A COMMON PATTERN



```
let targetNum = Math.floor(Math.random() * 10);
let guess = Math.floor(Math.random() * 10);

while (guess !== targetNum) {
  console.log(`Guessed ${guess}...Incorrect!`);
  guess = Math.floor(Math.random() * 10);
}
console.log(`CORRECT! Guessed: ${guess} & target was: ${targetNum}`);
```

BREAK KEYWORD



```
let targetNum = Math.floor(Math.random() * 10);
let guess = Math.floor(Math.random() * 10);

while (true) {
    guess = Math.floor(Math.random() * 10);
    if (guess === targetNum) {
        console.log(`CORRECT! Guessed: ${guess} & target was: ${targetNum}`);
        break;
    }
    else {
        console.log(`Guessed ${guess}...Incorrect!`);
    }
}
```

FOR...OF

A nice and easy way of
iterating over arrays
(or other iterable objects)



No Internet
Explorer Support

FOR...OF

```
for (variable of iterable) {  
    statement  
}
```

FOR...OF



```
let subreddits = [ 'soccer', 'popheads', 'cringe', 'books' ];
for (let sub of subreddits) {
    //Do this for every item in subreddits array:
    console.log(` ${sub} - www.reddit.com/r/${sub}`);
}
```

NESTED



```
const magicSquare = [
  [ 2, 7, 6 ],
  [ 9, 5, 1 ],
  [ 4, 3, 8 ]
];

for (let row of magicSquare) {
  let sum = 0;
  for (let num of row) {
    sum += num;
  }
  console.log(`Row of ${row} sums to ${sum}`);
}
```

Row of 2,7,6 sums to 15

Row of 9,5,1 sums to 15

Row of 4,3,8 sums to 15

OBJECTS!

We can loop over the keys of an object, using `Object.keys()`

```
const movieReviews = {  
    Amadeus : 10,  
    Arrival : 9.5,  
    Alien   : 9,  
    Amelie  : 8  
};  
  
for (let movie of Object.keys(movieReviews)) {  
    let score = movieReviews[movie];  
    console.log(`I rated ${movie} ${score}/10`);  
}
```

I rated Amadeus 10/10
I rated Arrival 9.5/10
I rated Alien 9/10
I rated Amelie 8/10

• •

"You should
watch Amadeus
if you haven't
seen it yet!"



FOR...IN

Loop over the keys in an object

```
for (variable in object) {  
    statement  
}
```

FOR...IN EXAMPLE

```
● ● ●  
  
const jeopardyWinnings = {  
    regularPlay          : 2522700,  
    watsonChallenge      : 300000,  
    tournamentOfChampions: 500000,  
    battleOfTheDecades   : 100000  
};  
  
let total = 0;  
for (let key in jeopardyWinnings) {  
    total += jeopardyWinnings[key];  
}  
console.log(`Ken Jennings's Total Winnings: ${total}`);  
//Ken Jennings's Total Winnings: $3422700
```