



JS LOOPS

Repeating Code



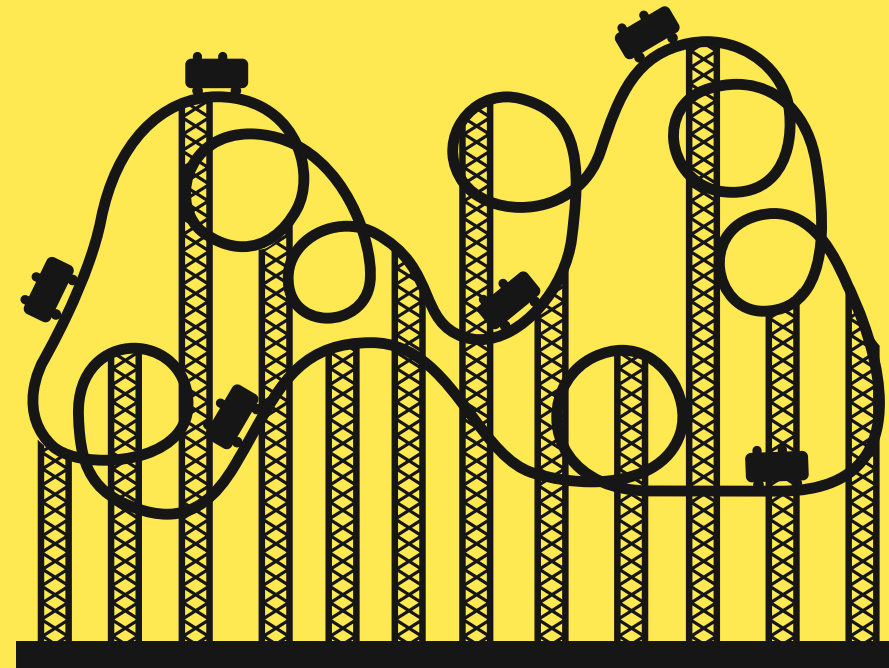
GOALS

- 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

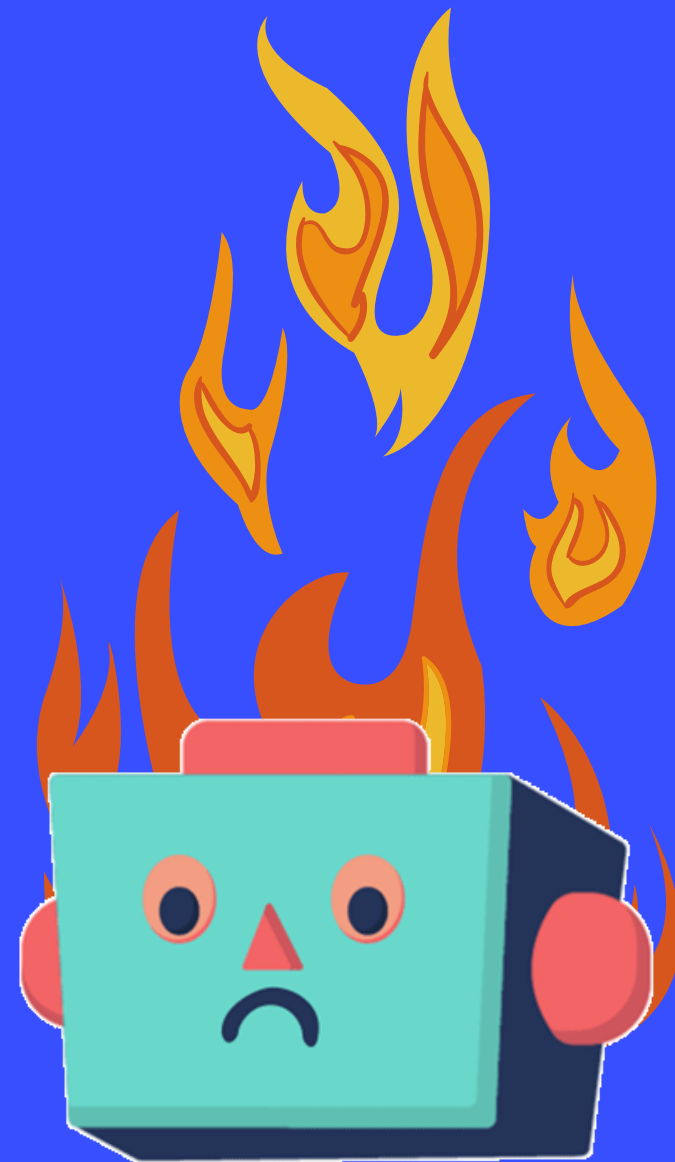
```
for (let i = 50; i >= 0; i -= 10) {  
    console.log(i);  
}  
//50  
//40  
//30  
//20  
//10  
//0
```

- 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);  
} //BADD!!!
```

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: O
  Inner: L
Outer: 1
  Inner: L
  Inner: O
  Inner: L
Outer: 2
  Inner: L
  Inner: O
  Inner: L
Outer: 3
  Inner: L
  Inner: O
  Inner: L
Outer: 4
  Inner: L
  Inner: O
  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! Gussed: ${guess} & target was: ${targetNum}`);
    break;
  }
  else {
    console.log(`Gussed ${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
```