

Loops

They go around and around...

While Loop

While Loop

Requires 3 elements:

1. The **while** keyword
2. conditional that evaluates to **true/false**
3. block of code. Runs until the conditional evaluates to **false**

While Loop

Analogy: You have 4 pizzas, and you eat one at a time.



While Loop

Analogy: You have 4 pizzas, and you eat one at a time.

```
while(I have pizzas left) {  
    How many do I have left?  
    Eat one  
}
```



Demo

While Loop

```
1  let pizzasLeft = 4;  
2  while (pizzasLeft >= 1) {  
3      console.log('I have ', pizzasLeft, ' pizzas left');  
4      pizzasLeft--;  
5  }
```

While Loop

```
1  let iHavePizzas = false;  
2  while (iHavePizzas) {  
3      console.log('why doesnt this run?');  
4  }
```


While Loop

```
1  let iHavePizzas = true;
2  while (iHavePizzas) {
3      console.log('i never eat so this runs forever');
4      // (or until my computer runs out of memory)
5  }
```

While Loop

```
1  let pizzasLeft = 4;  
2  // don't get yourself in an infinite loop!  
3  while (pizzasLeft >= 1) {  
4      console.log('I have ', pizzasLeft, ' left');  
      }
```

Check for Understanding:

Write a **while** loop that logs all the odd numbers from 9 down.

SOLUTION:

```
1  let num = 9;
2
3  while (num > 0) {
4      console.log('num: ', num);
5      num -= 2;
6  }
```

For Loop

For Loop

a **for** loop requires three elements:

1. the **for** keyword
2. three optional expressions
3. block of code. Runs until the conditional evaluates to **false**

For Loop

Analogy: You make a workout regime for 5 days.



For Loop

Analogy: You make a workout regime for 5 days.

```
for( starting on day 1; until day 5; go to next day) {  
    workout  
}
```

For Loop

- **first**, initialization is run (`let i = 1`)
- **before** each iteration, condition is checked to see if true - if it is, the for loop will run another iteration (`i <= 5`)
- **after** each iteration, the third expression runs, typically incrementing the counter (`i++`)

```
for (let i = 1; i <= 5; i++) {  
    console.log('current day: ', i);  
}
```




Demo

For Loop

```
1 // loop in either direction (in this case, backward)
2 for (let i = 5; i >= 1; i--) {
3     console.log('current index: ', i);
4 }
```

For Loop

```
1 // can increment by any number (in this case, 100)
2 for (let i = 100; i <= 400; i += 100) {
3     console.log('current index: ', i);
4 }
```

For Loop

```
1 // use for loops to iterate through a string
2 let letters = 'bumfuzzle';
3 for (let i = 0; i < letters.length; i++) {
4   let currentLetter = letters[i];
5   console.log(currentLetter);
6 }
```

Check for Understanding:

Write a **for** loop that capitalizes every other letter in a string.

SOLUTION:

```
1  let str = 'supercalifragilisticexpialidocious';
2  let newStr = '';
3  for (let i = 0; i < str.length; i++) {
4      if (i % 2 === 0) {
5          newStr += str[i].toUpperCase();
6      } else {
7          newStr += str[i];
8      }
9  }
```

continue keyword

```
1 // continue causes loop to skip to the next iteration
2 let word = 'Twitter';
3 let newWord = '';
4 for (let i = 0; i < word.length; i++) {
5     if (word[i] === 'w') {
6         continue;
7     }
8     newWord += word[i];
9 }
10 console.log('newWord: ', newWord);
11
12 // continue also works in while loops
```

break keyword

```
1  // break breaks out of the loop permanently
2  let programmingLanguage = 'C';
3  while (true) {
4      programmingLanguage += '+';
5      if (programmingLanguage.length === 3) {
6          break;
7      }
8  }
9  console.log(programmingLanguage);

// break also works in for loops
```