7.5 JS Loops

fruit loops with fruits - answered by Kevin Kenneth Daus

- **Loops** can execute a block of code as long as a specified condition is true.

Keyword(s)	Description	Sample code	Console output

`while`	• Used to create a loop that repeatedly executes a block of code as long as a specified condition is `true`.	`let capacity = 10;`
		`let waterLevel = 0;`
		
		`while (waterLevel < capacity) {`
		`  waterLevel += 2;`
		`  console.log("Adding 2 units of water. Current level:" + waterLevel);`
		`}`
		
		`console.log("Bucket is full!");`
			`Adding 2 units of water. Current level: 2 units`
			`Adding 2 units of water. Current level: 4 units`
			`Adding 2 units of water. Current level: 6 units`
			`Adding 2 units of water. Current level: 8 units`
			`Adding 2 units of water. Current level: 10 units`
			`Bucket is full!`

`do`	• Used to execute a block of code first and then checks a specified condition to determine if	`let capacity = 10;`
		`let waterLevel = 0;`
		
		`do {`
		`  waterLevel += 2;`
		`  console.log(`Adding 2 units of water. Current level:"" units`);`
		`} while (waterLevel < capacity);`	

	the loop should continue executing.	`console.log("Bucket is full!");`	

`for`	• Used to create a loop that iterates over a specified range or collection of values.	`const capacity = 10;`
		`for (let waterLevel = 0; waterLevel < capacity; waterLevel += 2) {`
		`  console.log("Adding 2 units of water. Current level: "+ waterLevel + " units");`
		`}`
		`console.log("Bucket is full!");`	

`break`	• Used to immediately exit or terminate the execution of a loop or switch statement.	`let temp = 70;`
		`const desiredTemp = 95;`
		`console.log("Starting to heat the water for tea.");`
		`while (true) {`
		`  temp += 5;`
		`  console.log("Current water temperature: " + temp + "C");`
		`  if (temp >= desiredTemp) {`
		`  console.log("Water is ready. You can now brew your tea!");`
		`  break;`
		`  }`
		`}`
			`Starting to heat the water for tea. Current water temperature: 75°C Current water temperature: 80°C Current water temperature: 85°C Current water temperature: 90°C Current water temperature: 95°C Water is ready. You can now brew your tea!`

The while loop

- The `while` keyword is used to create a loop that repeatedly executes a block of code as long as a specified condition is `true`.
- In the following example, the code in the loop will run, over and over again, as long as a variable (`i`) is less than 10:

```
while (i < 10) {
  text += "The number is " + i;
```

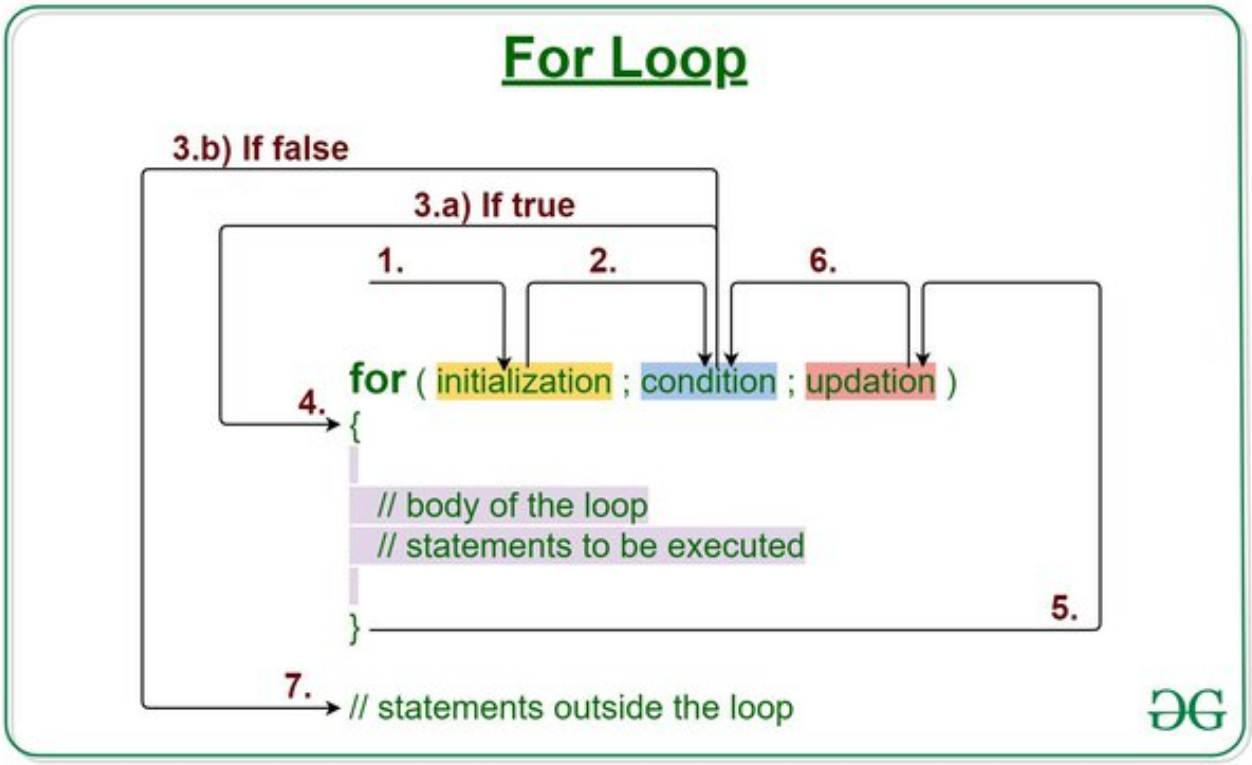
```
  i++;
}
```

The do while loop

- The `do while` loop is a variant of the while loop.
- This loop will execute the code block once, before checking if the condition is true, then it will repeat the loop as long as the condition is true.

```
do {
  text += "The number is " + i;
  i++;
}
while (i < 10);
```

The for loop



- Loops are handy, if you want to run the same code over and over again, each time with a different value.
- Often this is the case when working with arrays:
- Instead of:

```
text += cars[0] + "<br>";
text += cars[1] + "<br>";
text += cars[2] + "<br>";
```

```
text += cars[3] + "<br>";
text += cars[4] + "<br>";
text += cars[5] + "<br>";
```

- you can write:

```
for (let i = 0; i < cars.length; i++) {
  text += cars[i] + "<br>";
}
```

- The for statement creates a loop with 3 optional expressions:

```
for (let i = 0; i < 5; i++) {
  text += "The number is " + i + "<br>";
}
```

- From the example above, you can read:
  - Expression 1 (initialization statement) sets a variable before the loop starts (`let i = 0`).
  - Expression 2 (condition statement) defines the condition for the loop to run (`i` must be less than 5).
  - Expression 3 (updation statement) increases a value (`i++`) each time the code block in the loop has been executed.

Additional Material

- **Learn more**
  - W3Schools
- **Recommended watch**