the Master Course

{CODENATION}

JAVASCRIPT FUNDAMENTALS

Functions

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Learning Objectives

To understand how functions work

To write programs with functions

To write programs with all three types of functions

First Things First!

JS

Create a ticket machine for a cinema.

Write an if statement that checks the ages of cinema goers and displays the ticket prices.

- **Child (below 18): £8**
- **Adult (18+): £10.95**
- **Senior (60+): £7.50**

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Introducing Functions

... functions **break our code up** into **smaller**, **reusable** chunks!

Let's take this in...

JS

```
const pressGrindBeans = () => {

    console.log("Grinding for 20 seconds");

}

pressGrindBeans();
```

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Let's take this in...

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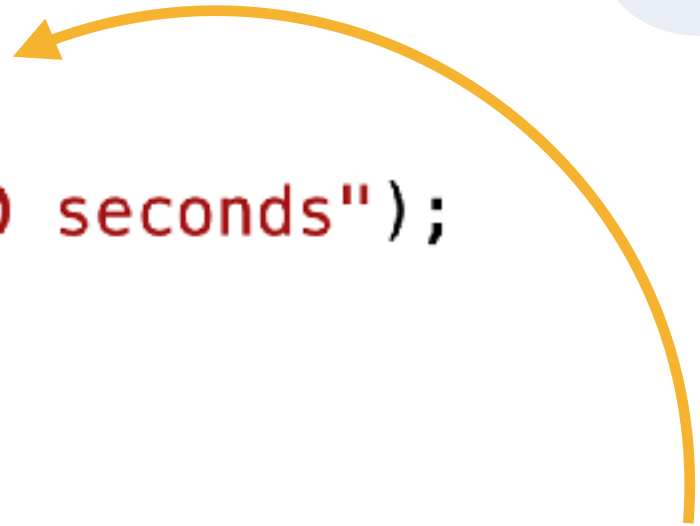
const pressGrindBeans = () => {

    console.log("Grinding for 20 seconds");

}

pressGrindBeans();
```



Declare a new function

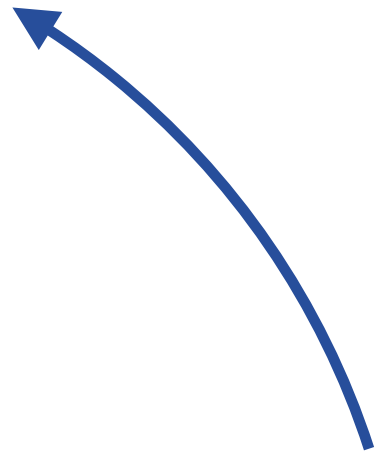
Let's take this in...

```
const pressGrindBeans = () => {

    console.log("Grinding for 20 seconds");

}

pressGrindBeans();
```



Start grinding the coffee

Let's take this in...

```
const pressGrindBeans = () => {

    console.log("Grinding for 20 seconds");

}

pressGrindBeans();
```

Runs the function pressGrindBeans

Lets level up....

... functions with **IF** statements included

Lets take this in...

```
let coffeeIsGrinding = false;

const pressGrindBeans = () => {
    if (coffeeIsGrinding) {
        console.log("Stopping the grind");
        coffeeIsGrinding = false;
    } else {
        console.log("Grinding is about to begin");
        coffeeIsGrinding = true;
    }
}

pressGrindBeans();
```

JS

Parameters

... these really make functions **tick**!

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JS

Parameters give functions flexibility

...they provide the ability for functions to act based on **data inputs!**

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Lets take this in...

```
const cashWithdrawal = (amount, accnum) => {

    console.log(`Withdrawing ${amount} from account ${accnum}`);

}

cashWithdrawal(300, 50449921);
cashWithdrawal(30, 50449921);
cashWithdrawal(200, 50447921);
```

We can use global variables in functions!

```
let accnumber = 50449921;

const cashWithdrawal = (amount, accnum) => {

    console.log(`Withdrawing ${amount} from account ${accnum}`);

}

cashWithdrawal(300, accnumber);
cashWithdrawal(30, 50449921);
cashWithdrawal(200, 50447921);
```

JS

We can also call on functions

...to do a job and **return** the result!

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Lets take this in...

```
const addUp = (num1, num2) => {
    return num1 + num2;
}

addUp(7,3);
console.log(addUp(2,5));
```

Add up two numbers and return the answer

JS

Functions might call

... on other functions and **use that to achieve its goal**. For example

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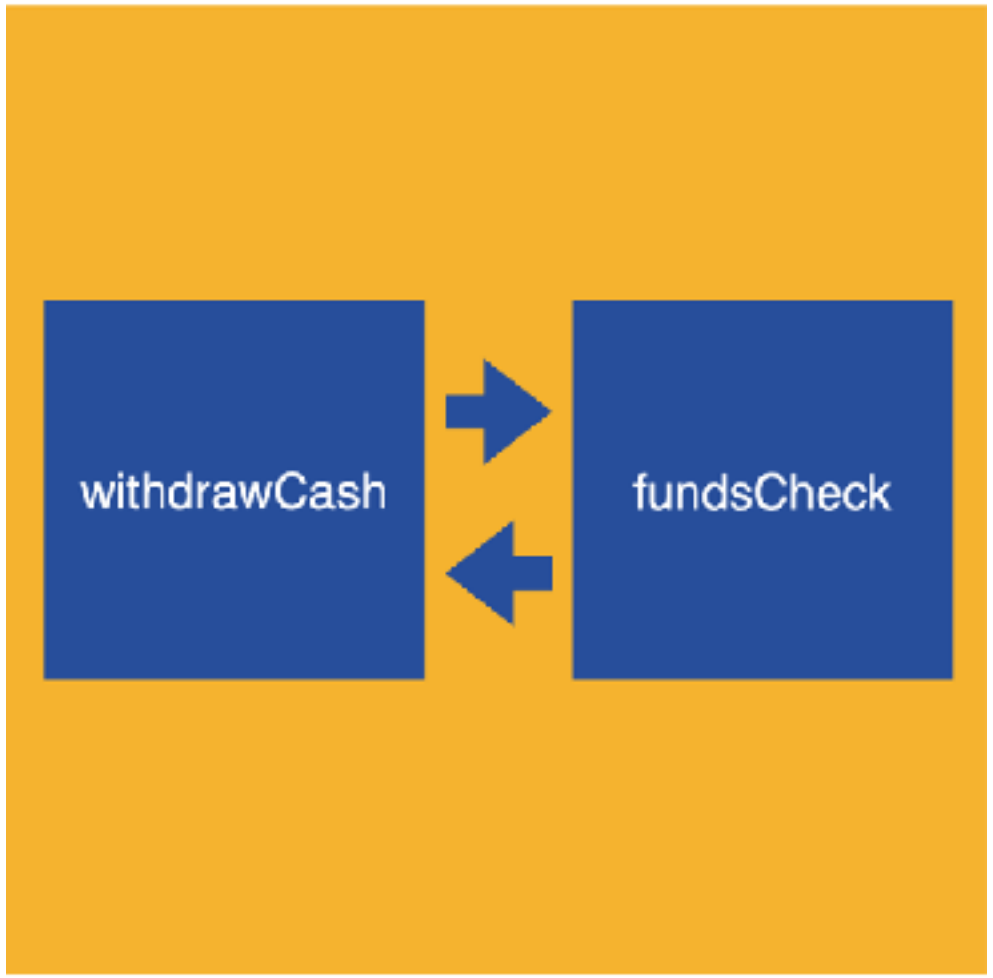

JS

Does the customer have enough funds requested?

...check and **return** result to **withdrawCash**

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An example...

```
const multiplyByNineFifths = (celsius) => {
    return celsius * (9/5);
};

const getFahrenheit = (celsius) => {
    return multiplyByNineFifths(celsius) + 32;
};

console.log("The temperature is " + getFahrenheit(15) + "°F");

// Output: The temperature is 59°F
```

Functions have so far been declared using => arrow function syntax ... it's intended to **make it less wordy!**

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There are other ways...

Function Declarations

Function Expressions

There are other ways...

Function Declarations

Function Expressions

Declaration(1):

```
function square(number) {
    return number * number;
};

square(5);

// Output: 25
```

Expression(2):

```
const square = function(number) {
    return number * number;
};

square(5);

// Output: 25
```

Expression(2):

```
const square = function(number) {
    return number * number;
};

square(5);

// Output: 25
```

Notice how we have the keyword Function but **no name?** That's why it's anonymous.

Arrow function syntax

```
const square = (number) => {
    return number * number;
};

square(5);

// Output: 25
```

Declaration

```
function square(number) {
    return number * number;
};

square(5);

// Output: 25
```

Expression/anonymous function

```
const square = function(number) {
    return number * number;
};

square(5);

// Output: 25
```

So to recap....

Functions are **written to perform a task**.

Functions **take data**, perform a **set of tasks on the data**, then **return the result.**

We can **define parameters to be used** when calling the function.

When calling a function, we can **pass in arguments**, which will **set the functions parameters.**

We can use return to return the result of a function and use it elsewhere.

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Learning Objectives

To understand how functions work

To write programs with functions

To write programs with all three types of functions

Activity 1:

Take this code and turn it into arrow function syntax:

```
function factorial (n) {
    if ((n === 0) || (n === 1)) {
        return 1;
    } else {
        return (n * factorial(n-1));
    }
}

console.log(factorial(33));
```

Activity 2:

JS

Edit the below snippet to include **two** parameters and a running order count updated when the function is called:

```
let orderCount = 0;

const takeOrder = (topping) => {
  console.log(`Pizza with ${topping}`);
  orderCount++;
}

takeOrder("pineapple");
```

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Activity 3:

JS

Cash machine time!

Let's create one that:

> Dispenses cash **if** your pin number is correct and your balance is equal to, or more than, the amount you're trying to withdraw!

Be Creative

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For this afternoon...

JS

... take a look at **Objects.**

https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Object

What are **key value** pairs?

Can you **write out some key value pairs**?

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