

JS Functions

A Fundamental Building Block

Objectives

- Understand why we use functions
- Define a function without arguments
- Define a function with arguments
- Return a value from a function

Functions

Functions let us wrap bits of code up into REUSABLE packages. They are one of the building blocks of JS.

Declare a function first:

```
function doSomething() {  
  console.log("HELLO WORLD");  
}
```

Then call it:

```
doSomething();  
doSomething();  
doSomething();  
doSomething();
```

Functions

Suppose I want to write code to sing "Twinkle Twinkle Little Star"

```
console.log("Twinkle, twinkle, little star,");  
console.log("How I wonder what you are!");  
console.log("Up above the world so high,");  
console.log("Like a diamond in the sky.");
```

To sing it again, I have to rewrite all the code. This is not DRY!

```
console.log("Twinkle, twinkle, little star,");  
console.log("How I wonder what you are!");  
console.log("Up above the world so high,");  
console.log("Like a diamond in the sky.");
```

Functions

We can write a function to help us out

```
function singSong() {  
  console.log("Twinkle, twinkle, little star,");  
  console.log("How I wonder what you are!");  
  console.log("Up above the world so high,");  
  console.log("Like a diamond in the sky.");  
}
```

To sing the song, we just need to call *singSong()*;

```
//to sing the entire song 4 times  
singSong();  
singSong();  
singSong();  
singSong();
```

Arguments

Often we want to write functions that take inputs.

```
function square(num) {  
  console.log(num * num);  
}
```

Now when we call *square* we need to pass in a value

```
square(10);    //prints 100  
square(3);     //prints 9  
square(4);     //prints 16
```

Arguments

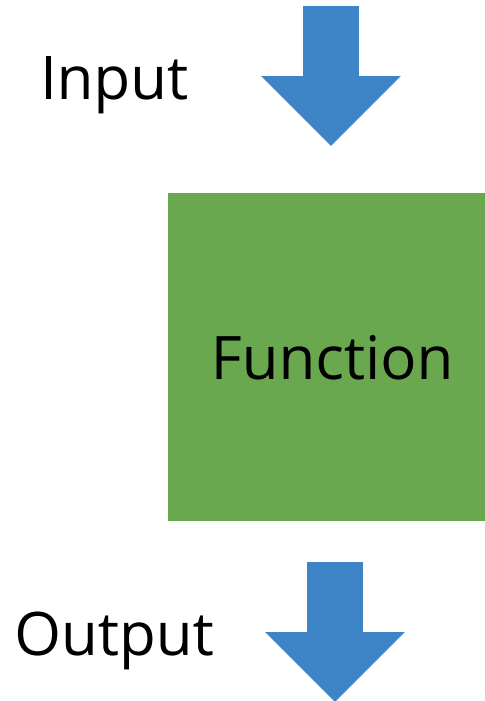
Functions can have as many arguments as needed

```
function area(length, width) {  
    console.log(length * width);  
}  
area(9,2); //18
```

```
function greet(person1, person2, person3){  
    console.log("hi " + person1);  
    console.log("hi " + person2);  
    console.log("hi " + person3);  
}  
greet("Harry", "Ron", "Hermione");
```

The Return Keyword

Often we want a function to send back an output value



The Return Keyword

We use the *return* keyword to output a value from a function

```
//this function capitalizes the first char in a string:
```

```
function capitalize(str) {  
    return str.charAt(0).toUpperCase() + str.slice(1);  
}
```

```
var city = "paris";           //"paris"  
var capital = capitalize(city); //"Paris"
```

```
//we can capture the returned value in a variable
```

The Return Keyword

The *return* keyword stops execution of a function

```
function capitalize(str) {  
  if(typeof str === "number") {  
    return "that's not a string!"  
  }  
  return str.charAt(0).toUpperCase() + str.slice(1);  
}  
  
var city = "paris";           //"paris"  
var capital = capitalize(city); //"Paris"  
  
var num = 37;  
var capital = capitalize(num); //"that's not a string!"
```

Another Syntax

Function Declaration vs. Function Expression

```
//function declaration
function capitalize(str) {
  return str.charAt(0).toUpperCase() + str.slice(1);
}
```

```
//function expression
var capitalize = function(str) {
  return str.charAt(0).toUpperCase() + str.slice(1);
}
```

Exercise

What does the following code return?

```
function test(x,y) {  
  return y - x;  
}
```

```
test(10, 40);
```

Exercise

What does the following code return?

```
function test(x) {  
  return x*2;  
  console.log(x);  
  return x/2;  
}
```

```
test(40);
```