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**GA GENERAL ASSEMBLY**

# **FUNCTIONS & OBJECTS**

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- **Review**
- **JavaScript Objects**
  - Creating Objects and attributes.
  - JSON: Saving objects in strings.
- **Functions**
  - Understand how functions take input & create output
  - Write a Function
  - Call a Function

# **REVIEW**

- Is there homework or topics you would like to review?

# **JAVASCRIPT OBJECTS**

## OBJECTS

- Objects help us to build maintainable, understandable code.
- Programming is the art of describing real world problems in code
- Objects let us model real world things in a useful way.
- Like the car.

# EXAMPLE OF AN “OBJECT”

- Person
  - Has a name, age, location
  - Can speak, eat.
- Lightbulb
  - Number of watts, brand
  - Can turn on and off

# OBJECTS – FORMAL DEFINITION

- An “object” in computer science is a collection of data and functions that work with that data.
- Objects allow us to organize similar data effectively

# JAVASCRIPT OBJECTS – SYNTAX

Empty object      `{}`

Person Object      `var person = {  
    age: 20,  
    name: "Kevin Bacon"  
};`



# SYNTAX OF THE “KEY: VALUE” PAIRS

```
{key: "Value"}
```

# SYNTAX OF THE “KEY: VALUE” PAIRS

```
{  
  age: 20,  
  name: "Kevin Bacon"  
  Profession: "Actor"  
};
```

## SYNTAX OF THE “KEY: VALUE” PAIRS

Objects start and end with  
{ } brackets



```
{name: "Kevin Bacon"}
```

# SYNTAX OF THE “KEY: VALUE” PAIRS

The key is similar to  
a variable name.




```
{name: "Beyonce Knowles"}
```

# SYNTAX OF THE “KEY: VALUE” PAIRS

```
{name: "Beyonce Knowles"}
```

The value can be anything!  
String, number, boolean..  
even function or another  
object!



## SYNTAX OF THE “KEY: VALUE” PAIRS

```
{name: "Beyonce Knowles", age: 20};
```

Multiple key/value pairs are separated by commas, like array values.



## INDEX METHOD - ACCESSING DATA

Creating

```
var test = {a: "hi"};
```

Accessing

```
test["a"];  
// returns "hi"
```

Assigning

```
test["a"] = "bye";  
// test["a"] now  
stores "bye"
```

## DOT METHOD – ACCESSING OBJECTS

Creating

```
var test = {a: "hi"};
```

Accessing

```
test.a;  
// returns "hi"
```

Assigning

```
test.a = "bye";  
// test["a"] now  
stores "bye"
```



## CAR EXAMPLE

```
var car = {  
  make: "Ford",  
  model: "Focus",  
  year: 2013,  
  mileage: 89000  
}
```

## CODE ALONG

Code\_Along\_Objects

## JSON

- JavaScript Object Notation
  - Way of representing objects we create as “Strings”
  - Safe way of saving objects, and passing them between places
- 
- Things like Facebook and Twitter use JSON to pass data around.
    - When you tweet, JSON is sent to the twitter servers

## SYNTAX - JSON

Normal Object      {name: "John Smith"}

JSON

'{"name": "John Smith"}'



It's a string!

# JSON – TURNING OBJECTS INTO JSON

```
JSON.stringify(obj);  
// turns objects into JSON strings
```

```
JSON.parse(string);  
// turns JSON strings into objects
```

# LAB TIME

Exercise JSON

# **FUNCTIONS**

# FUNCTIONS

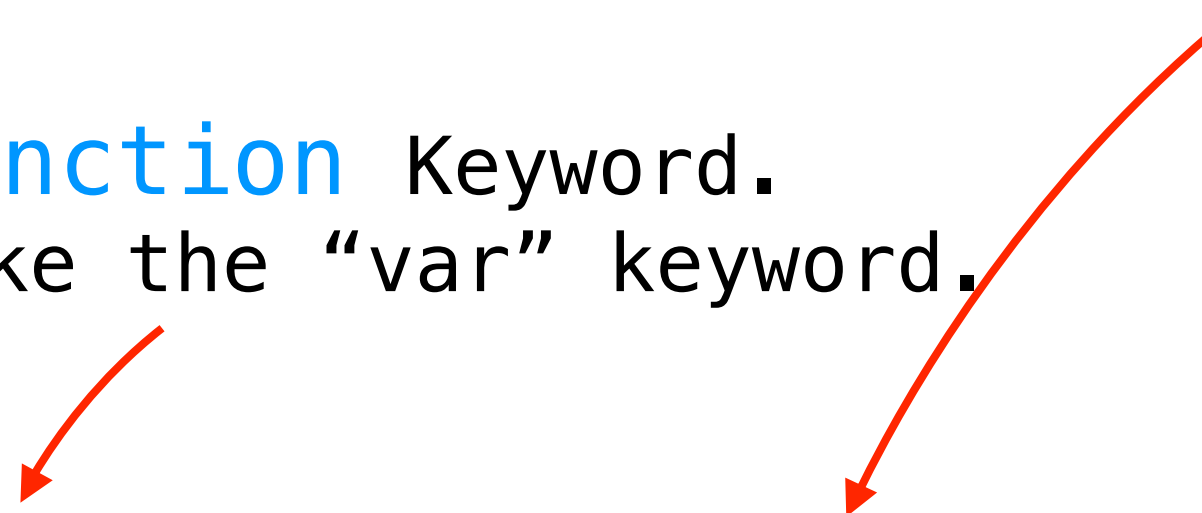
- Functions are ways to save little bits of behaviour.
- If you find you're doing something similar with lots of different bits of data, write a function.
- DRY - Don't repeat yourself. This is really important.
- For instance, a function for deposit and withdrawal in the ATM code.



# FUNCTIONS – SYNTAX

`function` Keyword.  
Like the “var” keyword.

The name of your  
function



```
function functionName(arg1, arg2) {  
    //Body of function  
}
```

# FUNCTIONS - SYNTAX

Arguments let you pass data into the function

```
function functionName(arg1, arg2) {  
    //Body of function  
}
```

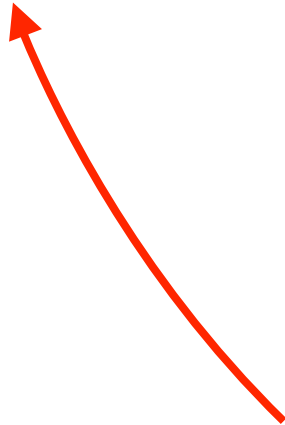


The functions executed code goes between the { } brackets. Much like an “if” statement.

# FUNCTIONS - EXAMPLE

```
function helloWorld() {  
    console.log("Hello Functions");  
}
```

```
helloWorld(); //Prints "Hello Functions to the  
console.
```



The brackets execute the function.  
Try calling the function without  
them to see what happens.

# FUNCTIONS – EXAMPLE

```
function addAndPrint(num1, num2) {  
    var sum = num1 + num2;  
    console.log(sum);  
}
```

```
addAndPrint(1, 2); // Result is 3
```

```
addAndPrint(8, 2); // Result is 10
```

# CODE ALONG

- Code\_Along\_Functions

# RETURNING DATA FROM FUNCTIONS

- What if we want to use the data the function creates?
- The “return” method allows us to do that.

# FUNCTIONS – EXAMPLE

```
function add(num1, num2) {  
    var sum = num1 + num2;  
    return sum;  
}
```

add(1, 2); // 3 is the result

```
var answer = add(20, 10);
```

# ORGANIZING FUNCTIONS

- Keep all your functions together in code.
- You can create a 'functions.js' file if you need (or like).
- When using `$(document).ready( )` it's very useful to 'namespace' our functions.



# ORGANIZING FUNCTIONS

```
ATM = {  
  createAccount: function(name, balance) {  
    account = {name: name, balance: balance, createdAt: Date.now()}  
    return account;  
  },  
  withdraw: function(account, amount) {  
    account.balance = account.balance - amount;  
    return account;  
  },  
  deposit: function(account, amount) {  
    account.balance = account.balance + amount;  
    return account;  
  }  
}
```

```
felixAccount = ATM.createAccount('Felix', '1000');  
felixAccount = ATM.withdraw(felixAccount, 100);  
felixAccount = ATM.deposit(felixAccount, 500);  
console.log(felixAccount.balance);
```

# LAB TIME

- Exercise\_Return\_Functions
- ATM\_Functions



**GENERAL ASSEMBLY**

