

# JSON

and a wee bit of JavaScript



# Javascript

- **client-side** script language of choice
- used to manipulate the **DOM**
- and make **asynchronous** HTTP requests
- gaining popularity as **server-side** scripting language (with Node.js)
- and general-purpose scripting



# variables in Javascript

- similar to PHP



# variable assignment

console

output

```
var sum = 1 + 2;  
console.log(sum);  
sum = 4 + 5;  
console.log(sum);  
sum = sum + sum;
```



# variable assignment and use

console

output

➔  
`var sum = 1 + 2;  
console.log(sum);  
sum = 4 + 5;  
console.log(sum);  
sum = sum + sum;`



note! doesn't exist until after 1st statement!



# variable assignment and use

console

3

output


→  
var sum = 1 + 2;  
console.log(sum);  
sum = 4 + 5;  
console.log(sum);  
sum = sum + sum;





# variable assignment and use

console

 `var sum = 1 + 2;  
console.log(sum);  
sum = 4 + 5;  
console.log(sum);  
sum = sum + sum;`

3



output

3



# variable assignment and use

console

```
var sum = 1 + 2;  
console.log(sum);  
sum = 4 + 5;  
→ console.log(sum);  
sum = sum + sum;
```

9



output

3



# variable assignment and use

console

```
var sum = 1 + 2;  
console.log(sum);  
sum = 4 + 5;  
console.log(sum);  
➔ sum = sum + sum;
```

9



output

3

9



# variable assignment and use

console

```
var sum = 1 + 2;  
console.log(sum);  
sum = 4 + 5;  
console.log(sum);  
sum = sum + sum;
```

18



output

3  
9





# linear arrays in Javascript

```
var pickleNames = [  
  'Gherkin',  
  'Polish',  
  'Hungarian',  
  'Swedish'  
];
```





# accessing arrays

```
var pickleNames = [  
[0]   'Gherkin',  
[1]   'Polish',  
[2]   'Hungarian',  
[3]   'Swedish'  
];
```

```
console.log(pickleNames[2]);
```

← zero-based index



# adding to a JS array

```
var pickleNames = [  
  'Gherkin',  
  'Polish',  
  'Hungarian',  
  'Swedish'  
];  
pickleNames.push('Kosher Dill');
```



refers to the “stack” data structure



# other array operations

- [https://developer.mozilla.org/en-US/docs/JavaScript/Reference/Global\\_Objects/Array](https://developer.mozilla.org/en-US/docs/JavaScript/Reference/Global_Objects/Array)



# “associative arrays” in Javascript

- Javascript’s equivalent to an associative array is called a “hash” or “plain object” or just “object”
- use is similar to PHP



# JS hashes

```
var pickleOrigins = {  
  Gherkin: 'West Indian',  
  Polish: 'Poland',  
  Hungarian: 'Hungary',  
  Swedish: 'Sweden',  
  'Kosher Dill': 'Germany'  
};
```

properties

values



# JS hashes

```
var pickleOrigins = {  
  Gherkin: 'West Indian',  
  Polish: 'Poland',  
  Hungarian: 'Hungary',  
  Swedish: 'Sweden',  
  'Kosher Dill': 'Germany',  
};
```

quotes necessary for  
properties  
with spaces

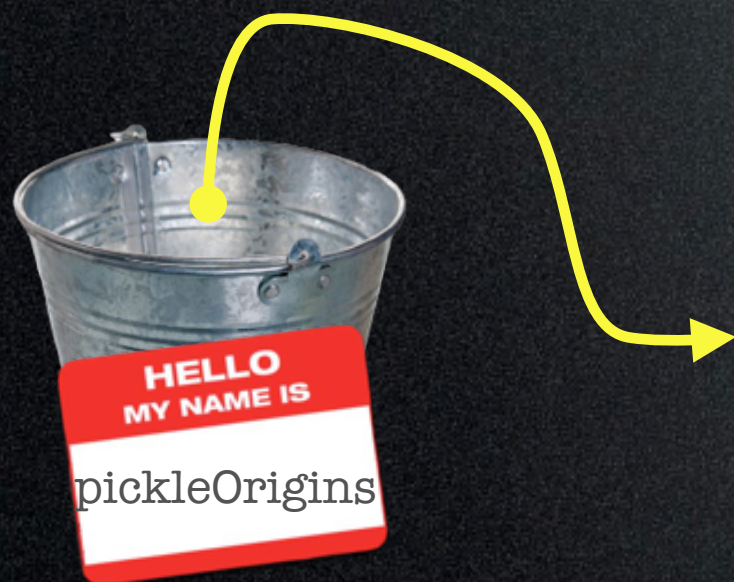
properties

values



# JS hashes

```
var pickleOrigins = {  
  Gherkin: 'West Indian',  
  Polish: 'Poland',  
  Hungarian: 'Hungary',  
  Swedish: 'Sweden',  
  'Kosher Dill': 'Germany'  
};
```



"Gherkin"	"Polish"	"Hungarian"	"Swedish"	"Kosher Dill"
"West Indian" 	"Poland" 	"Hungary" 	"Sweden" 	"Germany" 



# accessing hashes

```
var pickleOrigins = {  
  Gherkin: 'West Indian',  
  Polish: 'Poland',  
  Hungarian: 'Hungary',  
  Swedish: 'Sweden'  
};  
  
console.log(pickleOrigins['Polish']);  
console.log(pickleOrigins.Polish);  
pickleOrigins.Gherkin = 'Alaska';  
pickleOrigins['Kosher Dill'] = 'Germany';
```



# JSON

- Javascript Object Notation
- combination of arrays and hashes, arbitrarily nested
- concise, easy to understand
- very popular, very useful



# JSON

```
var users = [  
  {  
    'username': 'eric',  
    'firstName': 'Eric',  
    'lastName': 'Miller',  
    'email': 'eric@patternleaf.com'  
  },  
  {  
    'username': 'fred',  
    'firstName': 'Fred',  
    'lastName': 'Miller',  
    'email': 'fred@patternleaf.com'  
  },  
  {...},  
  {...}  
];
```



# JSON

```
var users = [  
  {  
    'username': 'eric',  
    'firstName': 'Eric',  
    'lastName': 'Miller',  
    'email': 'eric@patternleaf.com'  
  },  
  {  
    'username': 'fred',  
    'firstName': 'Fred',  
    'lastName': 'Miller',  
    'email': 'fred@patternleaf.com'  
  },  
  {...},  
  {...}  
];
```

← open array

← each item in array is an object

← close array



# JSON data access

```
var users = [  
  {  
    'username': 'eric',  
    'firstName': 'Eric',  
    'lastName': 'Miller',  
    'email': 'eric@patternleaf.com'  
  },  
  {  
    'username': 'fred',  
    'firstName': 'Fred',  
    'lastName': 'Miller',  
    'email': 'fred@patternleaf.com'  
  },  
  {...},  
  {...}  
];
```

```
console.log(users[0].username);  
console.log(users[1].firstName);  
console.log(users[1]['email']);
```



# exercise

- what would the data format for our guestbook be in JSON?



# Assignment

- convert guestbook from storing HTML markup to storing JSON data
- useful PHP functions:
  - `json_encode`
  - `json_decode`