Modules

Javascript Modules

- To structure an application coherently, the backend consists of separate Javascript files.
- Objects declared in these files must be
  - exported by one file
  - imported by another
- In order to keep each module focused on a specific responsibility

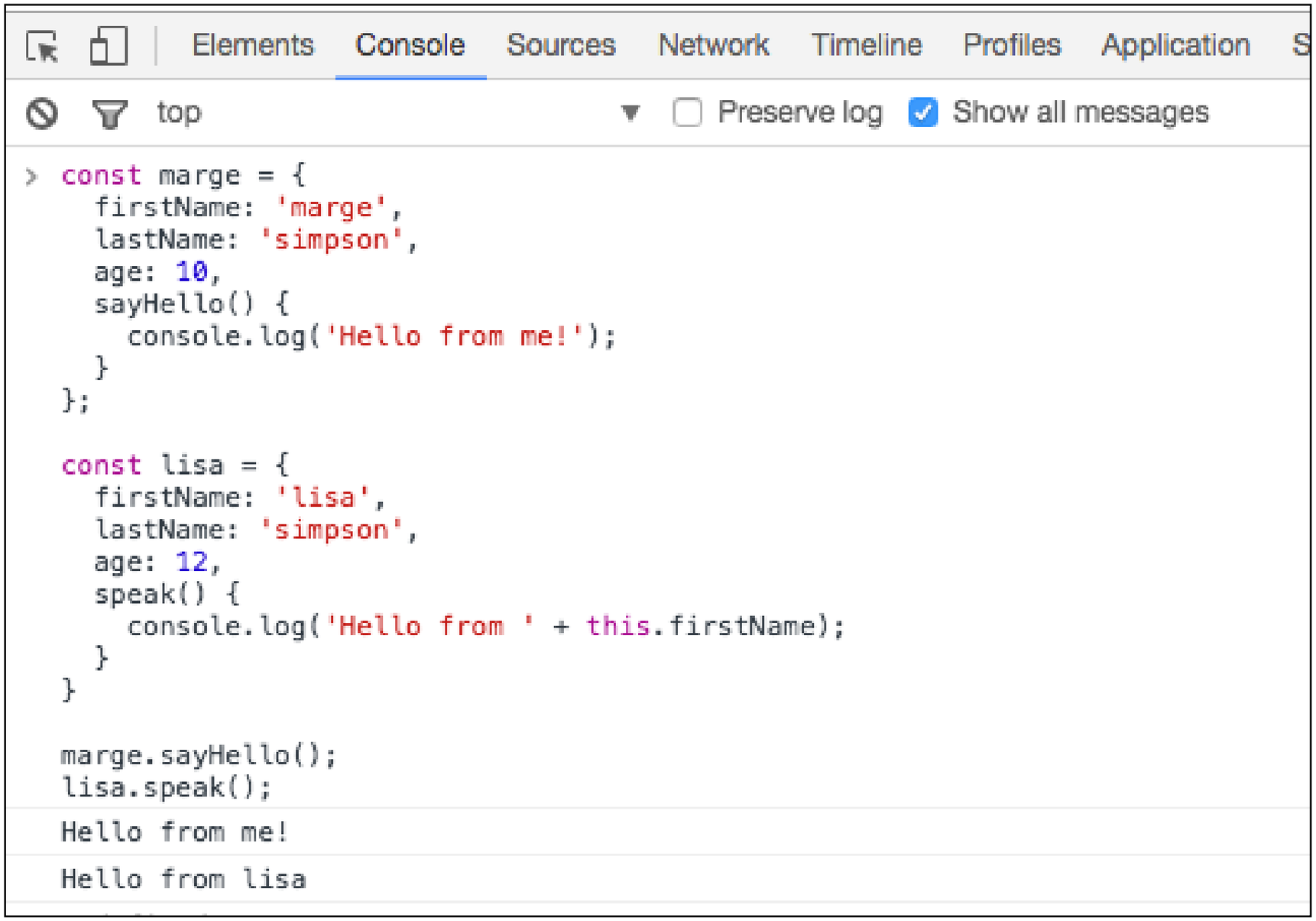
Example

- 2 separate objects defined in a single file
- Methods called on these objects at the end of the file

standalone.js

```
const marge = {
  firstName: 'marge',
  lastName: 'simpson',
  age: 10,
  sayHello() {
    console.log('Hello from me!');
  }
};

const lisa = {
  firstName: 'lisa',
  lastName: 'simpson',
  age: 12,
  speak() {
    console.log('Hello from ' + this.firstName);
  }
}

marge.sayHello();
lisa.speak();
```

In Chrome JS Console



Modularise the Program

standalone.js

```
const marge = {
  firstName: 'marge',
  lastName: 'simpson',
  age: 10,
  sayHello() {
    console.log('Hello from me!');
  }
};

const lisa = {
  firstName: 'lisa',
  lastName: 'simpson',
  age: 12,
  speak() {
    console.log('Hello from ‘
                + this.firstName);
  }
}

marge.sayHello();
lisa.speak();
```

marge.js

```
const marge = {
  firstName: 'marge',
  lastName: 'simpson',
  age: 10,
  sayHello() {
    console.log('Hello from me!');
  }
};
```

lisa.js

```
const lisa = {
  firstName: 'lisa',
  lastName: 'simpson',
  age: 12,
  speak() {
    console.log('Hello from ‘
                + this.firstName);
  }
}
```

main.js

```
marge.sayHello();
lisa.speak();
```

http://requirejs.org/

A JAVASCRIPT
MODULE LOADER

Home .....

Start .....
Download .....
API .....
Optimization .....

Use with jQuery .....
Use with Node .....
Use with Dojo .....
CommonJS Notes .....

FAQs .....
Common Errors .....
Writing Plugins .....

Why Web Modules .....
Why AMD .....
Requirements .....
History .....

```
/* ---

RequireJS is a JavaScript file and module loader.
It is optimized for in-browser use, but it can be
used in other JavaScript environments, like Rhino
and Node. Using a modular script loader like
RequireJS will improve the speed and quality of
your code.

IE 6+ ..... compatible ✔
Firefox 2+ ..... compatible ✔
Safari 3.2+ .... compatible ✔
Chrome 3+ ..... compatible ✔
Opera 10+ ..... compatible ✔

Get started then check out the API.

--- */
```

Modularise the Program

- These three modules:
  - marge.js
  - lisa.js
  - main.js
- Are completely separate.
- main.js cannot use marge or lisa objects

marge.js

```
const marge = {
  firstName: 'marge',
  lastName: 'simpson',
  age: 10,
  sayHello() {
    console.log('Hello from me!');
  }
};
```

lisa.js

```
const lisa = {
  firstName: 'lisa',
  lastName: 'simpson',
  age: 12,
  speak() {
    console.log('Hello from ‘
                + this.firstName);
  }
}
```

main.js

```
marge.sayHello();
lisa.speak();
```

module.exports

module.exports makes the listed object available to other modules

marge.js

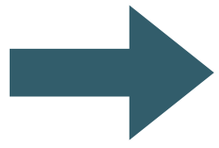
```
const marge = {
  firstName: 'marge',
  lastName: 'simpson',
  age: 10,
  sayHello() {
    console.log('Hello from me!');
  }
};

module.exports = marge;
```

lisa.js

```
const lisa = {
  firstName: 'lisa',
  lastName: 'simpson',
  age: 12,
  speak() {
    console.log('Hello from '
                + this.firstName);
  }
}

module.exports = lisa;
```

require

require identifies and imports objects defined in other modules



marge.js

```
const marge = {
  firstName: 'marge',
  lastName: 'simpson',
  age: 10,
  sayHello() {
    console.log('Hello from me!');
  }
};

module.exports = marge;
```

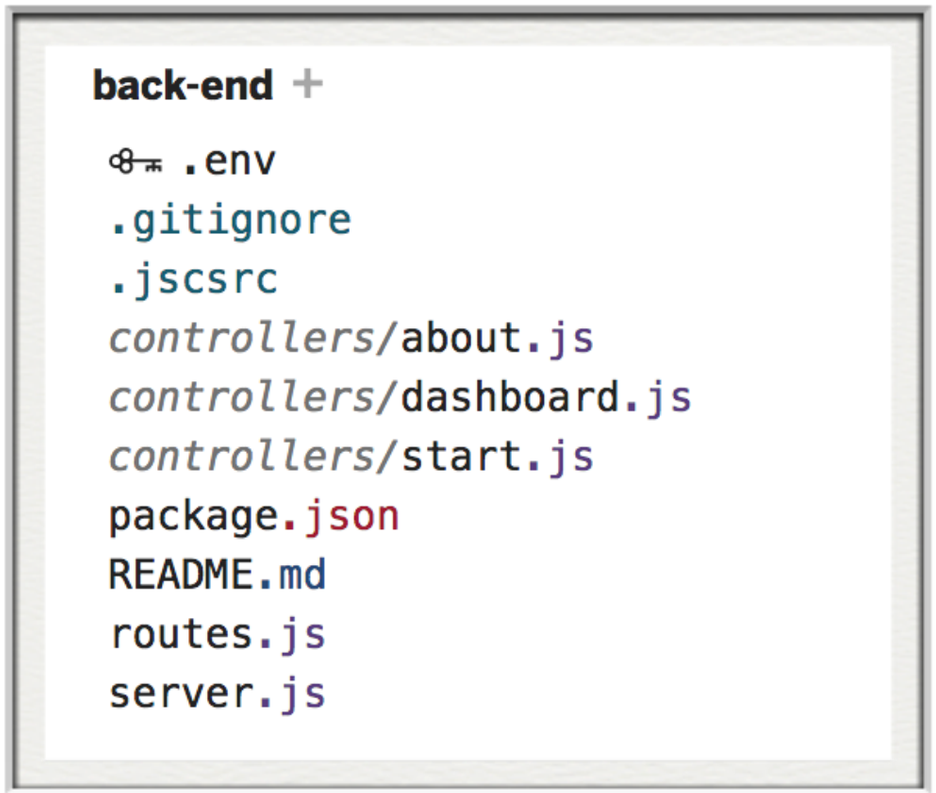
lisa.js

```
const lisa = {
  firstName: 'lisa',
  lastName: 'simpson',
  age: 12,
  speak() {
    console.log('Hello from '
                + this.firstName);
  }
}

module.exports = lisa;
```

main.js

```
const marge = require('./marge.js');
const lisa = require('./lisa.js');

marge.sayHello();
lisa.speak();
```

Modules in back-end - Example



- Each of these modules will use export and require to establish dependencies

- 5 separate modules
- server.js
- routes.js
- controllers
  - about.js
  - dashboard.js
  - start.js