

# Modules

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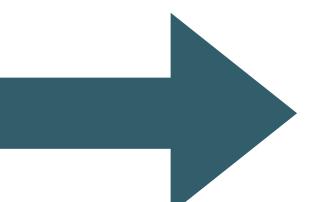
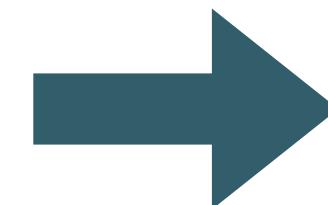
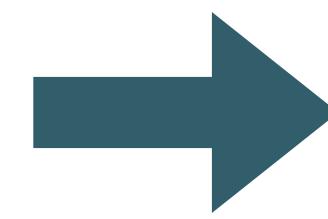
# Javascript Modules

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



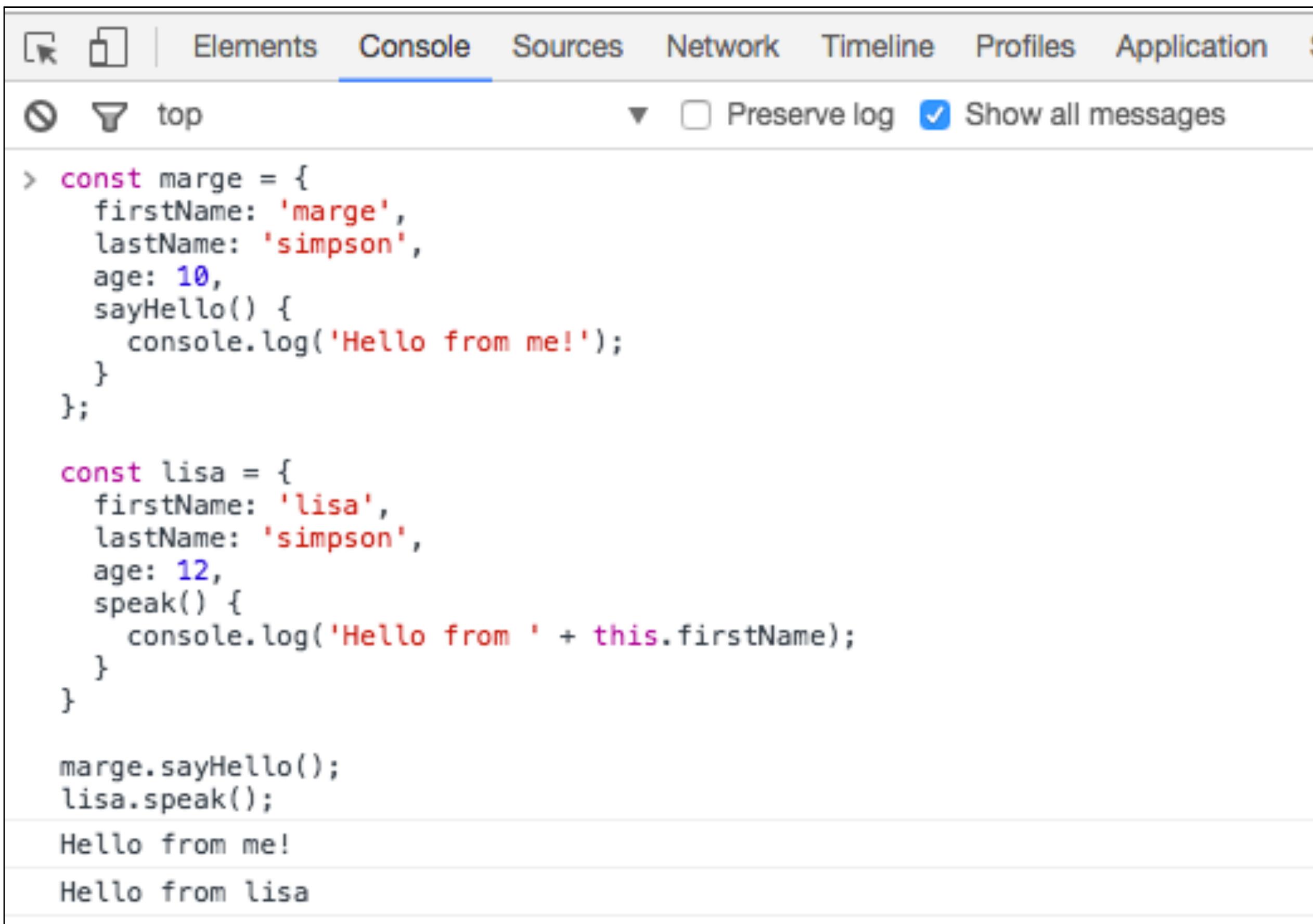
standalone.js

```
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



The screenshot shows the Chrome DevTools interface with the 'Console' tab selected. The console output window displays the following code and its execution results:

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

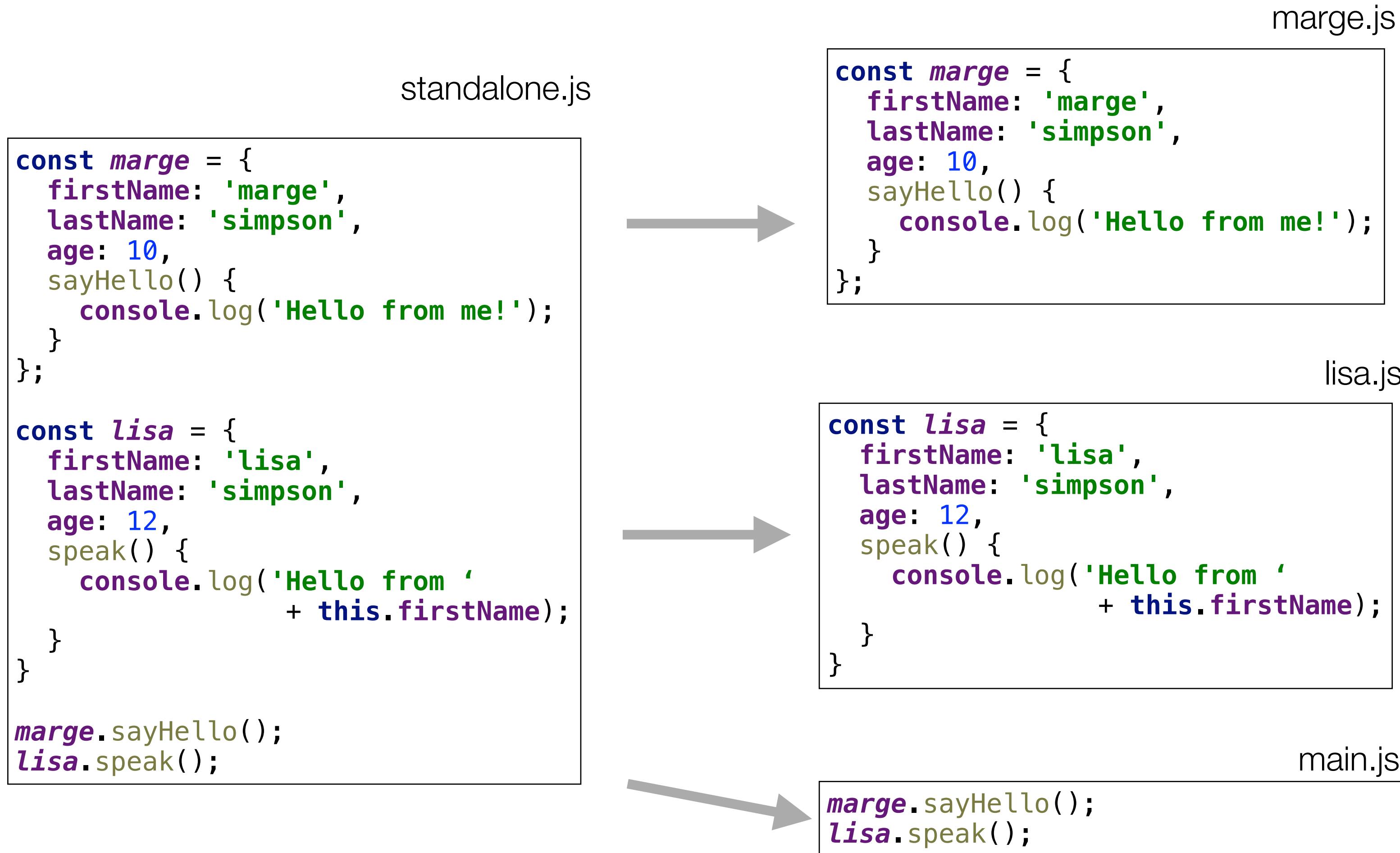
const lisa = {
  firstName: 'lisa',
  lastName: 'simpson',
  age: 12,
  speak() {
    console.log('Hello from ' + this.firstName);
  }
}

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

Hello from me!
Hello from lisa
```

The code defines two objects, `marge` and `lisa`, each with properties `firstName`, `lastName`, and `age`, and methods `sayHello` and `speak`. The `sayHello` method logs a message to the console, and the `speak` method logs a message using `this.firstName`. When the code is run in the console, it outputs the results of each method call.

# Modularise the Program



# <http://requirejs.org/>

The screenshot shows the official website for RequireJS. On the left side, there is a sidebar with the title "REQUIREJS" at the top, followed by a blue and red target icon. Below the icon, the text "A JAVASCRIPT MODULE LOADER" is displayed. A horizontal arrow points from the text to the right. The sidebar contains a list of links with icons:

- 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 .....

The main content area on the right starts with a multi-line comment block:

```
/* ---  
 * ---
```

Below this, the text reads:

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.

Following this, there is a table of browser compatibility:

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

At the bottom of the page, there is a call to action:

[Get started](#) then check out the [API](#).

At the very bottom, another multi-line comment block is present:

```
--- */
```

# Modularise the Program

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

marge.js

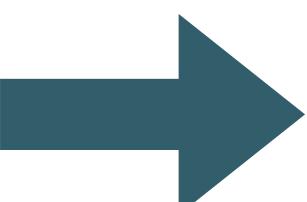
```
const marge = {
  firstName: 'marge',
  lastName: 'simpson',
  age: 10,
  sayHello() {
    console.log('Hello from me!');
  }
};
```

lisa.js

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

main.js

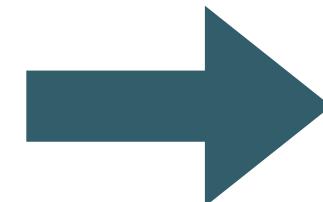
```
marge.sayHello();
lisa.speak();
```



# module.exports

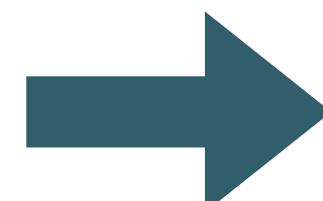
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**module.exports** makes  
the listed object available  
to other modules



```
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

marge.js

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

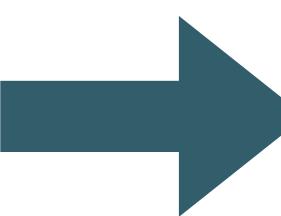
module.exports = marge;
```

lisa.js

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

module.exports = lisa;
```

**require** identifies and  
imports objects defined in  
other modules



main.js

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

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

# Modules in back-end - Example

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```
├── .env
├── .gitignore
├── .jscsrc
├── controllers/about.js
├── controllers/dashboard.js
├── package.json
├── README.md
├── routes.js
└── server.js
    └── utils/logger.js
```

- 5 separate modules
  - sever.js
  - routes.js
  - controllers
    - about.js
    - dashboard.js
- Each of these modules will use export and require to establish dependencies