

Getting Started with Node.js

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Outline

- An overview of Node.js
- Building and installing Node.js
- Developing for Node with Cloud9 IDE
- An introduction to Node's event loop
- Writing code with callbacks

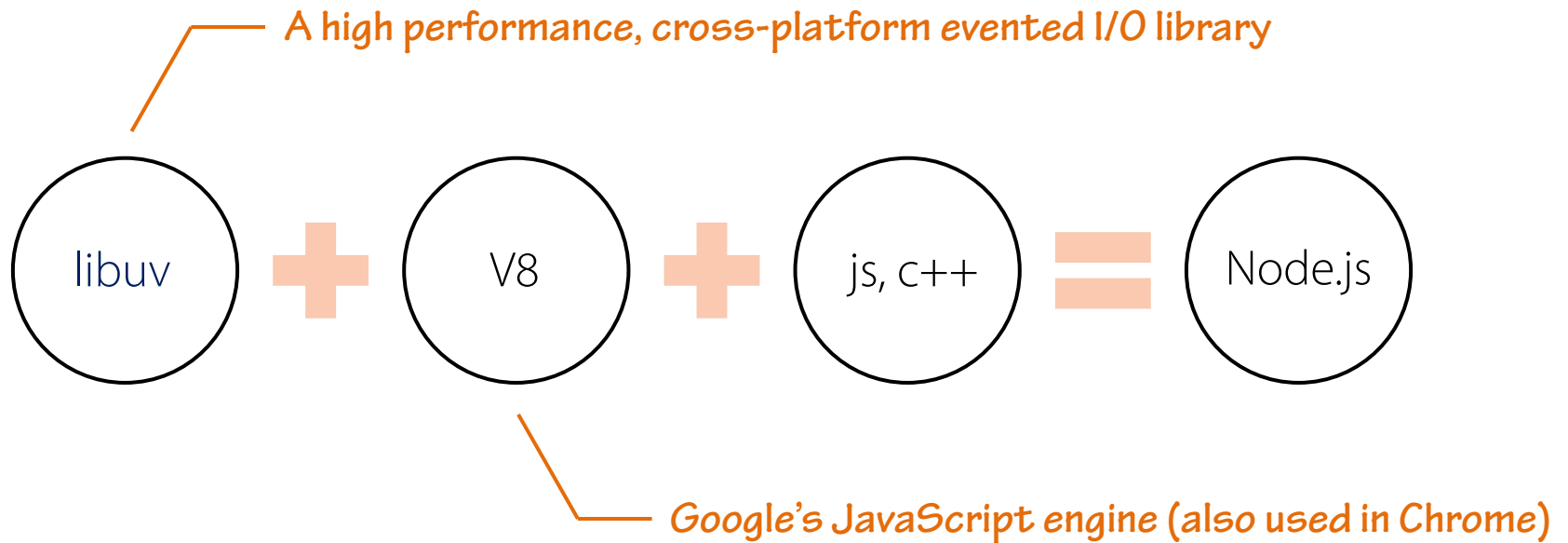
Node.js background

The screenshot shows a video player interface with a browser window in the center. The browser window displays the GitHub 'Popular Starred Repositories' page. The 'node' repository is highlighted with an orange circle. To the left, a portion of a video frame is visible, showing a person's name and a partial image. At the bottom, a video player control bar shows the time 00:26 / 48:32.

Popular Starred Repositories

Repository	Language	Stars	Forks
bootstrap Sleek, intuitive, and powerful front-end framework for faster and easier web development. Last updated 17 hours ago	JavaScript	40,950	10,390
node evented I/O for v8 javascript Last updated 16 hours ago	JavaScript	18,924	2,877
jquery jQuery JavaScript Library Last updated 21 hours ago	JavaScript	17,716	2,672
html5-boilerplate A professional front-end template for building fast, robust, and adaptable web apps or sites. Last updated 6 days ago	JavaScript	16,718	3,215
rails Ruby on Rails Last updated 14 minutes ago	Ruby	16,639	4,314

Node.js Building Blocks



Getting Node.js

<http://nodejs.org/download/>

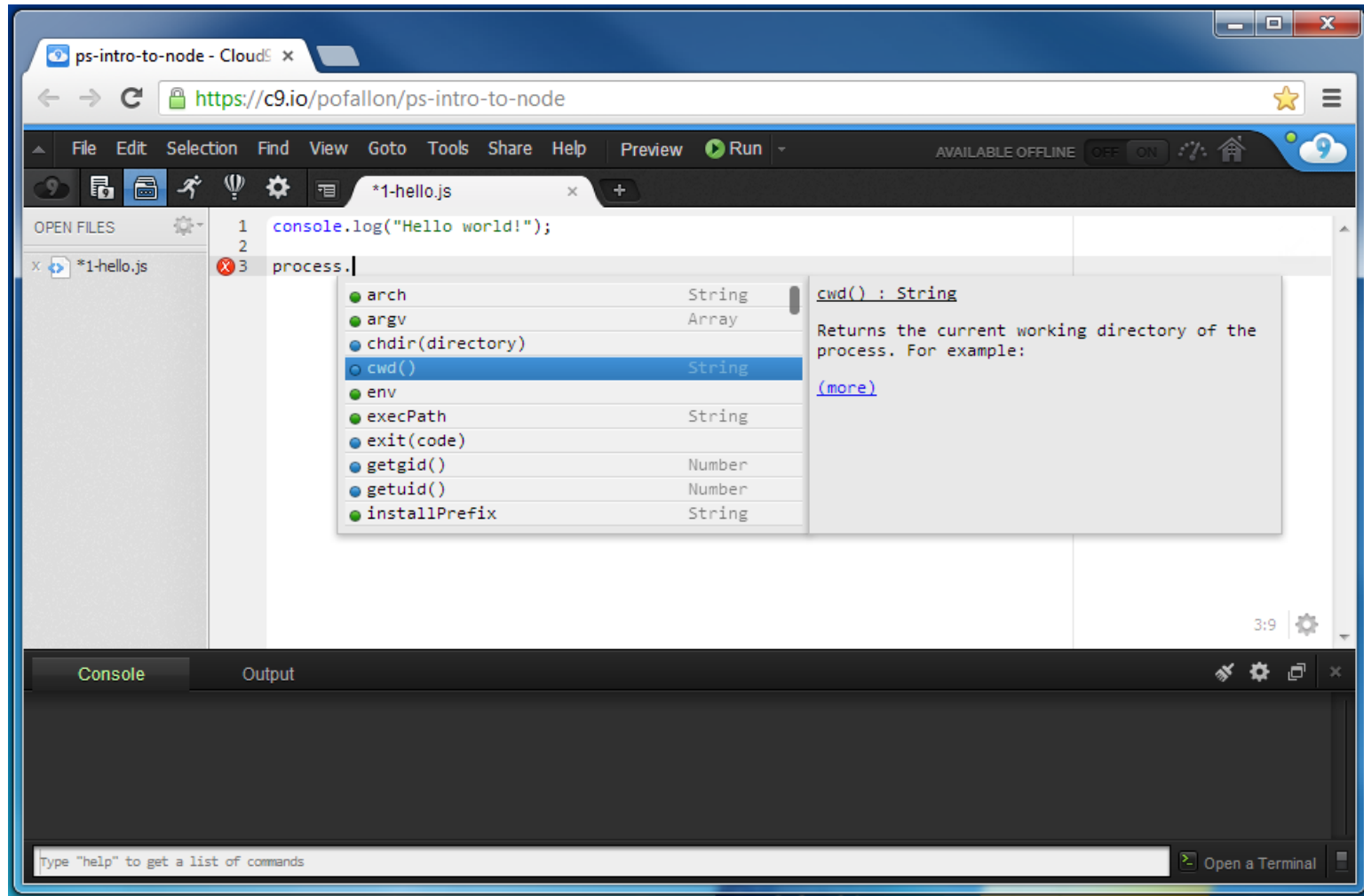
- **Installers available for Windows & Mac OS X**
- **Binaries available for Windows, Mac, Linux and SunOS**
 - Also available via many Linux package managers
- **Source code also available**

Manage multiple versions with 'nvm' (<https://github.com/creationix/nvm>)

- `git clone git://github.com/creationix/nvm.git ~/nvm`
- `. ~/nvm/nvm.sh`
- `nvm install 0.8.14`
- `nvm use 0.6.19`
- `nvm alias default 0.8.14`



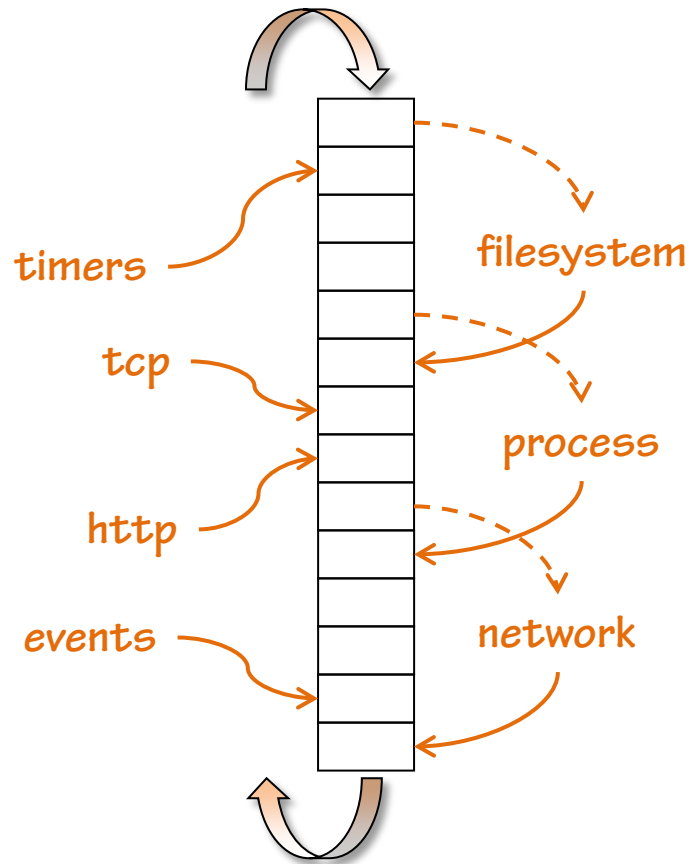
Cloud9 IDE



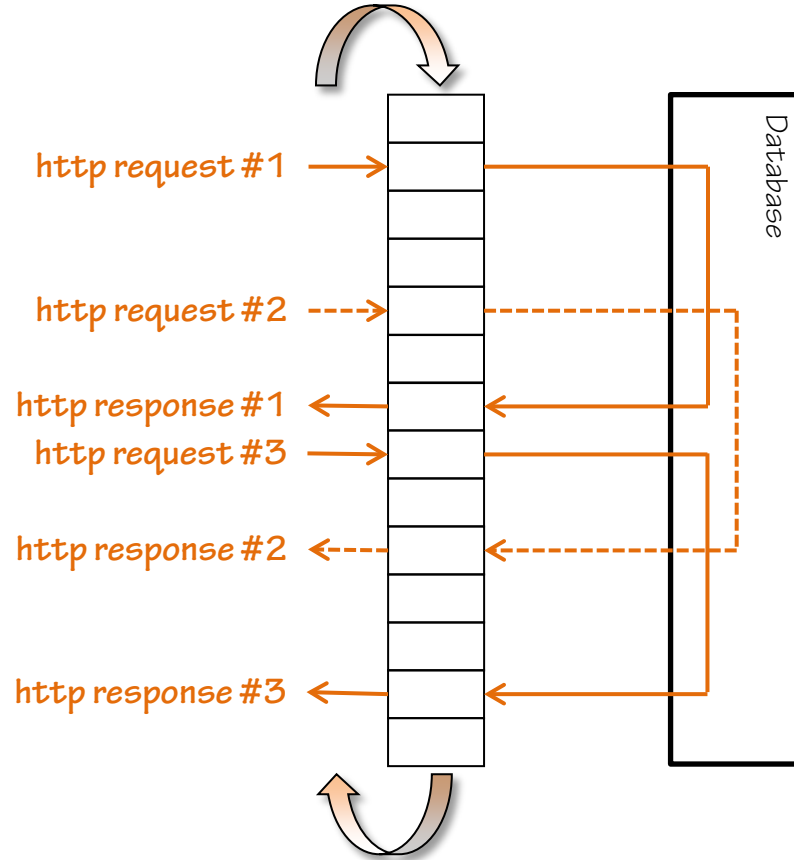
<http://c9.io>



Node's Event Loop



What does this mean in practice?





Writing asynchronous code is different

A typical approach

```
var conn = getDbConnection(connectionString);
var stmt = conn.createStatement();
var results = stmt.executeQuery(sqlQuery);
for (var i=0; i<results.length; i++) {
    // print results[i];
}
```

An asynchronous, “non-blocking” approach

```
getDbConnection(connectionString, function(err, conn) {
    conn.createStatement(function(err, stmt) {
        var results = stmt.executeQuery(sqlQuery);
        results.on('row', function(result) {
            // print result
        });
    });
});
```

callbacks

EventEmitter

Coding for asynchrony with callbacks

Asynchronous functions with callbacks

② Error is first parameter to callback function



```
var handleResults = function(error, results) {  
    // if error is undefined..  
    // do something with the results  
}
```

```
getStuff(inputParam, handleResults);
```

① Callback is last parameter in async function call



Anonymous Functions and Closures

For simple callbacks, anonymous functions are more common

```
getStuff(inputParam, function(error, results) {  
    // if error is undefined..  
    // do something with the results  
});
```

... and closures are your friend!

```
someOtherFunction(function(err, stuffToGet) {  
    var foo = 23;  
    getStuff(stuffToGet, function(error, results) {  
        // if error is undefined..  
        // do something with the results (and foo)  
    });  
});
```



Too much of a good thing...

Beware of the “Christmas tree” effect!



```
asyncFunction1(inputParam, function(err, results1) {  
  asyncFunction2(results1, function (err, results2) {  
    asyncFunction3(results2, function (err, results3) {  
      asyncFunction4(results3, function (err, results4) {  
        asyncFunction5(results4, function (err, results5) {  
          // and so on...  
        });  
      });  
    });  
  });  
});
```


Conclusion

- Overview of Node.js and its beginnings
- Installing Node.js and using nvm to manage versions
- Introduction to Cloud9 IDE
- The importance of Node's event loop and non-blocking I/O
- Writing asynchronous code using callbacks



References

- Ryan Dahl's original JSConf.eu presentation (YouTube):
<http://www.youtube.com/watch?v=ztspvPYybIY>
- An introduction to libuv -
<http://nikhilm.github.com/uvbook/introduction.html>
- V8 JavaScript Engine (Google Project Hosting):
<http://code.google.com/p/v8/>
- Installing Node via a package manager:
<https://github.com/joyent/node/wiki/Installing-Node.js-via-package-manager>
- How to JavaScript closures work?
<http://stackoverflow.com/questions/111102/how-do-javascript-closures-work>