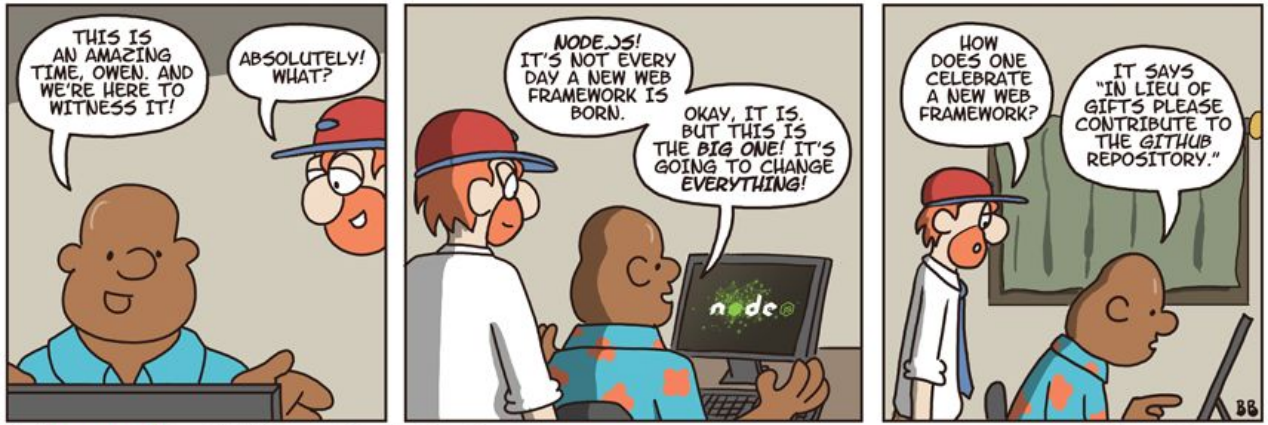
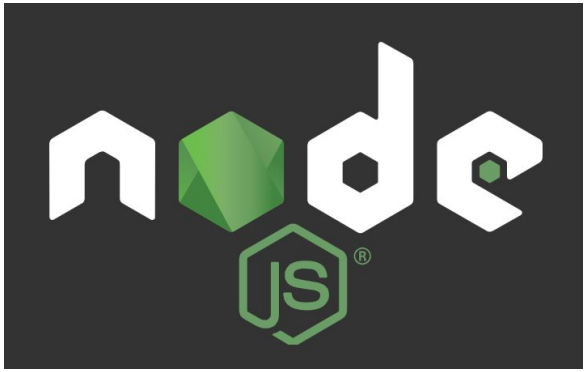


CSc 337
Nodejs

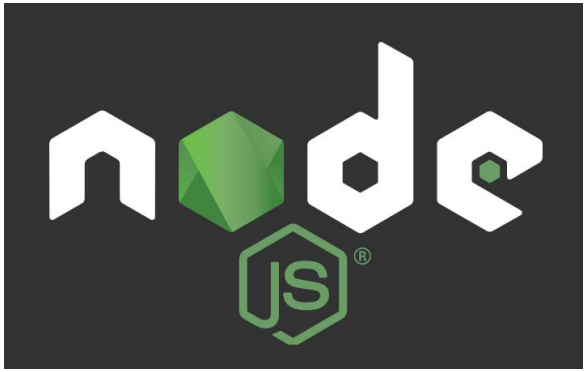
Benjamin Dicken

What is Nodejs ?

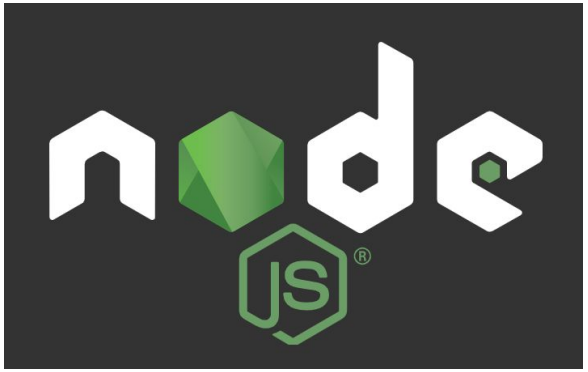


- Javascript Runtime
- Asynchronous
- Event Driven
- Can be used for
  - Local scripts/tools
  - Web servers!

Why Node Js ?



- Same language for server and client
  - As opposed to using different language server-side, such as **php**, **python**, **ruby**, **java**
- Leverage callbacks, asynchronicity
- Works well as web server



Get to know this resource well:

https://nodejs.dev/en/learn/introduction-to-nodejs/

Chrome V8

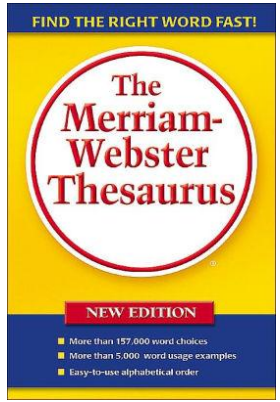
- The “engine” under the hood of node
- Runs javascript

```
thes = { 'fast'      : ['quick', 'agile', 'speedy'],
       'old'       : ['aged', 'antique'],
       'slow'      : ['sluggish', 'gradual'],
       'difficult' : ['hard', 'challenging', 'arduous'],
       'strong'    : ['durable', 'robust'] }

function addWord() {
  let base = prompt('Enter a base word: ');
  let newWord = prompt('Enter a new word: ');
  if (!(base in thes)) {
    thes[base] = [];
  }
  thes[base].push(newWord);
}

function lookUp(word) {
  if (word in thes) {
    let similar = thes[word];
    console.log('Similar words to ' + word + ':');
    for (i in similar) {
      console.log('  ' + similar[i]);
    }
  } else {
    console.log('Sorry, try another word!');
  }
}
```

Implement with Node Instead




```
function main() {

  while (true) {
    let userInput = prompt('Enter a word or ADD: ');
    if (userInput == 'ADD') {
      addWord();
    } else if (userInput == 'EXIT') {
        console.log('stopping!');
        break;
    } else {
      lookUp(userInput);
    }
  }
}

main();
```

Announcements

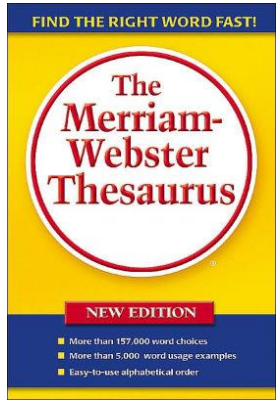
- Exam
- Clarification on policy for submitting PAs late on gradescope

Get a Line of input

```
const readline = require("readline");
const rl = readline.createInterface({
    input: process.stdin,
    output: process.stdout
});

rl.question("Type Something: ", function(userInput) {
    console.log(userInput);
});
```

Node-ified

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        if (!(base in thes)) {
          thes[base] = [];
        }
        thes[base].push(newWord);
        main();
      });
  });
}

function lookUp(word) {
  if (word in thes) {
    let similar = thes[word];
    console.log('Similar words to ' + word + ':');
    for (i in similar) {
      console.log('  ' + similar[i]);
    }
  } else {
    console.log('Sorry, try another word!');
  }
  main();
}
```

```
function main() {
  rl.question("Enter a word or ADD: ", function(userInput) {
    console.log(userInput);
    if (userInput == 'ADD') {
      addWord();
    } else if (userInput == 'EXIT') {
      console.log('stopping!');
    } else {
      lookUp(userInput);
    }
  });
}

main();
```

Getting a web server up-and-running

```
const http = require('http');

const hostname = '127.0.0.1';
const port = 3000;

const server = http.createServer((req, res) => {
  res.statusCode = 200;
  res.setHeader('Content-Type', 'text/plain');
  res.end('Hello World');
});

server.listen(port, hostname, () => {
  console.log(`Server running at http://${hostname}:${port}/`);
});
```

How do we access the URL?

What is you want to reply differently?

```
http://localhost:3000/nfl

http://localhost:3000/nba
```

Read from file (simple)

```
const fs = require('fs');
fs.readFile('./hi.txt', 'utf8', function (err,data) {
  if (err) { return console.log(err); }
  console.log(data);
});
```

Write to file (simple)

```
const fs = require('fs');
const content = '<html>....</html>';
fs.writeFile('./hi.html', content, err => {
  if (err) {
    console.error(err);
  }
  // file written successfully
});
```

https://nodejs.dev/en/learn/writing-files-with-nodejs/

Read from file (line by line)

```
async function readLines(fileName) {
  const fileStream = fs.createReadStream(fileName);
  const rl = readline.createInterface({
      input: fileStream,
      crlfDelay: Infinity });
  for await (const line of rl) {
    console.log(line);
  }
}
```

Using line-reader module

```
const lineReader = require('line-reader');

lineReader.eachLine('/path/to/file', function(line, last) {
    console.log(line);
    if (last) { /* wrap-up code */ }
});
```

https://stackabuse.com/reading-a-file-line-by-line-in-node-js/

```
const readline = require("readline");
const rl = readline.createInterface({
    input: process.stdin,
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thes = { 'fast'      : ['quick', 'agile', 'speedy'],
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        }
        thes[base].push(newWord);
        main();
      });
  });
}

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  if (word in thes) {
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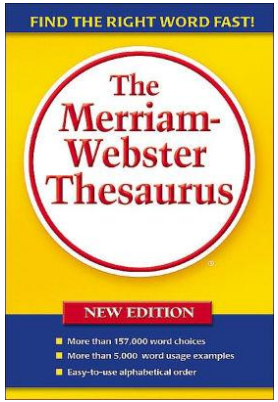
    console.log('Similar words to ' + word + ':');
    for (i in similar) {
      console.log('  ' + similar[i]);
    }
  } else {
    console.log('Sorry, try another word!');
  }
  main();
}
```

Change to respond to requests

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    } else {
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    }
  });
}

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  });
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    }
  } else {
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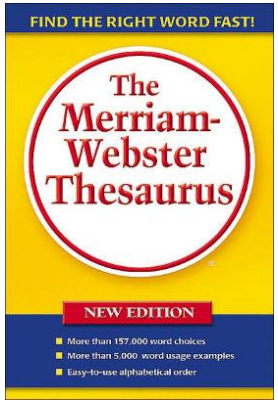
  }
  main();
}
```

Change to save and load to/from file

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    } else if (userInput == 'EXIT') {
      console.log('stopping!');
    } else {
      lookUp(userInput);
    }
  });
}

main();
```