

Full Throttle, No Breaks

Debugging Node
~ Danny Coates ~

Debugging

- Why?
 - Understand the code & state
 - Find bugs
- How?
 - Logging / Assertions
 - Breakpoints / Stepping

Logging / Assertions

- BAD
 - What to log?
 - Log spelunking
 - Embedded in code
 - Creates noise
- GOOD
 - Fail fast
 - Persistent record
 - Documents

Breakpoints / Stepping

- BAD
 - Manual
 - Slow
 - Ad-hoc
 - Single Session
- GOOD
 - Flexible
 - Wide perspective

Why?

again

- Understand the program
- Find bugs

How else?

- WANT
 - transferrable
 - flexible
 - fast
- NoWANT
 - noise
 - manual
 - huge logs

Example: hello.js

```
var http = require('http')  
var x = 0
```

```
http.createServer(function(req, res) {  
  x += 1  
  res.writeHead(200,  
    {'Content-Type': 'text/plain'})  
  res.end('Hello World ' + x)  
}).listen(8124)
```

```
console.log('Running at http://127.0.0.1:8124/')
```

Script the Debugger

```
require( 'woz' )  
.attach(5858, function(){  
  this.scripts.get( 'hello.js' )  
    .setCheckpoint({line: 6})  
})
```


Default Output

checkpoint:hello:6

hits:1

backtrace:

events:45

http:1046

http:87

locals:

req:Object

res:Object

this:Object

More specific

```
require('woz')  
.attach(5858, function(){  
  this.scripts.get('hello.js')  
    .setCheckpoint({  
      line: 6,  
      watch: ['x', 'req.url']  
    })  
})
```

Output

```
checkpoint:hello:6
```

```
  watch:
```

```
    x:1
```

```
    req.url: '/'
```

```
checkpoint:hello:6
```

```
  watch:
```

```
    x:2
```

```
    req.url: '/favicon.ico'
```

```
require('woz')
.attach(5858, function(){
  var lastX = 0
  this.scripts.get('hello.js')
    .setCheckpoint({
      line: 6,
      watch: ['x'],
      action: function(cp, cb){
        if(cp.watch['x'] !== ++lastX)
          return cb('x incremented wrong')
        cb()
      }
    })
})
})
```

Output

- No output unless error
- Debug REPL

```
error: 'x incremented wrong'  
debug>
```

Woz

- Debugger script toolkit
 - Build-Your-Own-Debugger
 - Scriptable and/or interactive
- Isolates debug code
 - Share debug scripts / logs
- Assert conditions & invariants
 - across invocations too

Woz

- HAZ
 - transferrable
 - flexible
 - fast
- NoHAZ
 - noise
 - manual
 - huge logs

Demo

Node Chat

Thanks

Danny Coates

@trycatcher

dannycoates@gmail.com

<https://github.com/dannycoates>

Checkpoint

- Hit count
- Line
- Watch
- Execute
- Action
- Limit
- Condition
- Name
- Heap
- Backtrace