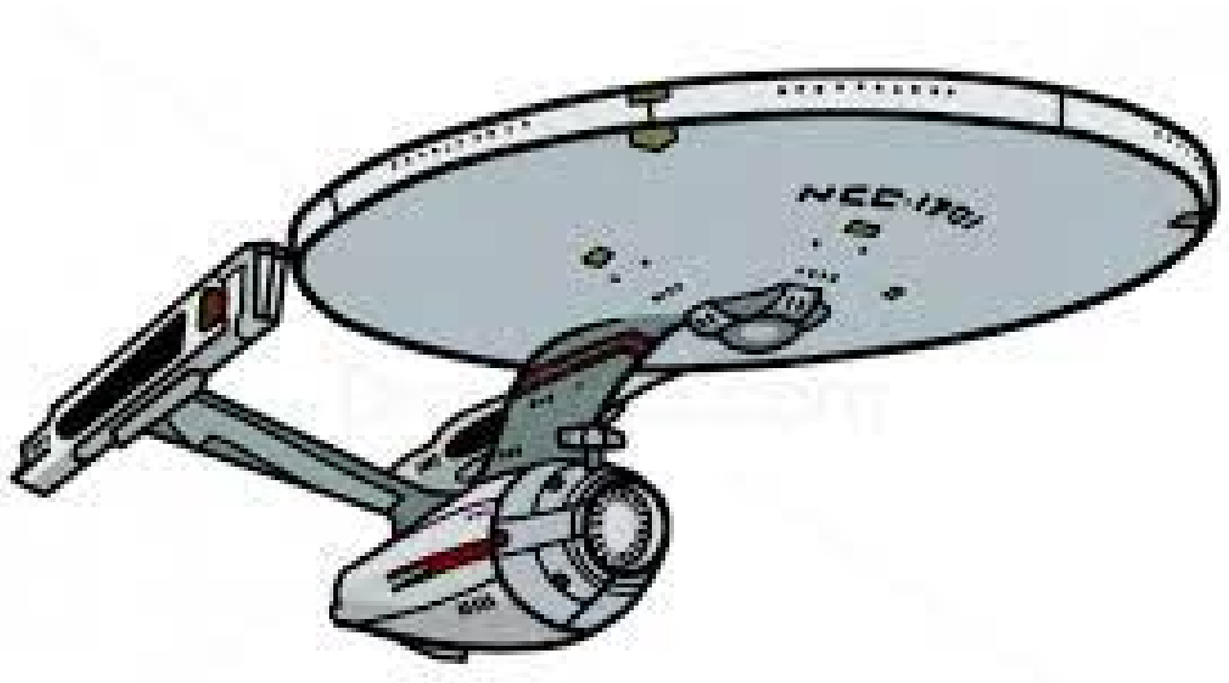
WebAssembly

how I learned to stop worrying
and love the frontend

orsinium.dev

Wasm: the final frontend

To boldly go where no man has gone before!



A Talk Near the Future of Python

by David Beazley

meet tiny snek

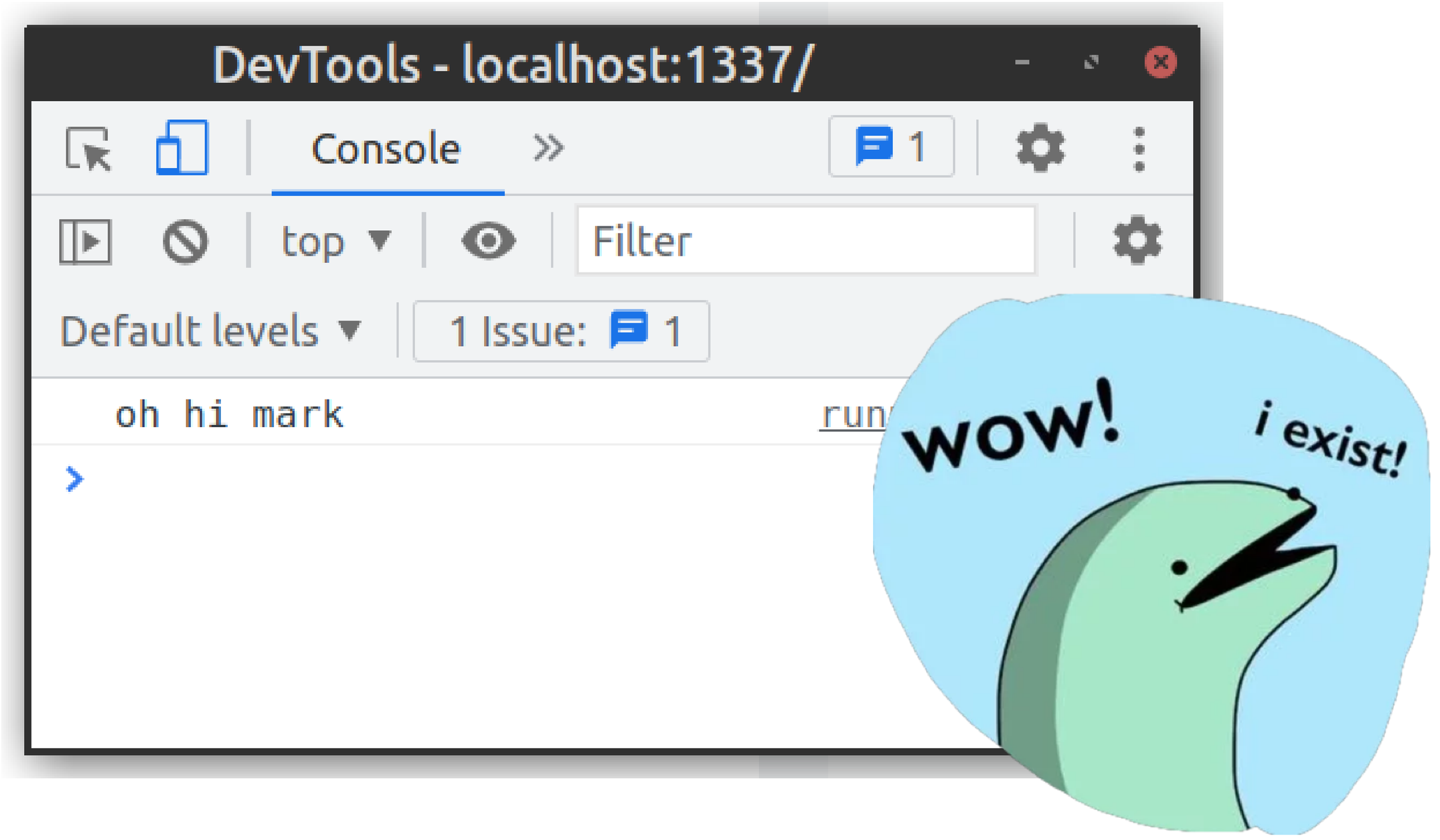
- Not JS
- Binary
- Native
- Safe
- Easy to run
- Portable

- AssemblyScript
- Rust
- C/C++
- Go

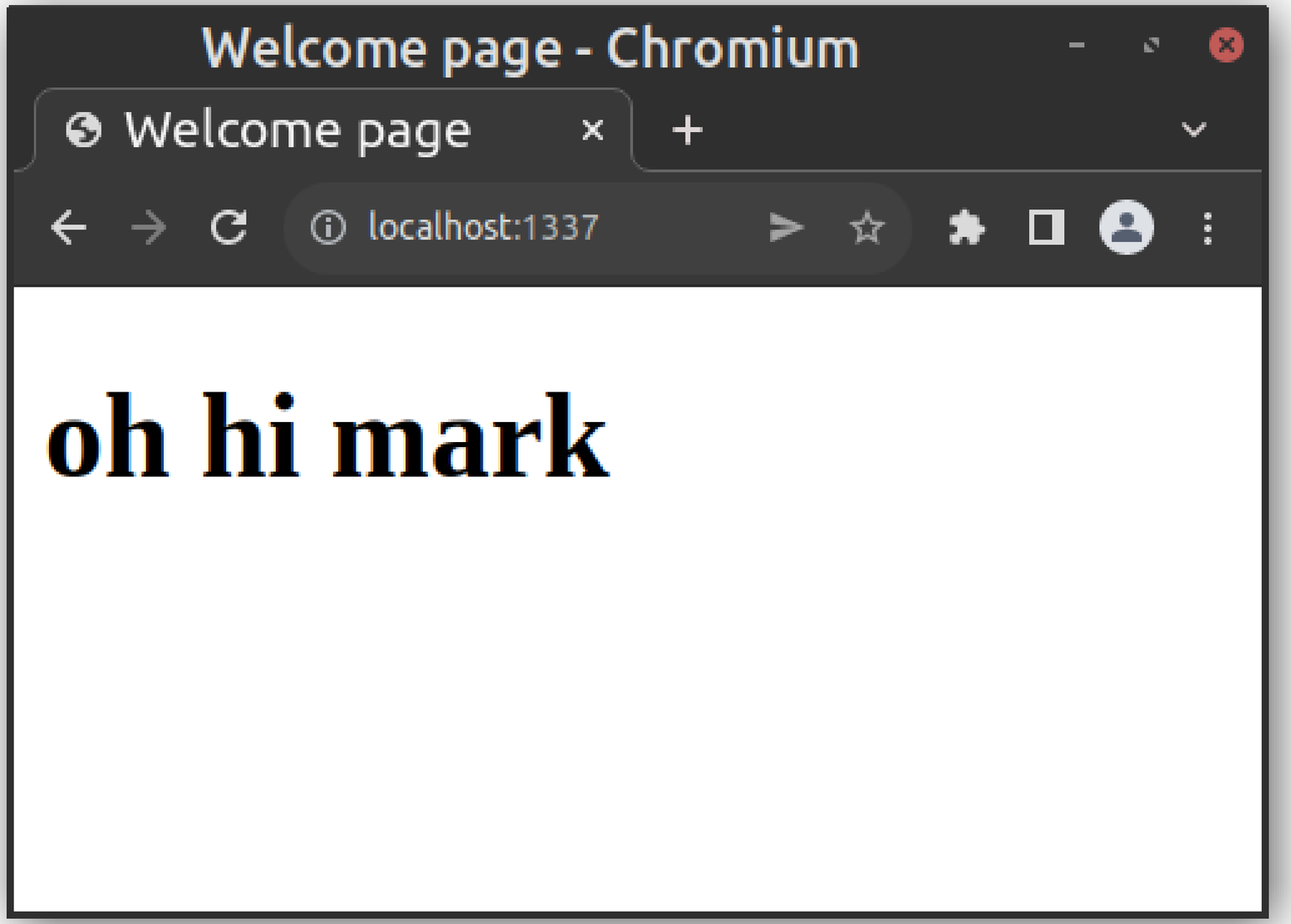
```
package main

import "fmt"

func main() {
    fmt.Println("oh hi mark")
}
```

```
mkdir -p build
cp frontend/* build/

cp \
  "$(go env GOROOT)/misc/wasm/wasm_exec.js" \
  build/runner.js

GOOS=js GOARCH=wasm go build \
  -o build/frontend.wasm .
```

```
<!doctype html>
<html>
  <head>
    <meta charset="utf-8">
    <script src="./runner.js"></script>
  </head>
  <body>
    <script src="./loader.js"></script>
  </body>
</html>
```

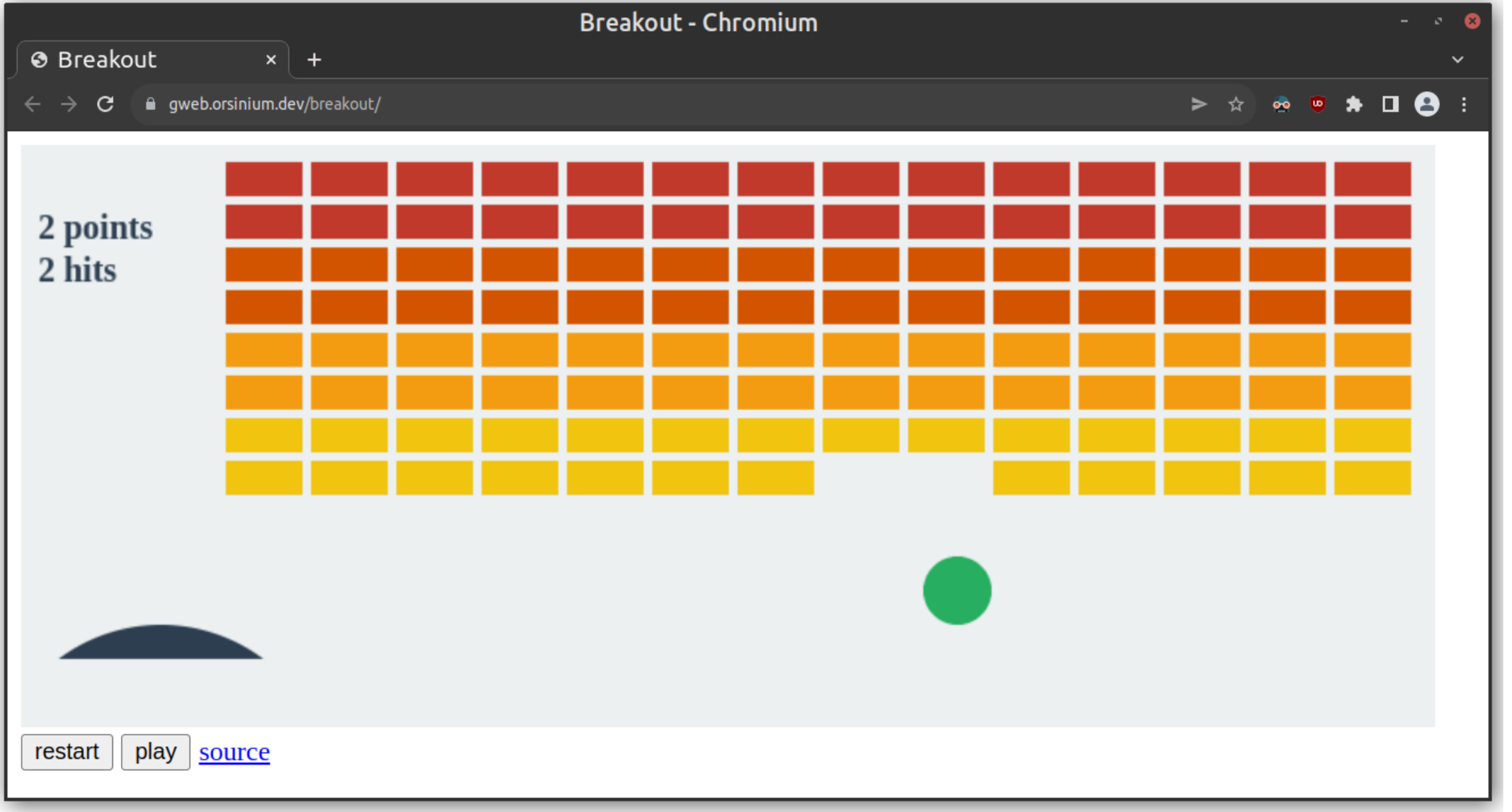

DevTools - localhost:1337/
Console
1
top
Filter
Default levels
1 Issue: 1
oh hi mark
wow!
i exist!

```
package main
import "syscall/js"
func main() {
    window := js.Global()
    doc := window.Get("document")
    doc.Set("title", "Welcome page")
    header := doc.Call("createElement", "h1")
    header.Set("innerText", "oh hi mark")
    body := doc.Get("body")
    body.Call("appendChild", header)
}
```


Welcome page - Chromium
Welcome page
localhost:1337
oh hi mark

```
package main
import "github.com/life4/gweb/web"
func main() {
    window := web.GetWindow()
    doc := window.Document()
    doc.SetTitle("Welcome page")
    header := doc.CreateElement("h1")
    header.SetText("oh hi mark")
    body := doc.Body()
    body.Node().AppendChild(header.Node())
}
```

gweb.orsinium.dev

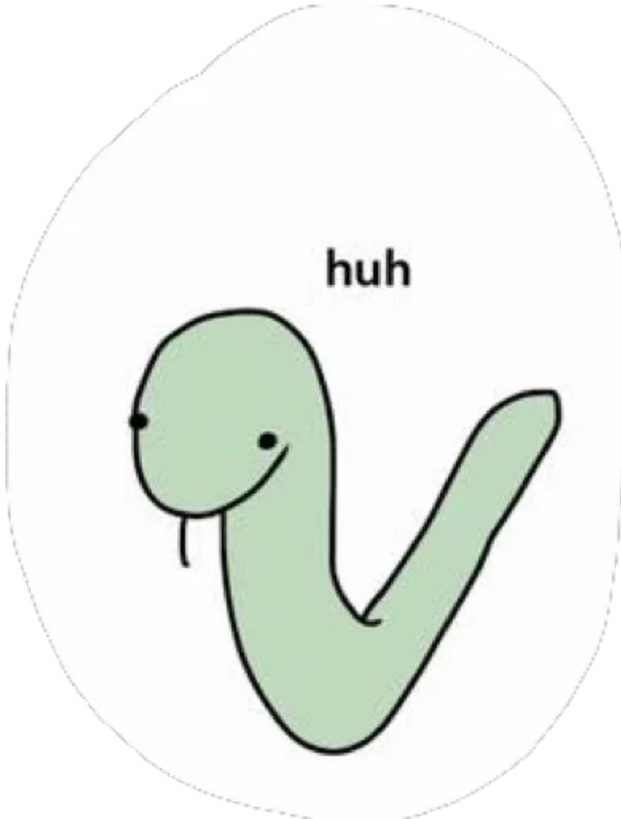

Breakout - Chromium
Breakout
gweb.orsinium.dev/breakout/
2 points
2 hits
restart
play
source

size matters

less is more

TinyGo

	syscall/js	gweb
gc	1.3M	1.5M
tinygo	95K	136K
no scheduler	61K	100K
wasm-opt	50K	89K



WASI

The WebAssembly System Interface

```
func main() {
    fmt.Println("I'm in the console")
    text := []byte("I'm in the file\n")
    err := ioutil.WriteFile("./log.txt", text, 0644)
    if err != nil {
        panic(err)
    }
}
```

```
tinygo build \
  -target wasi \
  -o wasi.wasm ./wasi

wasmtime --dir . wasi.wasm
```

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