WASM Resource Hog & Monitor

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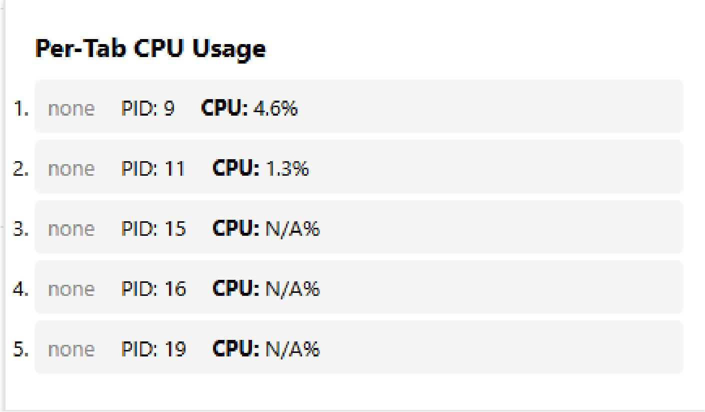
Introduction

- **Monitor**
  - Measure CPU usage per tab
  - Include Memory, network, GPU memory, # of web workers
- **WASM Resource Hog**
  - Basic resource exhaustion attack
    - Just CPU for now, I'm working on memory
  - Obfuscate and try to get around defenses
    - Implement dynamic behavior
    - Implement threading to capture more than one core

Monitor

- Currently just CPU is being measured



Per-Tab CPU Usage

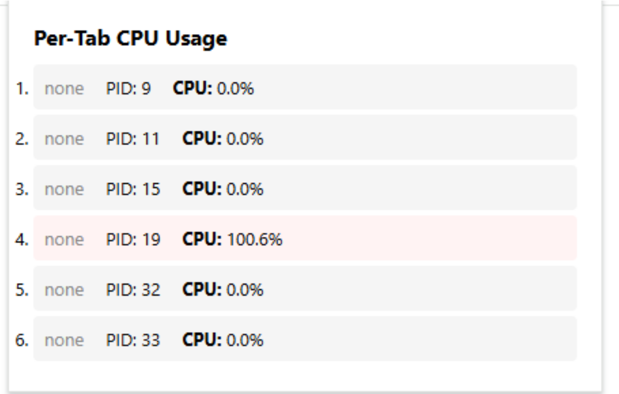
1. none PID: 9 **CPU:** 4.6%
2. none PID: 11 **CPU:** 1.3%
3. none PID: 15 **CPU:** N/A%
4. none PID: 16 **CPU:** N/A%
5. none PID: 19 **CPU:** N/A%

Monitor Code

Demo

Hog

- Currently only have basic CPU hog working
  - Only functions on one core
  - Demo resource monitors catching it



Per-Tab CPU Usage

1. none PID: 9 **CPU:** 0.0%
2. none PID: 11 **CPU:** 0.0%
3. none PID: 15 **CPU:** 0.0%
4. none PID: 19 **CPU:** 100.6%
5. none PID: 32 **CPU:** 0.0%
6. none PID: 33 **CPU:** 0.0%

```
void cpu_hog_for_seconds(double seconds) {
    double start = emscripten_get_now();
    volatile double x = 0.0001;
    // spin until duration elapses
    while ((emscripten_get_now() - start) < seconds * 1000.0) {
        x += x * 1.0000001;
    }
}
```