LOOKING TO DO A PROJECT ON LINUX MEMORY OR PROCESS MANAGEMENT

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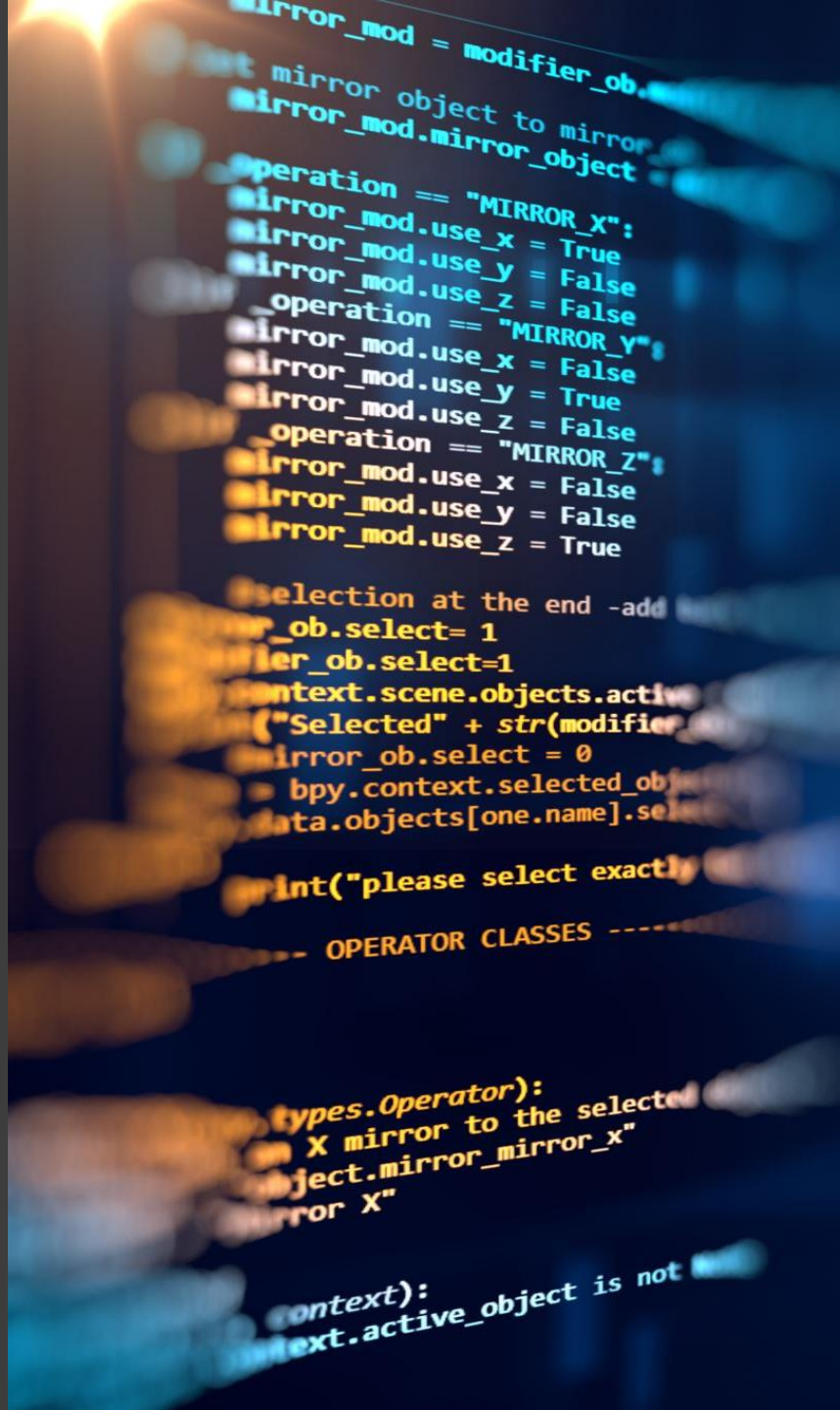

EMBEDDED AND SAFETY CRITICAL SYSTEMS

- Limited memory
- Real time scheduling
- Containerization used to segment processes

AREAS OF INTEREST

- Current OOM Killer heuristic is not always predictable
  - New heuristics that more aptly detects a memory leak in constrained memory application
- Middleware to mark processes as sacrificial lambs to permit graceful shutdown
  - Medical device – alert user to failure and safely power down (ex. Devices pumping blood need to slowly stop pumping, insulin pumps need to shut valves)
  - Automotive – alert user and permit safety critical processes to move user out of harms way before impending shutdown
  - Sacrificial containers? Is it OK to lose UI or non-safety critical process if there is runaway mem allocation in safety critical container?
- Using thrashing to predict potential memory issues when memory is limited
  - Can you see the storm brewing?

HALF BAKED, LOOKING FOR FULLY-BAKED

- These are just my interests
- I'm flexible on a project idea
- Looking to learn!

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PERFORMANCE SURVEY ACROSS EMBEDDED OS

- Examine across three different devices
  - Use case analysis
  - Replicate / Emulate
- Memory Management
  - Profile / Benchmarks
  - OOM Killer – induce memory leaks (std way of approaching that)
- Future Improvements
  - Proposed improvements to OOM
    - Protections to user-space processes
    - Safe-shutdown state (ciritical only mode)
    - Adaptive OOM Killer