

## **Week 6 — Testing & Hardening**

### **Lightweight System Monitor**

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Integration tests; fault injection (simulate I/O errors)

Improved error messages, basic accessibility features

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### **Testing**

#### **1. Unit Tests**

- test\_fetch\_system\_data\_works: Ensures fetch\_system\_data() returns CPU usage  $\geq 0$ .
- test\_config\_defaults: Checks that AppConfig defaults are correct.
- test\_load\_config\_no\_crash: Ensures loading config does not crash.
- test\_appconfig\_implements\_default: Confirms AppConfig implements Default trait.
- test\_screen\_enum\_debug: Validates that Screen enum implements Debug.
- test\_sortby\_enum\_debug: Validates that SortBy enum implements Debug.
- test\_message\_enum\_clone: Ensures Message enum can be cloned.
- test\_lightmon\_get\_processes\_data: Confirms get\_processes\_data returns data.
- test\_set\_refresh\_interval\_parsing: Validates parsing and updating refresh interval.
- test\_toggle\_theme: Checks dark\_mode toggling.
- test\_filter\_changed: Validates filter\_text updates correctly.

## 2. Integration Tests

- test\_config\_file\_creation: Ensures config file can be saved and exists.
- test\_config\_round\_trip: Tests saving and loading config preserves values.
- test\_export\_processes\_to\_csv\_success: Confirms CSV export succeeds.
- test\_export\_processes\_to\_csv\_fail: Checks error handling for failed CSV export (simulated).

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## Hardening / Improvements

### 1. Error Handling

- Config saving errors display clear toast messages.
- CSV export errors handled with user-friendly messages.

### 2. Accessibility

- All buttons and inputs have clear labels.
- Toast messages provide feedback on actions (success/failure).
- Adjustable refresh interval improves usability.

### 3. Fault Injection

- CSV export tests simulate I/O errors to ensure error handling works.
- Config load/save tests verify behavior when file does not exist or is unwritable.

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