

EV CHARGING PROJECT - MASTER TODO LIST

Student: Your Name

Deadline: Week of December 16, 2025

Status: IN PROGRESS

CURRENT BLOCKING BUG (FIX FIRST!)

BUG-001: CP Persistence Problem

Status: NOT FIXED

Priority: CRITICAL - FIX BEFORE ANYTHING ELSE

File: [TODO-BUG-CP-PERSISTENCE.md](#)

Problem:

- CP-001 always exists on startup (hardcoded somewhere)
- When you create CP-002 or CP-003, they work fine
- BUT when you restart the system, they show as "DISCONNECTED"
- They don't reconnect automatically

Why this breaks everything:

- Can't test multiple CPs properly
- Can't demonstrate scalability
- Can't show dynamic CP creation/deletion working correctly

Estimated time: 2-3 hours

CRITICAL TASKS (Required for passing)

TASK 1: Fix CP Authentication Flow

Status: NOT STARTED

Priority: CRITICAL

File: [TODO-TASK1-AUTHENTICATION.md](#)

Estimated time: 2-3 days

What's wrong:

- CPs currently skip Registry and connect directly to Central
- No credential verification happens
- No security at all

What you need:

- CP_Monitor must fetch credentials from Registry first
 - CP_Monitor authenticates with Central using those credentials
 - Central verifies with Registry before allowing CP to operate
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TASK 2: Implement Symmetric Encryption

Status: NOT STARTED

Priority: CRITICAL

File: [TODO-TASK2-ENCRYPTION.md](#)

Estimated time: 3-4 days

What's wrong:

- All messages between CP and Central are plain text
- Anyone can read/modify messages
- Zero security

What you need:

- After authentication, Central gives each CP a unique encryption key
 - CP_Engine encrypts all messages to Central
 - Central decrypts all messages from CPs
 - Each CP has different key
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TASK 3: Create Proper Audit Log

Status: NOT STARTED

Priority: CRITICAL

File: `TODO-TASK3-AUDIT-LOG.md`

Estimated time: 1 day

What's wrong:

- No audit log file exists
- Kafka events exist but teacher can't see them
- No IP address tracking

What you need:

- Create `data/audit_log.txt` file
 - Log every important action with: timestamp, IP, who, what, parameters
 - Teacher must be able to open this file and see everything that happened
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TASK 4: Add HTTPS to Registry

Status: NOT STARTED

Priority: HIGH

File: `TODO-TASK4-HTTPS-REGISTRY.md`

Estimated time: 1 day

What's wrong:

- Registry uses HTTP (insecure)
- Anyone can intercept credentials
- Correction guide requires HTTPS/SSL

What you need:

- Generate self-signed SSL certificate
 - Make Registry API run on HTTPS
 - Update CP_Monitor to connect via HTTPS
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TASK 5: Fix Key Revocation Mechanism

Status: PARTIALLY DONE

Priority: MEDIUM

File: [TODO-TASK5-KEY-REVOCATION.md](#)

Estimated time: 1 day

What's wrong:

- Admin menu has "revoke key" option but doesn't work
- CP doesn't realize its key was revoked
- No re-authentication happens

What you need:

- When admin revokes key, CP's messages get rejected
 - CP sees "bad key" error
 - CP must re-authenticate to get new key
 - All without restarting anything
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RECOMMENDED WORK SCHEDULE

Week 1 (Now - Dec 16):

- **Day 1:** Fix CP persistence bug (BUG-001)
- **Day 2-3:** Implement authentication flow (TASK 1)
- **Day 4-6:** Implement encryption (TASK 2)
- **Day 7:** Create audit log (TASK 3)

Week 2 (Dec 16-23):

- **Day 1:** Add HTTPS to Registry (TASK 4)
 - **Day 2:** Fix key revocation (TASK 5)
 - **Day 3-4:** Test everything together
 - **Day 5-6:** Deploy on 3 computers and practice demonstration
 - **Day 7:** Final testing and prepare for correction
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PROGRESS TRACKER

Task	Status	Time Spent	Notes	
BUG-001	<input type="radio"/>	Not Started	0h	MUST DO FIRST
TASK 1	<input type="radio"/>	Not Started	0h	
TASK 2	<input type="radio"/>	Not Started	0h	
TASK 3	<input type="radio"/>	Not Started	0h	
TASK 4	<input type="radio"/>	Not Started	0h	
TASK 5	<input type="radio"/>	Not Started	0h	

Legend:

- Not Started
- In Progress
- Completed
- Blocked/Issues

WHAT TEACHER WILL CHECK

During correction, the teacher will:

1. Ask you to deploy on 3 different computers
2. Ask you to explain authentication flow (CAN'T - not implemented)
3. Ask to see encrypted messages (CAN'T - not implemented)
4. Ask to see audit log file (CAN'T - doesn't exist)
5. Ask to create/delete CPs dynamically (works if bug fixed)
6. Ask about key revocation (doesn't work properly)
7. Test resilience by killing processes randomly (mostly works)
8. Check HTTPS on Registry (not implemented)

NOTES TO REMEMBER

- Don't panic - you have good foundation, just missing security
 - Fix the CP bug FIRST before doing anything else
 - Authentication must come before encryption (can't encrypt without keys)
 - Test each task thoroughly before moving to next one
 - Keep this file updated with your progress
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IF YOU GET STUCK

1. Re-read the task file for that specific task
 2. Check the correction guide requirements
 3. Test in small steps (don't try to do everything at once)
 4. If a task blocks you for more than 4 hours, move to next one and come back later
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Last Updated: December 16, 2025

Next Review: After fixing BUG-001