Assignment: RFID Access Control with ESD Verification

Type: Internship
Discipline(s): ICT / Embedded Software / Electrical Engineering
Level: Bachelor

Assignment description

Help protect sensitive electronics at AME by checking that everyone entering an ESD-protected area is safe to enter. You will develop an HMI application that identifies users by RFID, guides them through an ESD test and controls access. You will also build the server and database to record access attempts and test results.

Objective

Deliver a working prototype that grants entry only with an authorised RFID badge and a fresh ESD pass linked to that user and access attempt. Earlier results cannot be reused; granted and denied attempts are logged.

Tasks

- Study and design: Explore the HMI, RFID, ESD tester and entry-control interfaces. Agree the test criteria, permissions, failure behaviour and software architecture with AME.
- HMI and access control: Build clear instructions and status screens. Reject invalid badges and failed, missing or expired tests. Use door or gate feedback, where available, to distinguish permission from actual entry.
- Server and database: Develop the backend and communication API. Store who attempted entry, when and where, the ESD result, access decision and denial reason. Provide permission management and log viewing/export.
- Reliability and testing: Protect communication and log access, agree retention, and buffer outage logs for synchronisation without duplicates. Prevent faults bypassing the ESD check and preserve emergency exits. Demonstrate and test normal use, invalid badges, test failures, reused results, timeouts and device/server faults.

Resources Available

Collaboration with software, electronics, IT and ESD specialists. RFID, tester and access hardware will be confirmed during the initial study; development and server facilities will be arranged with the supervisor.

Key Deliverables

Working HMI application, server, database and administrator interface; requirements, architecture and log data model; integration demonstration and test report; source code, installation/configuration and maintenance documentation; final internship report.