

COURSE NAME: Database Programming

PROPOSAL OF FINAL PROJECT

COURSE CODE: COSC-2307

STUDENT NAME: Deny Setiawan Rahardjo (Jojo)

STUDENT ID: 5149978

INSTRUCTOR: Prof. Liam Dingle

Title:

Room Rental Management System (RRMS)

High-Level Purpose:

The Room Rental Management System (RRMS) helps property owners and rental agents manage residential properties (houses or rooms) more efficiently. The goal is to centralize and automate rental operations, including tenant management, payment tracking, and property maintenance.

This database will serve as the foundation for a future web-based application that allows property owners to register their properties, enter their customers, automatically issue invoices to tenants, monitor payments, and handle maintenance requests. The system will improve transparency between owners and tenants, reduce manual invoicing errors, and provide real-time insight into occupancy and revenue trends.

The main functional areas include:**1. Lease & Unit Management**

- Manage property details (house or room) and link them to a single property company.
- Record leases, including start/end dates, rent amount, due dates, and deposit details.
- Handle unit-level occupancy where one property may contain multiple rentable rooms.
- Track lease status: Active, Expired, or Terminated.
- Maintain company-level scope for potential future expansion to multi-tenant setups.

2. Payment & Invoicing Module

- Automatic Invoicing: Generate monthly rent invoices automatically for all active leases.
- Transaction Records: Capture payment confirmations submitted by tenants via secure email link (no login required).
- Support partial payments, overpayments, and late fees where applicable.

- Allow optional upload of proof of payment (e.g., bank transfer receipt).
- Maintain full transaction history for financial audit and reconciliation

3. Alerts & Notifications

- Identify invoices that are upcoming, due, or overdue for timely follow-up.
- Automatically send email reminders with unique, secure links for tenants to confirm or update payment information.
- Maintain an alert log and token records to prevent duplicate or expired email actions.

4. Maintenance & Compliance Module

- Allow tenants to submit maintenance or utility issue reports using a link included in their invoice email.
- Enable owners/agents to schedule repairs and assign contractors for resolution.
- Track ticket category, priority, and completion status for accountability.
- Store documents and references (e.g., maintenance receipts, service agreements) for compliance and record-keeping.

5. User Roles & Access Management

- Define internal user roles: Admin and Owner/Agent.
- Tenants access specific actions (payment confirmation, maintenance submission) only through secure email links, not login.
- Restrict data access based on user role and company scope.
- Maintain activity logs for transparency and traceability of changes.

6. Operational Utilities

- Provide data export/import (CSV/Excel) for reporting or bookkeeping integration.

- Enable backup and restore operations to ensure database safety and data recovery.

Keep audit trails of financial and lease data modifications to ensure integrity and accountability.

7. Reporting & Dashboard

- Display monthly and yearly summaries of payments, occupancy rates, and outstanding balances.
- Generate visual and tabular insights for management decision-making (e.g., revenue trends, maintenance frequency, late-payment patterns).
- Support drill-down views for lease or property-specific performance.

Potential Data Sources:

All data for this project will be self-created but modelled realistically based on existing property rental sites (e.g., Realtor.ca, Airbnb) to structure property attributes.