DATABASE DOCUMENTATION

Hostel Room Allocation and Maintenance System

This document describes the database structure that would be needed for the full implementation.

DATABASE OVERVIEW

- Database Type: PostgreSQL or MySQL
- Purpose: Store user data, room allocations, maintenance requests and system records

MAIN ENTITIES

1. Users:

- Stores student and staff account information

- Fields: id, email, password_hash, name, role (student/staff)

2. Hostels

- Hostel building information

- Fields: id, name, address, capacity

3. Rooms

- Individual room details

- Fields: id, hostel_id, room_number, room_type (single/double/triple/quad), capacity, floor, status (available/occupied/maintenance)

4. Room Requests

- Student room allocation requests

- Fields: id, student_id, hostel_id, room_type, semester, special_requirements, status (pending/allocated/rejected)

5. Room Allocations

- Active room assignments

- Fields: id, student_id, room_id, start_date, end_date, status (active/completed/cancelled)

6. Maintenance Requests

- Maintenance work orders

- Fields: id, student_id, room_id, category (plumbing/electrical/hvac/furniture/other), description, urgency (low/medium/high/urgent), status (pending/in_progress/completed), assigned_to, staff_notes

RELATIONSHIPS

1. Users -- Room Requests (one-to-many)

2. Users -- Room Allocations (one-to-many)

3. Users -- Maintenance Requests (one-to-many)

4. Hostels -- Rooms (one-to-many)

5. Rooms -- Room Allocations (one-to-many)

6. Rooms -- Maintenance Requests (one-to-many)

NOTES FOR IMPLEMENTATION

1. Use UUIDs for primary keys

2. Implement proper indexing on foreign keys and frequently queried fields

3. Add audit trails (created_at, updated_at timestamps)

4. Consider soft deletes for data retention

5. Implement proper backup and recovery procedures

6. Use transactions for critical operations (room allocation, status updates)

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Team Members:

- Fabilous Lashidi (Project Manager)
- Zvinaishe Marume (System Architect)
- Promise Siafwiyo (UI Designer)
- Tapiwa Chigome (UX Designer)
- Keith Mutabvuri (Researcher)
- Carlton Kampota (Frontend Developer)
- Tivonge Kambarani (Documentation Specialist)
- Tinotenda Gozi (System Analyst)
- Gufe Makomborero (Quality Assurance)

Author: Software Engineering Team