The Chinese University of Hong Kong
2025-26 Term 2   CSCI3100 Software Engineering
Project Proposal

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1   Team Members

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2   Topic: CUHK Venue and Equipment Booking SaaS

2.1   Planned N-1 Features

1. ActionMailer to send email notification to the user when the booking is confirmed.

2. Sidekiq+Redis to implement Daily digest to each Department admin: "Today's bookings in your department", "Tomorrow's schedule", "Pending approvals".

3. ActionCable to implement real-time booking status updates.

4. Chartkick dashboard to show the usage statistics of the venues or equipments.

2.2   Overview

Multi-Tenant SaaS Application built with **Rails 7.2.3** :

Data Models:

- **Department** (tenant isolation: Engineering, Arts, Medicine)

- **Resources** (2 types: Room or Equipment)

- **Booking** (status: pending $\rightarrow$ approved/rejected/expired)

- **User** (student submits, admin approves)

Major Pain Points and Solutions:

Pain Points	Solutions
Fragmented booking Double booking may happen since every dept have separate database	**Conflict detection** Single Rails database check availability in real-time
No approval workflow Direct booking without approval may cause conflicts (e.g. proposed exam)	**Multi-stage approval** Pending approval $\rightarrow$ admin dashboard $\rightarrow$ approved/rejected/expired
Poor visibility No room/equipment utilization stats	**Chartkick Dashboard** Room usage charts + peak times + email notifications
Manual communication Need email chains to get approval without a centralized system	**ActionCable + ActionMailer** Admin approve $\rightarrow$ instant browser notification + confirmation email