

PROJECT ABSTRACT

Campus Shuttle Seat Booking Android App

An Android app concept for campus shuttle seat booking: browse routes and departures, pick seats on a live seat map, and receive a digital ticket with a booking code. Delivered built-to-order with the working demo flow, source, report, PPT and viva kit.

01. Title

Campus Shuttle Seat Booking Android App

02. Introduction / Background

On large campuses the shuttle is the lifeline between hostels, academic blocks and the main gate — and at peak hours it is a scramble. Students queue at stops with no idea whether seats remain, drivers manage headcounts manually, and missed shuttles mean missed lectures. A seat-booking app removes the uncertainty: routes and departure times are visible, seats are reservable in advance, and boarding is verified with a digital ticket instead of a shouted roll call.

03. Problem Statement

Campus shuttles run on fixed routes but boarding is first-come chaos — students cannot plan around seat availability and transport staff have no demand data. The project addresses this with a mobile booking flow: route cards with live seat counts, an interactive seat map with real-time availability states, fare calculation, and a ticket screen with booking ID and scan code for the driver to verify.

04. Objectives

- Present campus shuttle routes with bus numbers, departure slots and live seats-left counts.
- Render an interactive seat map (7 rows, 28 seats) with available/selected/booked states.
- Enforce booking rules: locked booked seats, live fare total per selected seat.
- Compute fare automatically (Rs. 20 per seat) and show a live total.
- Generate a digital ticket with booking ID, route, seats, fare and scan code.
- Keep an 'upcoming trip' card on the home view for quick access.
- Deliver the complete student kit: demo flow source, report, PPT and viva Q&A.;

05. Proposed Methodology

The app is prototyped as a mobile UI flow with three screens: Routes, Seat Map and Ticket, navigated via bottom tab bar. The seat map is generated from a data model of rows and columns with a booked-seat set; taps toggle selection state and re-render the fare summary. Confirming a booking produces a ticket object (booking ID, route, seats, fare) rendered with a deterministic scan-code pattern. Route selection passes the chosen route context into the seat screen.

06. System Architecture / Working

The Routes screen lists three campus routes with bus registration numbers, three departure slots each, and seats-left counters with availability badges. Tapping a route opens the Seat Map for its 08:30 departure: a bus-layout grid where booked seats are locked, taps select up to four seats, and the sticky bottom bar shows the live fare. Confirm generates the Ticket screen with booking CR-88517, the scan code, and trip details — the driver's verification surface.

07. Hardware / Software Requirements

- Android smartphone (demo flow runs in any modern browser)
- Kotlin + Jetpack Compose (production build path); HTML/CSS/JS for the interactive demo flow
- Optional backend: Firebase for live seat inventory and booking records

08. Expected Outcomes

- A working three-screen booking flow: routes → seat map → ticket.
- Interactive seat selection with fare calculation and booking rules enforced.
- Digital ticket with booking ID and scan code.
- A complete report, PPT and viva Q&A; on the booking flow and seat-state logic.

09. Applications

- Campus transport digitization for colleges and universities.
- Corporate shuttle and staff-bus seat management.
- Event shuttle booking for fests and conferences.

10. Future Scope

- Live GPS tracking of shuttles on a campus map.
- UPI payment integration for fare collection.
- Waitlist and auto-allocation when a route fills.
- Driver app with passenger manifest and scan verification.