

SMART CAMPUS MANAGEMENT

HOD Approval System

Streamlining Faculty Early Departure Requests
with Real-Time Notifications & Digital Exit Passes

PROJECT OVERVIEW

The Problem

- Manual paper-based approval process
- HOD unavailable when faculty needs to leave early
- No record-keeping or audit trail
- Faculty unsure of approval status
- No digital exit pass or verification
- Time-consuming, error-prone workflow

Our Solution

- Fully digital web-based workflow
- Instant email notifications to HOD & Faculty
- QR code digital exit pass generation
- Real-time status tracking dashboard
- Supporting document uploads
- Complete audit trail with timestamps

TECHNOLOGY STACK

Modern full-stack architecture built for scale and reliability



FRONTEND

React + TypeScript

Vite • Tailwind CSS
React Router • React Hot Toast



BACKEND

Node.js + Express

TypeScript • RESTful API
nodemon • JWT Auth



DATABASE

MongoDB Atlas

Mongoose ODM
Cloud-hosted • Atlas Free Tier



EMAIL

Nodemailer + Gmail

SMTP Integration
HTML Templates • Auto Notify



QR CODE

qrcode Library

Dynamic Generation
Full JSON Data Embedded



AUTH

JWT + bcrypt

Role-Based Access
FACULTY • HOD • ADMIN

KEY FEATURES



HOD Smart Dashboard

Sort by urgency/time, filter by faculty, search, tabs for Pending / Approved / Rejected history



Digital Exit Pass

Auto-generated QR code with full details — faculty name, date, time, reason, department



Email Notifications

Instant Gmail alerts to HOD on new requests; Faculty gets approval/rejection email with QR code



Document Upload

Faculty can attach PDF, DOC, JPG, PNG supporting documents up to 3 files × 5 MB each



Duplicate Prevention

One request per date enforced — backend + frontend validation with clear error messages



Audit Trail

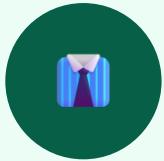
Every action logged with who, what, and when — complete request lifecycle history

THREE USER ROLES



FACULTY

- Submit early departure requests
- Upload supporting documents
- Track request status in real-time
- Receive email on approval/rejection
- View digital exit pass with QR code
- See HOD rejection reasons & comments



HOD

- View prioritised pending requests
- Sort by urgency / time / faculty name
- Filter by faculty or urgency level
- Approve → auto-generate exit pass
- Reject with mandatory reason
- Request more information from faculty

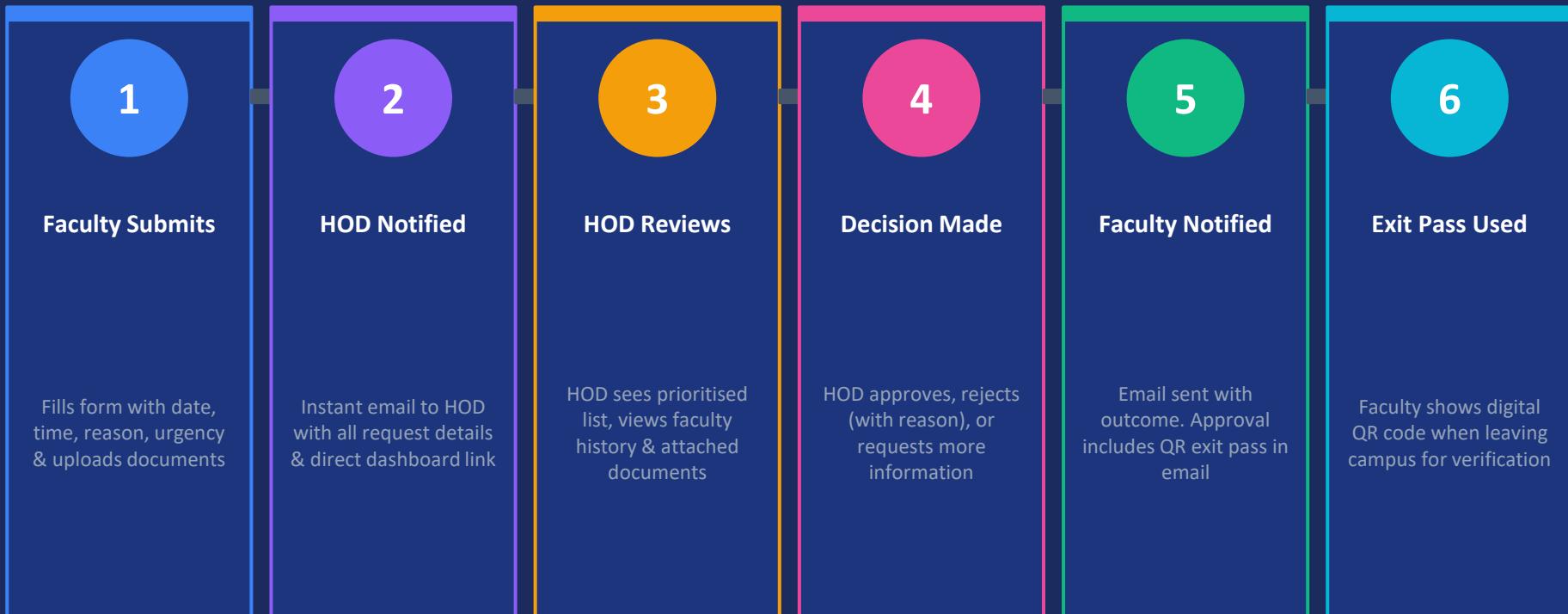


ADMIN

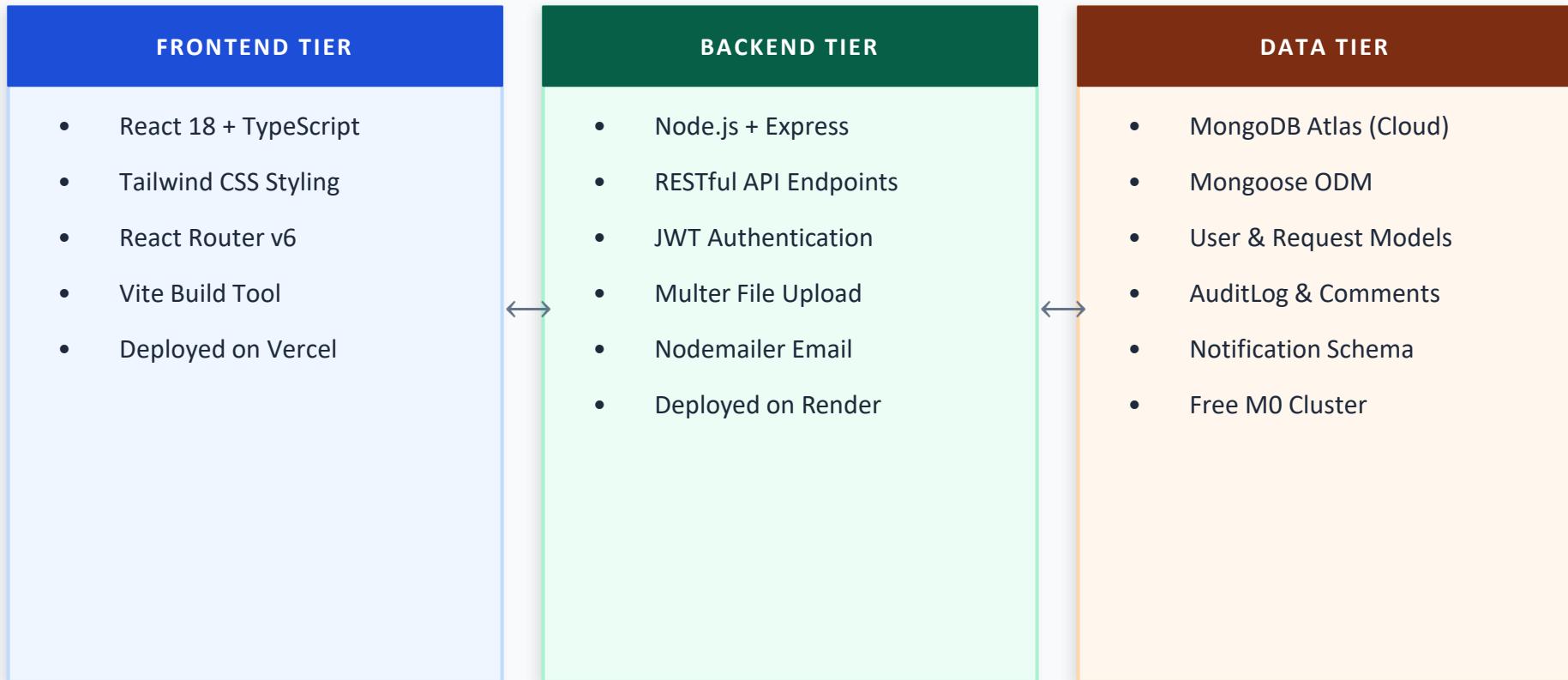
- Full system oversight dashboard
- Create Faculty & HOD accounts
- Manage all 10 departments
- View & delete user accounts
- Monitor all requests system-wide
- Access complete statistics

HOW IT WORKS

End-to-end request lifecycle in 6 simple steps



SYSTEM ARCHITECTURE



SECURITY & VALIDATION

Enterprise-grade security built into every layer



JWT Authentication

- Secure token-based login
- Tokens expire automatically
- Refresh on each request



Role-Based Access

- 3 roles: ADMIN, HOD, FACULTY
- Middleware enforces permissions
- Protected API endpoints



Password Security

- bcrypt hashing (salt rounds 10)
- Passwords never stored plain
- Secure reset flow



File Upload Security

- MIME type validation
- 5 MB size limit per file
- Max 3 files per request



Input Validation

- Duplicate date prevention
- Required field enforcement
- HOD uniqueness per dept



Data Protection

- Helmet.js HTTP headers
- CORS origin restriction
- MongoDB injection safety

FREE DEPLOYMENT

▲ VERCEL — Frontend

- 1. Push frontend/ to GitHub repo
- 2. Go to vercel.com → Import Project
- 3. Set Root Directory: frontend
- 4. Build Command: `npm run build`
- 5. Add Environment Variable:
`VITE_API_URL = https://your-app.onrender.com/api`
- 6. Click Deploy — Done! 

◇ RENDER — Backend

- 1. Push backend/ to GitHub repo
- 2. Go to render.com → New Web Service
- 3. Connect GitHub → select repo
- 4. Root Directory: backend
- 5. Build: `npm install && npm run build`
- 6. Start: `node dist/server.js`
- 7. Add all .env variables → Deploy 

Thank You

HOD APPROVAL SYSTEM

3

User Roles

10

Departments

15+

API Endpoints

100%

Free Hosting

- Complete Request Lifecycle Management
- Real-Time Email Notifications (Gmail SMTP)
- QR Code Digital Exit Passes
- Supporting Document Uploads
- Deployed FREE on Vercel + Render + MongoDB Atlas