PRANSHUL ARORA

CSE Undergrad at BITS Pilani

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SKILLS:

- **Languages:** JavaScript, Java, Python, Go, SQL, C, C++
- **Web Development:** React.js, Node.js, Express, Flask, Django, FastAPI, Spring Boot, Hibernate
- **Databases:** MongoDB, MySQL, PostgreSQL, Firebase, Supabase
- **Cloud & DevOps:** AWS, Vercel, Render, Neon, Git, Docker, CI/CD, Jenkins, Kubernetes

PROFESSIONAL EXPERIENCE:

Centre for Railways Information Systems (CRIS) - Software Development Intern | Node, Express, Oracle SQL

- Designed and Implemented an automated **ETL pipeline** to extract data from multiple legacy Excel databases, detect & resolve inconsistencies, and load into a unified SQL database,
- Enabled seamless migration of **10M+ passenger records**

Management Simulation Games (MSGames) - Full Stack Developer | Python, FastAPI, MongoDB, Docker, Jenkins, PyTest

- Independently designed and developed the entire backend and DB for two new simulations, based on a **modular** architecture with clear **SoC** and runtime **health-check endpoints**
- **Scaled** the backend to support **300+ concurrent players** in live simulation game sessions
- Implemented a **JWT**-secured, **role-based** (Instructor/Student) session management system with secure session creation, code-based joining, and instructor-only session controls
- **Containerized** the backend using Docker & set up the backend **CI/CD** pipeline on Jenkins
- Designed an automated **testing suite** including unit, integration, and end-to-end tests

PROJECTS:

NodeFox (SaaS) - Founder | Node, React, Next.js, Vercel, AWS, Firebase, Stripe, Github Actions ***Video Demo*** | ***Website***

- Implemented an **event-driven** workflow that triggers automated form creation and an **SMTP**-based email **notification system**, with **cron jobs** for scheduled reminder emails
- Designed a hybrid cloud storage layer combining **AWS S3** (**PoLP**-scoped IAM, pre-signed URLs) and Google Drive integration via **OAuth**
- Implemented a **free-trial** system with **secure** payment method storage and **autopay**
- Built a role-based access control (**RBAC**) system with **Stripe webhook**–triggered **Firebase** workspace provisioning and an automated team invitation workflow
- Securely exposed public and authenticated APIs with per-user and per-IP **rate limiting**, **AWS Lambda reserved concurrency**, **API Gateway throttling** and **fail-fast** execution safeguards
- Configured **reCAPTCHA** score-based bot mitigation for public endpoints
- Configured **CloudWatch observability** with logging and metrics for system health monitoring

Smart Multi-Tenant Database System | Express, PostgreSQL, Neon DB

- Designed **resource-usage–optimizing** dynamic tenant allocation strategy across multiple DBs
- Designed a centralized lookup DB to automate pooled, **RLS-**protected tenant DB provisioning, **benchmarking** and **tuning** serverless DB concurrency via **k6 load testing**.
- Implemented **indexed** lookup and **caching** of URIs to reduce request **latency by ~40%**
- Implemented connection **pooling** to reduce **cold-start** overhead from **~90ms to ~4ms**

Real-time Collaborative Coding Environment | Node, Express, React, Socket.io, Render ***Live Demo*** | ***Github***

- Achieved **~50–100 ms real-time** synchronization latency across **5+ concurrent users**, over an **event-driven** Socket-based architecture
- Implemented **conflict resolution** using a **Last-Write-Wins** (LWW) strategy

EDUCATION:

BITS Pilani KK Birla Goa Campus | BE CSE