Tech Stack Summary

Project Name	ClassQuest

Team: Dmytro Stepaniuk, Alvin Tolentino, Tolani Oke-Steve
Region: AWS ca-central-1 (Canada Central)
Purpose: All components run serverless on AWS, following a stateless, pay-per-use design. This allows an MVP to run at under $25/month while automatically scaling for province-wide adoption.

Guiding principles:

- Serverless & managed – no servers to patch.

- Canadian data residency (ca-central-1).

- Multi-tenant by school.

- Infrastructure as Code with AWS CDK/SST.

Frontend:

- React + TypeScript (Vite) – Single-Page App for students and teachers

- Amazon S3 + CloudFront + ACM (TLS) – Static hosting, CDN, HTTPS

Authentication:

- Amazon Cognito (Hosted UI + JWT) – User login, class codes, and role-based access

API & Backend:

- AWS AppSync (GraphQL) – Realtime data (XP, quests, leaderboards)

- AWS Lambda (Node.js 20 + TypeScript) – Serverless business logic

- Amazon DynamoDB (NoSQL) – Primary data store for users, quests, and progress

Events & Scheduling:

- Amazon EventBridge – Automated class events and XP resets

Infrastructure & Deployment:

- AWS CDK / SST (TypeScript) – Infrastructure as Code

- GitHub Actions – CI/CD for both frontend and backend

- AWS CloudWatch + X-Ray – Logs, monitoring, and tracing

Region: ca-central-1 (Canada Central) – ensures Canadian data residency