Next UniVerse — Project Proposal

Team NextGen Minds

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Abstract

Next UniVerse, developed by the team NextGen Minds, is a gamified peer-to-peer e-learning platform designed to transform the tutoring landscape in Bangladeshi universities. Unlike conventional tutoring systems, Next UniVerse is entirely student-driven, fostering a collaborative ecosystem where learners access content created exclusively by peers within their own university. This localized approach ensures relevance to curricula, enhances relatability, and builds stronger academic communities.

The platform integrates gamification mechanics—points, badges, leaderboards, and gift redemption—to motivate both tutors and learners. Students can choose from multiple peer tutors, rate their performance, and even hire them for offline sessions, creating healthy competition that drives quality content creation. Beyond individual universities, Next UniVerse hosts inter-university competitions and events, encouraging innovation, knowledge-sharing, and national-level collaboration among students.

By combining affordability, accessibility, and engagement, Next UniVerse addresses the persistent challenges of unequal tutoring access, financial barriers, and academic gaps in higher education. It empowers students to become both knowledge creators and consumers, democratizing learning while cultivating a culture of cooperation and excellence. Ultimately, Next UniVerse envisions a future where Bangladeshi university students collectively elevate their academic success through a dynamic, gamified, and community-led platform.

1. Team

Team Name: NextGen Minds

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2. Objectives

2.1. Primary learning objectives for the DBMS lab

- Demonstrate a normalized relational design with referential integrity and constraints.

- Implement transactions and concurrency control for grading and submission workflows.

- Use indexing and query optimization to support responsive dashboards and lookups.

- Store and query semi-structured analytics using JSONB.

- Produce SQL DDL, ERD, and a working prototype that validates the data model under realistic usage.

2.2. System objectives

- Deliver a working MVP that supports course creation, content delivery, assessments, and gamification.

- Provide a reproducible deployment pipeline and automated tests.

- Ensure basic privacy and security practices consistent with GDPR-like requirements.

3. Key Features

3.1. MVP Features

- User management with roles: student, tutor, admin and secure email/password authentication.

- Course and module management: instructors or peer tutors create courses, modules, and materials.

- Material storage referenced by storage_url; prototype uses YouTube unlisted and Google Drive.

- Quiz engine, assignments, discussion threads, gamification, certificates, analytics, notifications.

3.2. Stretch features

OAuth/SSO, CDN streaming, inter-university competitions, advanced recommendations.

4. Technology Stack

- **Frontend:** React + Chakra UI or Bootstrap.

- **Backend:** ASP.NET Core.

- **Database:** PostgreSQL with JSONB for analytics.

- **Storage:** YouTube unlisted and Google Drive for prototype; AWS S3 + CloudFront for production.

- **Hosting:** Vercel/Netlify for frontend; Aiven for Postgres; Render serverless for backend.

- **CI/CD:** GitHub Actions.

5. Data Model Summary

Main entities include users, courses, modules, materials, quizzes, questions, quiz_attempts, assignments, submissions, certificates, discussion_threads, posts, notifications, payments, analytics_events, user_relationships.

6. Implementation Plan and Milestones

1. Sprint 0 Week 0 Planning

2. Sprint 1 Weeks 0–1 Core Data Model and Auth

3. Sprint 2 Weeks 1–2 Course and Content

4. Sprint 3 Weeks 2–3 Assessment and Submissions

5. Sprint 4 Weeks 3–4 Gamification and Analytics

6. Sprint 5 Week 5 Buffer and Demo Prep

7. Testing and Evaluation

Unit tests, integration tests, E2E tests with Cypress or Playwright, load tests with k6 or Locust. Success criteria listed in the project plan.

8. Security Privacy and Compliance

Follow GDPR-like practices, hashed passwords, HTTPS, signed URLs, role-based access control, backups, secrets manager.

9. Risks and Mitigation

List of risks and mitigations as in the project plan.

10. Deliverables

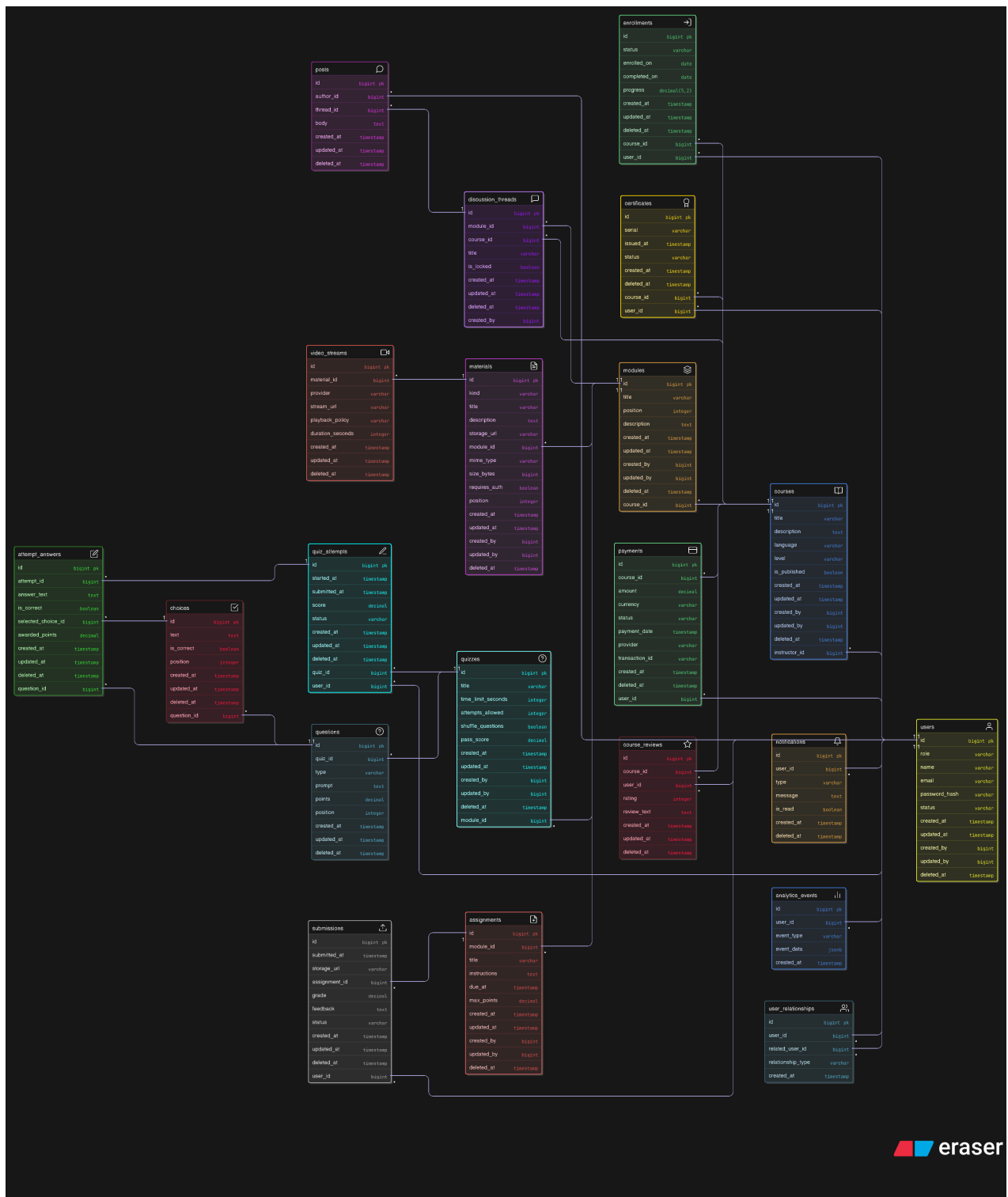Written report, code repo, ERD and SQL DDL, demo video, test artifacts.

Appendix

Figure 1: ERD diagram