Assignment #7 - Project Constraints Essay

Adaptabrawl - Senior Design (Fall 2025) | Course: CS5001 - Senior Design I | Due: October 13, 2025, 11:59 PM

Team Members

- Kartavya Singh - Netcode & Infrastructure
- Saarthak Sinha - Combat/Systems & Tooling
- Kanav Shetty - UX/UI, VFX/SFX, Stages
- Yash Ballabh - Tools, CI/CD & QA

Project Constraints Essay (10-12 sentences)

Our design for Adaptabrawl - a 2D online fighting game - has to fit within constraints that shape what is actually shippable.

Economically, we are standardizing on Unity LTS and free or low cost tooling, avoiding paid middleware and keeping scope to a vertical slice so out of pocket costs stay near zero.

Online play will rely on Unity Relay or Lobby initially; usage based fees and campus network realities push us toward low bandwidth sync (20-30 Hz), simple prediction, and room code sessions rather than accounts.

Legally, every art, sound, font, and package must be original, permissively licensed (for example, MIT or CC-BY), or purchased with redistribution rights, and we will track provenance directly in the repo.

We will avoid third party IP, keep trademarks out of UI, and limit telemetry to non personal play test data to reduce privacy exposure and compliance risk.

For security and privacy, we use a host authoritative model with limited client authority to reduce cheating, validating hits on the host and encrypting transport where the stack supports it.

We minimize attack surface by offering join by code (no stored accounts), rate limiting lobby actions, and keeping logs ephemeral and narrowly scoped to debugging.

On diversity and cultural impact, the HUD and art will use color safe palettes, scalable text, and readable telegraphs, with controller or keyboard parity and full remapping to broaden access.

Character themes, VFX or SFX, and stage motifs will avoid stereotypes and be localization ready (short strings, no baked in text), and adaptive condition modifiers will always be clearly disclosed to preserve perceived fairness.

These constraints directly shape feasible solutions: we choose deterministic, bandwidth thrifty netcode over costly rollback, data driven content with auditable licenses, and minimal data collection.

By designing within these boundaries, we keep the project viable for a student team while delivering fair, readable online matches that respect players' time, privacy, and identities.