

Sticky Notes Application – Submission

Part 1: Design Diagrams

Use Case Diagram

Mermaid code (render with any Mermaid viewer): usecaseDiagram actor User rectangle "Sticky Notes" { User --> (Create Note) User --> (Read Notes) User --> (Update Note) User --> (Delete Note) }

Sequence Diagram

Mermaid code: sequenceDiagram participant U as User participant V as View (note_create) participant F as NoteForm participant M as Note (Model) U->>V: GET /notes/new V-->>U: HTML form U->>V: POST title, content V->>F: Bind & validate F-->>V: Valid V->>M: save() V-->>U: Redirect to note detail

Class Diagram

Mermaid code: classDiagram class Note { +id +title +content +created_at +updated_at } class NoteForm class Views { +note_list() +note_detail(pk) +note_create() +note_update(pk) +note_delete(pk) } NoteForm --> Note Views --> Note Views --> NoteForm

Part 2: Research Answers

1) Preserving state in HTTP apps

HTTP is stateless. Web apps preserve user state with cookies that carry a session ID. After a successful login, the server creates a session record (in memory, cache, or a database) and sends Set-Cookie with a secure, HTTP-only cookie. Each new request includes that cookie; the server looks up the session to identify the user and load state. Many frameworks rotate session IDs on login and use short expiries plus CSRF protection for POST requests. Some systems use signed tokens (JWTs). JWTs are self-contained and scale well, but revocation/rotation must be handled carefully. For standard Django web flows, cookie-based sessions are typical.

2) Django migrations to MariaDB

Install a MariaDB/MySQL driver (e.g., mysqlclient). In settings.py, set: DATABASES = { "default": { "ENGINE": "django.db.backends.mysql", "NAME": "your_db", "USER": "your_user", "PASSWORD": "your_password", "HOST": "your_host", "PORT": "3306", "OPTIONS": {"charset": "utf8mb4"}, } } Ensure the MariaDB database exists and uses utf8mb4. Then run: python manage.py makemigrations python manage.py migrate Use a least-privilege DB user. If the DB is remote, enable TLS. Keep environments in sync by running the same migrations in each.