PROJECT SYNOPSIS

SYNAPSE:
DJANGO SOCIAL MEDIA WEB APPLICATION

Organization: Lovely Professional University

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1. Project Title

Synapse – A Django-Based Social Media Web Application Platform

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2. Introduction

Synapse is a social networking web application built using Django.
It allows users to create accounts, manage their profiles, connect with other users, and interact through features such as following, viewing posts, editing profiles, and secure authentication with optional 2-factor authentication.
The platform is designed to replicate the core user-experience patterns of modern apps like Instagram—clean UI, profile pages, followers system, notifications layout, and a responsive interface.

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3. Problem Statement

People often rely on multiple social media platforms with complicated interfaces, heavy features, and poor privacy controls.
There is a need for a lightweight, clean, privacy-aware platform that focuses on core interactions:

- Creating a profile
- Connecting with users
- Sharing content
- Maintaining security and authentication

Synapse solves this by providing a minimalist, secure, and efficient social media platform built on Django.

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4. Objectives

- Build a full-stack social media platform using Django.
- Provide secure authentication with password + 2FA support.
- Enable users to edit profiles with profile picture upload & cropping.
- Implement user connections (Follow/Unfollow system).
- Provide a responsive UI with light/dark theme support.
- Maintain a clean, Instagram-like profile interface with posts, followers, etc.
- Ensure data security, validation, and proper permission handling.

5. Scope of the Project

- User registration & login
- Email verification
- 2FA (Two Factor Authentication)
- Profile management (username, email, bio, profile picture)
- Follow / Unfollow
- Public Profile Page
- Posts display (grid view)
- Sidebar navigation (Feed, Messages, Explore, Profile, Settings)
- Light/Dark theme
- Logout modal & session handling

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6. Technologies Used

Frontend

- HTML5
- CSS3
- JavaScript
- Lucid Icons

Backend

- Django (Python)
- Django ORM
- Django Forms

Database

- MySQL

Other Tools

- Git & GitHub
- VS Code
- Django Template

7. System Architecture

Architecture Used:

- Client–Server Architecture
- Django MTV (Model–Template–View) Architecture

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8. Modules Description

1. User Module

- Signup, Login, Logout
- Forgot Password / Reset Password
- Email Verification
- Two-Factor Authentication
- Profile Editing
- Profile Photo Cropping & Removal
- Dark/Light Mode
- Session Handling

2. Social Interaction Module

- Follow / Unfollow
- Followers & Following Count
- Public Profile Page
- Posts Grid Layout
- Profile Tabs (Posts, Saved, Tagged)

3. Admin Module

- Manage Users
- Activate/Deactivate Users
- Remove content
- Oversee user activities

9. Database Design

User Model (Custom Django User)

- username
- email
- password
- bio
- profile_picture
- is_verified
- is_2fa_enabled
- otp_secret

Follow Model

- follower (ForeignKey → User)
- following (ForeignKey → User)
- created_at

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10. Implementation Plan

Phase 1 – Setup & Authentication

- Django setup
- Custom user model
- Register, Login, Logout
- Email verification
- Password handling

Phase 2 – Profile System

- User profile page
- Edit profile form
- Profile picture upload

Phase 3 – Social Module

- Follow / Unfollow
- Followers / Following count
- Public profile rendering

Phase 4 – UI & Sidebar

- Sidebar navigation
- Light/Dark theme
- Logout modal

Phase 5 – Testing, Bug Fixes, Final Deployment

11. Testing Strategy

1. Unit Testing

- User authentication
- Form validations
- Model constraints
- Follow/unfollow logic

2. Integration Testing

- Complete profile edit flow
- 2FA login flow
- Image upload + crop
- Logout modal session handling

3. Manual UI Testing

- Responsive layout
- Sidebar interaction
- Theme toggle

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12. Expected Outcome

- A fully functional social media platform with user authentication.
- A modern, clean UI similar to Instagram.
- Secure login with optional 2FA.
- Working follow system and public profiles.
- Stable profile editing with cropping.
- Smooth and professional user experience

13. Future Enhancements

- Real-time messaging system
- Notifications system with WebSockets
- Post creation (photos/videos)
- Story feature
- Activity feed algorithm
- Hashtags and comments
- AI-assisted content moderation
- User analytics dashboard

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14. Conclusion

Synapse successfully demonstrates how to build a modern social media platform using Django.
It combines strong backend architecture, secure authentication, and a polished frontend to deliver a functional social application that can be expanded into a full production-level system.
This project showcases full-stack development skills and lays the foundation for future scalable enhancements.