Event Management System (EMS)

Technical Documentation

1. Introduction:-

The Event Management System is a Flask-based web application developed following the MVC architectural pattern.
The system provides features for event browsing, registration, and feedback management.

2. System Architecture:-

The application follows the MVC architecture:

- Model: Handles data logic through repository files.
- View: HTML templates rendered using Jinja2.
- Controller: Flask controllers handle routing and user requests.

3. Project Structure:-

1. controllers: Handle user requests and routing.

2. repositories: Handle database operations.

3. utils: Utility functions such as database connection and security.

4. templates: HTML pages for UI.

5. test: Unit and integration tests.

4. Design Patterns Used:-

Repository Pattern:

- Used to separate database logic from controllers.
- Improves readability and testability.

Singleton Pattern:

- Used for database connection to ensure a single connection per request.

Factory Pattern:

- Used to create and configure the Flask application.

5. Authentication & Sessions:-

1. Users authenticate using email and password.

2. Passwords are hashed before storage.

3. User sessions are managed using Flask sessions.

6. Database Design:-

Tables used:

- users
- events
- registrations
- feedbacks

The database is implemented using SQLite for simplicity.

7. Testing:-

- Unit tests were written using unittest.
- Tests validate repository logic and authentication utilities.
- Integration test checks route accessibility.

8. Docker:-

- Docker is used to containerize the application.
- A Dockerfile defines the runtime environment.
- The application can be run using Docker commands.

9. Version Control:-

- GitHub was used for version control.
- Feature branches were created for each team member.
- Pull Requests were used to merge changes into main.

10. Conclusion:-

The system applies software engineering principles such as MVC, design patterns, testing, and containerization to ensure a maintainable and scalable solution.