



UNIVERSITY OF
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School of Computing and Mathematical Sciences

CO7201 Individual Project

Preliminary Report

DanceFlow: Personalized Dance Sequence Builder and Scheduler

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Word Count: 1548

28/02/2025

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1. Aims and Objectives

The aim of Dance Flow web application is to provide the users with structured and engaging platform helping them to stay organized and improve their dancing skills. Many dancers have difficulty in staying consistent, organizing their practice sessions and maintaining the track of their personalized learning over time. With the personalized dance sequence builder users can personalize the sequences and arrange them according to the preference of their style and skill levels. Additionally, the integration of progress tracking features helps the users to monitor their learning progress at any time and focus on the areas where they need improvement. This web application makes it easier for the users to organize and finish their sessions on time.

- Ensure that user roles and logins are secure, assigning an admin role for managing the content.
- Build an easy-to-use interface for managing and developing dance sequences.
- Providing CRUD operations to allow the users to create, edit and delete the dance moves and sequences.
- Enabling advanced filtering options to find the dance moves and sequences quickly.
- Integrating multimedia supported database which stores the description, images and videos of dance moves.
- Integrating calendar functionality for scheduling of sessions.
- Allowing users to track their progress by developing comprehensive progress tracking.
- using AI-driven assistants that suggest optimal session times based on user's activity and progress.
- Designing a community space where users can share sequences and communicate with others.

2. Requirements

Essential:

- **User Registration:** Users should be able to create and login with their accounts securely.
- **Admin role:** Admin will be able to create, edit and delete the dance moves, this ensures that the content remains up to date.
- **Database:** A database with a collection of dance moves including its description, images and videos.
- **Sequence Creation:** Users can create and customize their dance sequences.
- **Progress Tracking:** Tracks the progress of their dance practice sessions and users can see their progress anytime.
- **Community Features:** Users will be able to share their dance sequence with other users in the application.

Recommended:

- **Role based access control:** This ensures that both the user and admin roles have appropriate permissions.
- **CRUD Operations:**
 - Admin: This helps the admin to create, edit and delete the dance moves in the database.
 - User: This helps the user to make changes in the sequences according to their preference.
- **Advanced features:** keywords and filtered search options to find the dance moves and sequences quickly.
- **Calendar Integration:** Users can schedule their dance sessions and set reminders.
- **Notifications:** Users will get the notification to remind them of their dance sessions.
- **AI recommendations:** Users will the recommendations from AI based on their activity and progress.

Optional:

- **Profile Customization:** Users can customize and update their profile.

- **Offline mode:** Users can download their preferred sequences for later practice.
- **Voice Commands:** Implementing voice commands like start/stop to practice sessions

3. Technical Specification

- **Frontend**
 - **HTML5:** for creating the structure of web pages for login and signup
 - **CSS:** for styling and making the user interface responsive.
- **Backend**
 - **JavaScript:** to handle the user interaction in the backend.
- **Database**
 - **MongoDB:** to handle and store the data of users, dance moves and sequences with flexibility.

4. Requirements Evaluation Plan

To evaluate the quality of DanceFlow Web Application, various testing methods and evaluation criteria are followed. Users will be involved in the testing process to get the feedback on the usability of the application. To verify the quality of software the following testing methodologies will be used:

- **Functional testing:** testing if all the functionalities are implemented properly.
- **Unit testing:** to test the CRUD operations separately using automated test cases.
- **Performance testing:** to test the performance and response of the application.
- **Role based access testing:** to make sure that users cannot access admin only features.
- **Security testing:** to test the authentication and data privacy of the user and admin roles.
- **Load testing:** to test the performance of the application under heavy usage.

- **A/B testing:** testing to improve the experience of the users.
- **Integration testing:** to test the integration between frontend, backend and database.

5. Background Research and Reading list

DanceFlow, a web application aimed to provide the users with optimized dance practice scheduling and enhance the learning experiences. Now-a-days many dancers are facing a lot of difficulties in their scheduling of dance sessions, staying organized and keeping track of them. With the integration of all the necessary requirements makes this platform more effective for the users [1]. This platform allows the users to practice the sessions at their own pace.

There are many online dance learning platforms which provide the users with pre-recorded instructional videos and structured sessions among various styles, but they all lack personalized learning and progress tracking features which could help the users to improve their dance skills efficiently. Research on personalizing learning highlights the importance of adaptive learning experiences [2]. Personalized learning allows the users to access the content according to their preferences. Progress tracking will be helpful for the users to keep track of their progress on skill development and stay organized.

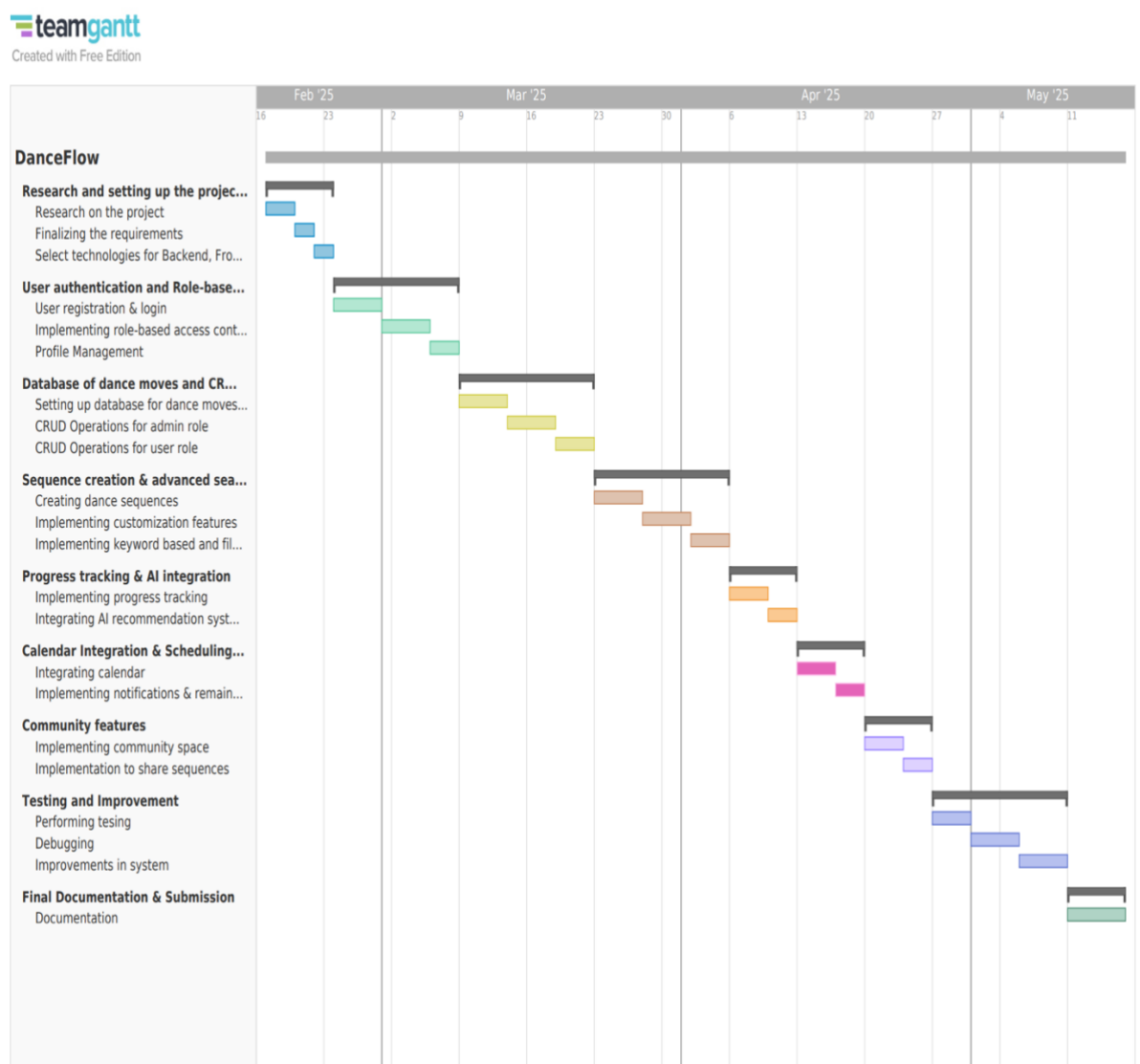
A successful web application must be able to manage the role-based permissions and content. Role-Based Access Control ensures that the different roles like admin and user must have the appropriate rights and permissions to access the content in the application [3]. By defining clear roles for admin and user in the application, it enhances the system security and organization. In DanceFlow, the admin will have the access to manage the dance content which includes creating, updating and deleting the dance moves while the users will only have the access to personalize their sequence and schedule the sessions. This access control enhances the user experience, prevents the unauthorized access and ensures the smooth management of the system.

Intergration of multimedia elements like images and videos will significantly enhance the user's learning experience [1]. This will also improve the interactive learning experience of the users. The study on interactive learning shows that the users' capacity for learning has been developed when they were offered the freedom to learn at their own pace [4]. The integration of multimedia elements allows the users to understand and improve their dance skills with greater accuracy.

Advanced search and filter functionalities are the essential components of digital learning platform, which will enable the quick and efficient access to relevant content and enhance the learning and experience of the user. Integration of these features is crucial in the DanceFlow for optimizing the user journey [5]. This functionality will be more beneficial for the beginners who may find it difficult to get their preferred dance moves.

6. Time-plan and Risk Plan

A detailed time-plan for achieving the objectives of the project in Gantt Chart



Milestones of the project:

- Technical challenges: coding errors, difficulties in integrating APIs

- Sol: Using well-documented APIs and performing early-stage testing.
- Time Management: delays in development and testing phases
 - Sol: following the time plan and prioritizing the tasks.
- User Experience: User may have some difficulties while using the application
 - Sol: Conducting early-stage user testing and gathering feedback to improve the User Interface.
- System Performance: The application may not perform well under the heavy usage
 - Sol: Conducting early testing to check the performance of the application.
- Security problems: chances of unauthorized access or losing the data
 - Sol: Ensuring the database connections are secure and implementing the strong authentication.

7. References

1. **Kavakli, E., Bakogianni, S. and Karkou, V.** (2003) ‘The WebDance project: Web dance for all using advanced e-learning tools’, *17th World Congress on Dance Research: Dance in Education*, January.
2. **Brusilovsky, P. & Millán, E.** (2021) ‘Adaptive learning systems: From data-driven personalizations to AI-powered recommendations’, *ACM Computing Surveys*, 54(3), pp. 1-35.
3. **Xu, F., Guoyan, L., Hao, H. & Li, X.** (2004) ‘Role-based access control system for Web services’, *The Fourth International Conference on Computer and Information Technology, CIT '04.*, Wuhan, China, pp. 357-362. doi: 10.1109/CIT.2004.1357221.
4. **Shahzad, M., Nadeem, M.A. & U-Nisa, Z.** (2021) ‘Developing Learning Environment Using Interactive Multimedia’, *Pakistan Journal of Distance and Online Learning*, 7(1), pp. 93-106.
5. **Rutuja, B. & Nalinipriya, G.** (2024) *Developing a sophisticated collaborative filtering-based web application for recommending books*. In *Computational Methods in Science and Technology*. 1st edn. CRC Press. eBook ISBN 9781003501244.