Software Requirements Specification

for

Namal Podcast

Version 1.0

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January 15, 2024

Namal University Mianwali

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1. Introduction:

The Namal Podcast project is a dynamic platform designed to enhance the learning experience for Namal University students. By facilitating live video sessions with professors and guest speakers, the platform aims to create an engaging and interactive environment. Through features such as real-time audience interaction, session archiving, and event announcements, Namal Podcast seeks to establish itself as a central hub for educational content and community engagement within Namal University.

2. Purpose:

The primary purpose of the Namal Podcast project is to transform traditional learning by incorporating modern technology. The project intends to make educational content more accessible and enjoyable for Namal University students. By hosting live video sessions, the platform aims to foster direct communication between students and educators, encouraging active participation and knowledge-sharing. Additionally, the recording and archiving of sessions ensure that valuable content is available for on-demand access, catering to diverse learning preferences.

3. Scope:

The scope of the Namal Podcast project encompasses the development and implementation of a comprehensive podcasting platform tailored for Namal University. This includes features such as user authentication, live session hosting for professors and guest speakers, audience access with interactive features, session archiving, and event announcements. The platform's scope extends to ensuring real-time interaction during live sessions, seamless archiving of recorded content, and scalability to accommodate potential future expansions within the university or public access. The project explicitly excludes functionalities beyond the defined podcasting scope, such as unrelated communication tools or non-educational content delivery.

4. Functional Requirements:

1. **User Authentication:**
   a) <u>For Namal Community:</u>
      As this platform is bound to Namal University so this platform must implement a secure authentication process for users with Namal University email credentials.
      For example, A user with the email "sadaqat2021@namal.edu.pk" should only be able to register successfully from the audience side.

b) <u>For Guests and speakers:</u>
For guests and speakers without Namal University credentials, the platform can assign unique access credentials (e.g., temporary emails or access codes) valid for a specified time, ensuring secure registration and verification.

2. **Host Live Video Session:**
Hosts, including professors and guest speakers, must have the capability to start live video sessions.

3. **Audience Video Access and Interaction Features:**
   a) <u>Attend Video Session:</u>
   Audience members must have access to live video sessions, enabling them to see and hear multiple hosts during discussions.
   b) <u>Interaction with Session:</u>
   The platform must support audience interaction through comments and likes during live video sessions.

4. **Archiving Recorded Sessions:**
All live video sessions must be automatically recorded and should be available on the platform to watch after the live session.

5. **Upcoming Event Announcements:**
The platform will display an announcement section prominently on the homepage, showcasing upcoming podcast events with relevant details, such as topic, date, and host. This ensures users are informed about scheduled live sessions or announcements upon accessing the platform.

5. Non-Functional Requirements:

1. **Performance:**
   a) <u>Real-Time Interaction:</u>
   The platform must ensure a latency of less than 3 seconds between the host's live video feed and its reception by the audience, ensuring a responsive and engaging real time interaction during live sessions.
   b) <u>Timely Archiving:</u>
   Live sessions must be automatically archived on the server within 30 minutes after their conclusion. This ensures that recorded content is available for on-demand access promptly, providing a seamless and timely user experience.
   c) <u>User Engagement Performance:</u>
   As user engagement increases, the platform must seamlessly handle a growing number of users, posts, and comments within specified timeframes.

This ensures uninterrupted performance without delays, maintaining a responsive user experience even during periods of increased activity.

2. **Information Security:**
   The platform must use strong security methods like encryption, secure logins, and access controls to protect Namal University's information. This ensures that only authorized users can access data, preventing any loss or unauthorized use of academic content and user information.
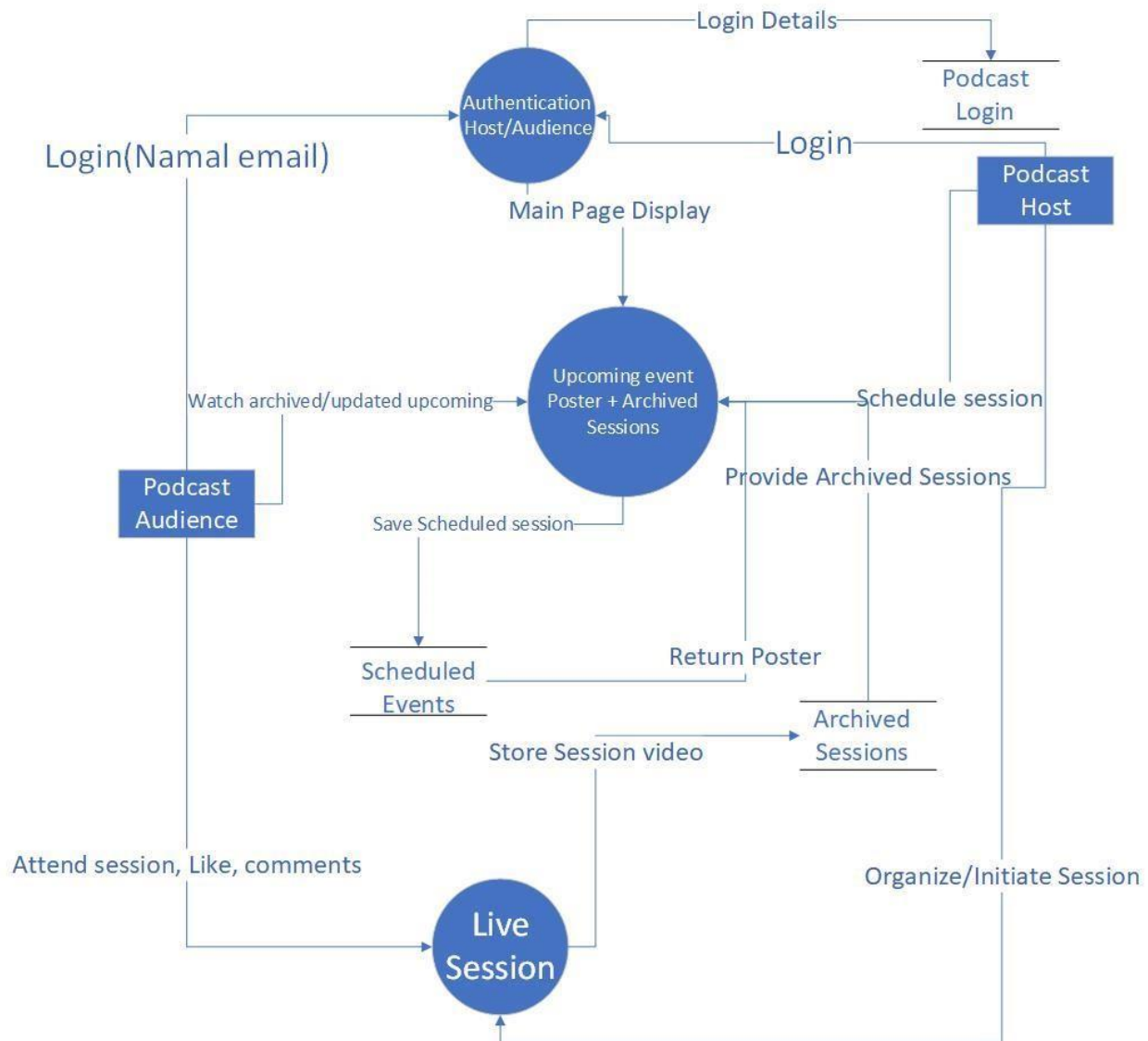
3. **Scalability:**
   The platform should be scalable, accommodating the potential expansion of user base and content demand. This includes the ability to extend the system for larger university departments or public access.
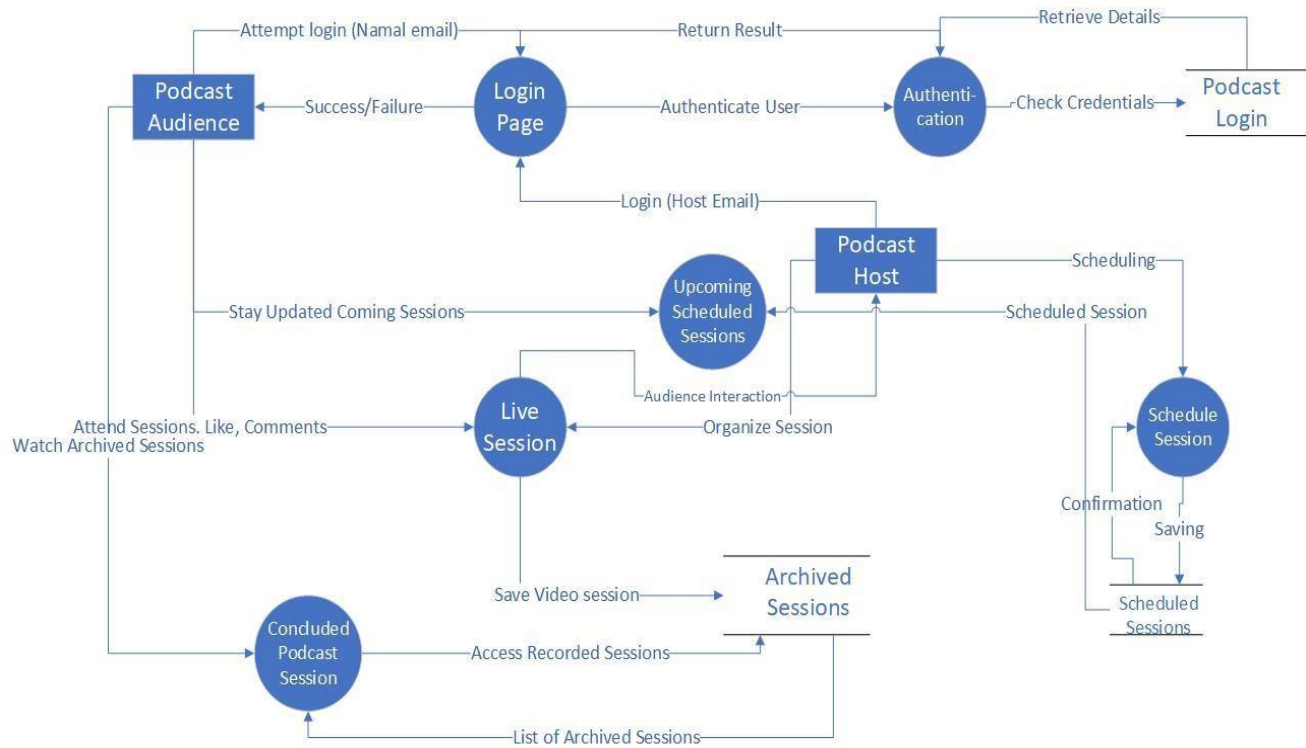
6. Data Flow Diagram's:

6.1 Data Flow Diagram: Level-0

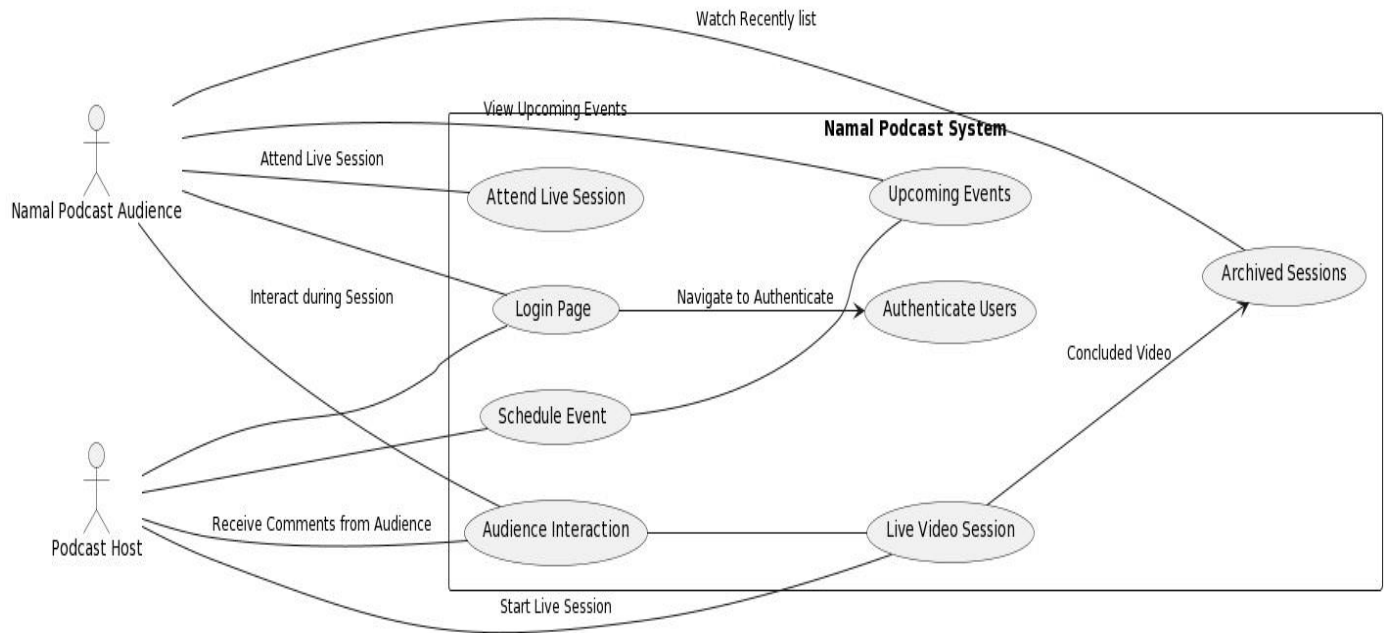## 6.2 Data Flow Diagram: Level-1

6.3 Data Flow Diagram: Level-2

7. Use Case Diagram:

8. Use Case Description:

8.1 Authenticate Users

Primary Actor: Namal Podcast Audience, Podcast Host

Description:

1. Namal Podcast Audience navigates to the Login Page.

2. Namal Podcast Host also navigates to the Login Page.

3. Namal Podcast Audience and Host provide authentication details.

8.2 Start Live Session

Primary   Actor: Podcast

Host Description:

1.   Podcast Host initiates the Start Live Session action.

2.   The system opens the Live Video Session interface for the Podcast Host.

8.3 Attend Live Session

Primary Actor: Namal Podcast Audience

Description:

1. Namal Podcast Audience selects the Attend Live Session option.

2. The system grants access to the Live Video Session for the Namal Podcast Audience.

8.4 Watch Recently Concluded Videos

Primary Actor: Namal Podcast Audience

Description:

1. Namal Podcast Audience accesses the Archived Sessions.

2. The system presents a list of recently concluded videos for the Namal Podcast Audience to watch.

8.5 Interact During Live Session

Primary Actor: Namal Podcast Audience

Description:

1. Namal Podcast Audience engages in real-time interaction during the Live Video Session.

2. The system facilitates comments and interactions, which are visible to the Podcast Host.

8.6 Schedule Event

Primary Actor: Podcast

Host Description:

1. Podcast Host initiates the Schedule Event action.

2. The system prompts the Podcast Host to provide details for the scheduled event.

8.7 View Upcoming Events

Primary Actor: Namal Podcast

Audience Description:

1. Namal Podcast Audience navigates to the Upcoming Events section.

2. The system displays a list of scheduled events for the Namal Podcast Audience to view.

8.8 ➜ Alternate Interaction:

If authentication fails, the system prompts the user to re-enter valid credentials.

8.9 Methods and Complex Inputs/Outputs:

1. The system uses authentication methods to verify user credentials.

2. Complex inputs include user authentication details.

3. Outputs include access to Live Video Sessions, Archived Sessions, and Upcoming Events.

9. SSD of all Use Case Diagram:

1. Login and Authentication:
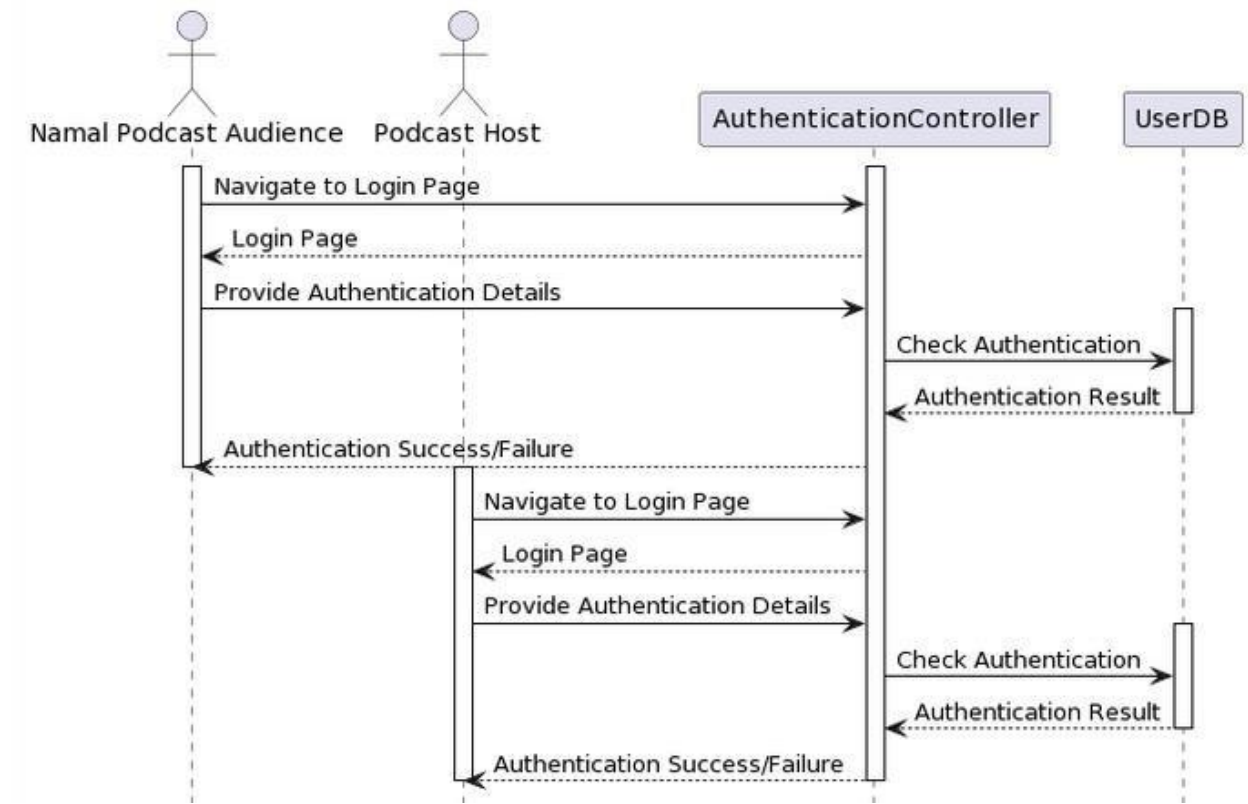
2. Schedule Event:
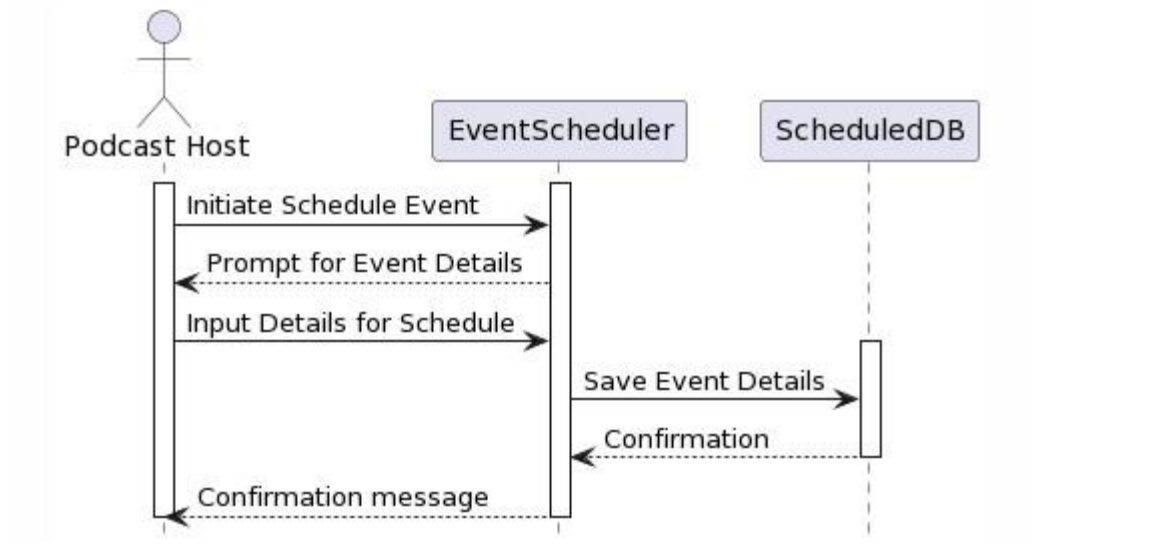
3. View Upcoming Events:
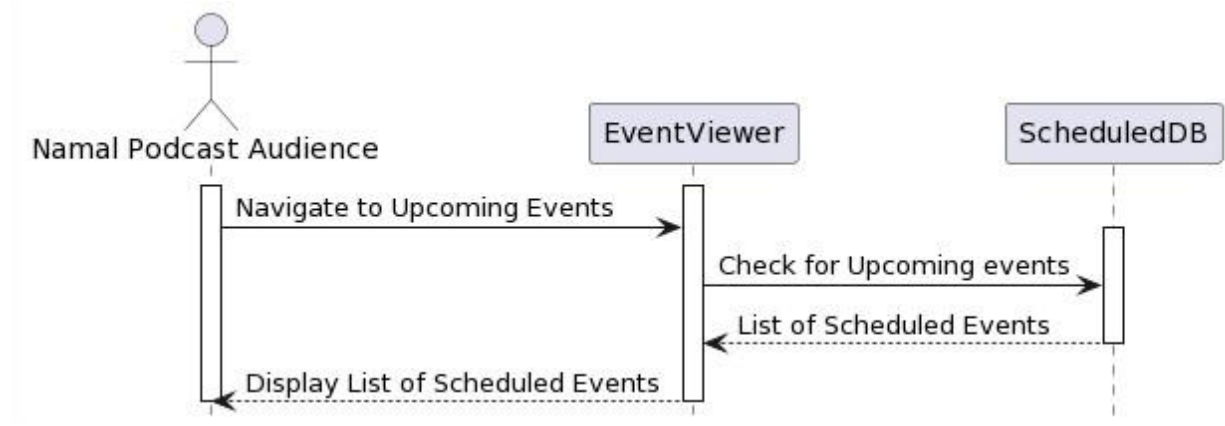
4. Start live session:
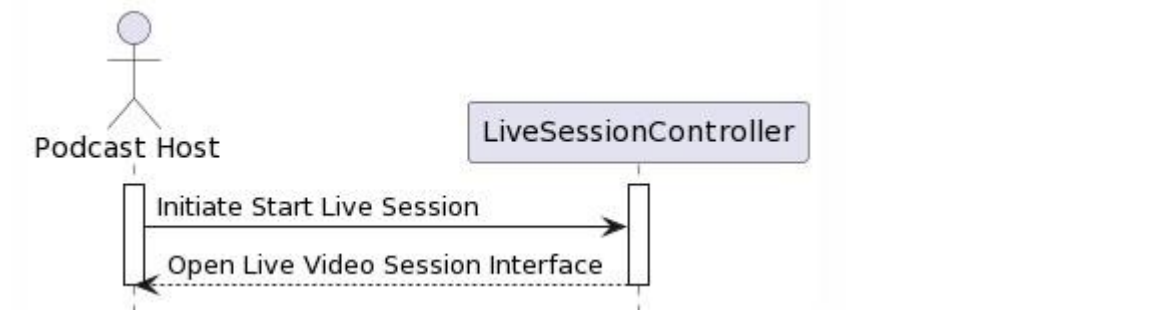
5. Attend live session:

6. Interact during live session:

7. Watch archived sessions:

10. Activity Diagram:

11. Test Cases:

These test cases cover different aspects of the project, including user authentication, live session functionalities, interaction features, archiving, and upcoming event announcements.

11.1 Test Case 1: User Authentication

Objective: Verify the user authentication process for Namal Podcast Audience and Podcast Host.

1. **Test Steps:**

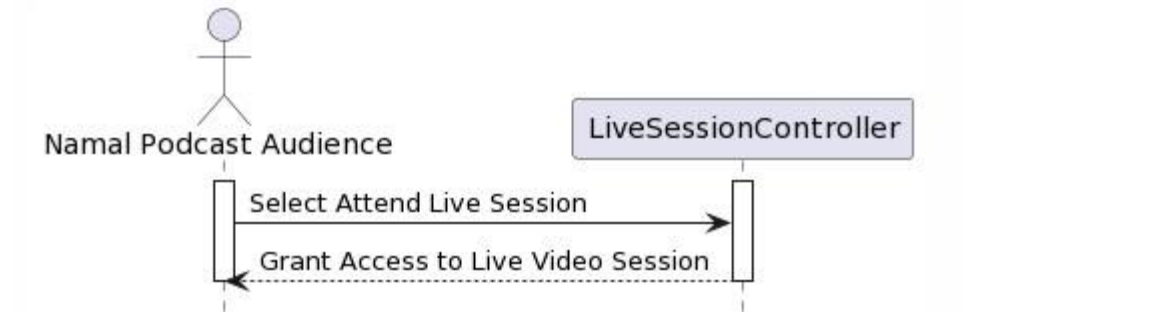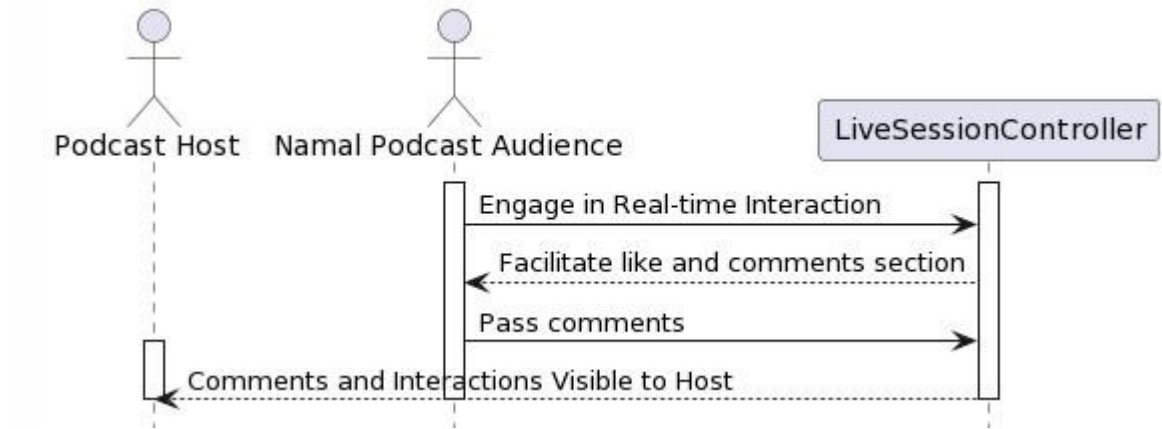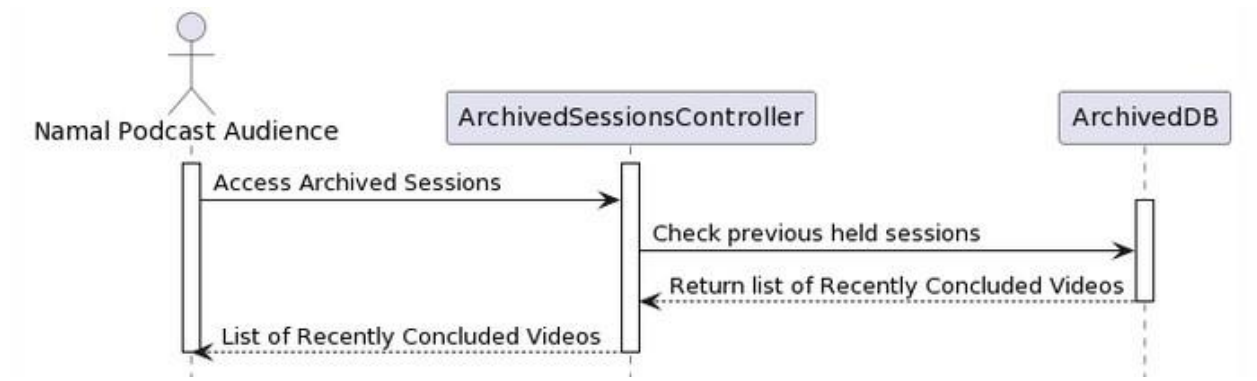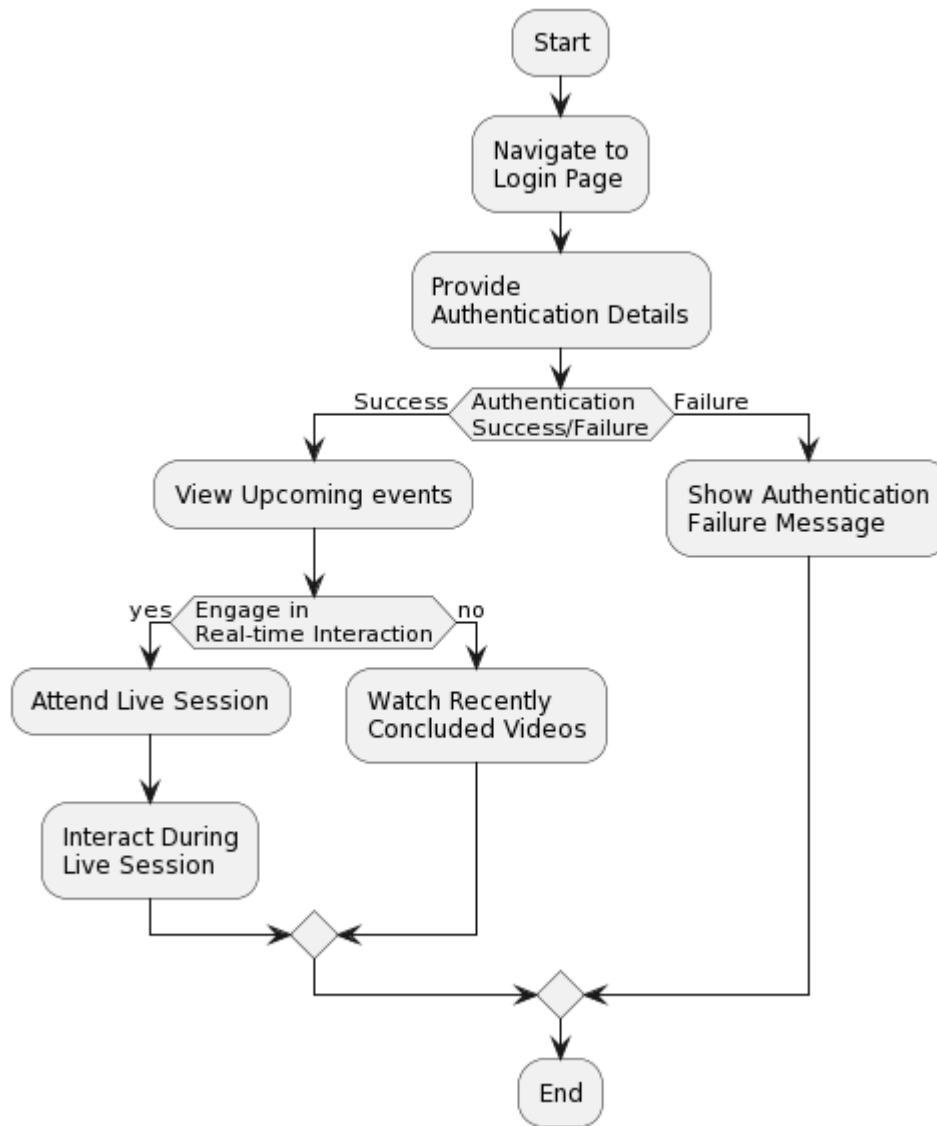   o   Namal Podcast Audience navigates to the Login Page.

   o   Namal Podcast Host also navigates to the Login Page.

   o   Namal Podcast Audience provides valid authentication details (Namal University email credentials).

   o   Namal Podcast Host provides valid authentication details (Namal University email credentials).

2. **Expected Result:**

   o   Audience and Host should be successfully authenticated.

3. **Alternate Interaction:**

   o   If authentication fails, the system should prompt the user to re-enter valid credentials.

11.2 Test Case 2: Start Live Session

Objective: Verify the capability of the Podcast Host to start a live video session.

1. **Test Steps:**

   o   Podcast Host initiates the Start Live Session action.

2. **Expected Result:**

   o   The system should open the Live Video Session interface for the Podcast Host.

11.3 Test Case 3: Attend Live Session

Objective: Verify the Namal Podcast Audience's access to and interaction with live video sessions.

1. **Test Steps:**

   o   The Namal Podcast Audience selects the Attend Live Session option.

2. **Expected Result:**

   o   The system should grant access to the Live Video Session for the Namal Podcast Audience.

11.4 Test Case 4: Watch Recently Concluded Videos

Objective: Verify the accessibility of recently concluded videos in the Archived Sessions.

1. **Test Steps:**

   o   Namal Podcast Audience accesses the Archived Sessions.

2. **Expected Result:**

   o   The system should present a list of recently concluded videos for the Namal Podcast Audience to watch.

11.5 Test Case 5: Interact During Live Session

Objective: Verify the real-time interaction features for Namal Podcast Audience during a Live Video Session.

1. **Test Steps:**

   o   Namal Podcast Audience engages in real-time interaction during the Live Video Session (comments, likes).

2. **Expected Result:**

   o   The system should facilitate comments and interactions visible to the Podcast Host.

11.6 Test Case 6: Schedule Event

Objective: Verify the capability of the Podcast Host to initiate and schedule an event.

1. **Test Steps:**

   o   Podcast Host initiates the Schedule Event action.

   o   The system prompts the Podcast Host to provide details for the scheduled event.

2. **Expected Result:**

   o   The event details should be successfully saved.

11.7 Test Case 7: View Upcoming Events

Objective: Verify the Namal Podcast Audience's ability to view upcoming events.

1. **Test Steps:**

      o Namal Podcast Audience navigates to the Upcoming Events section.

2. **Expected Result:**

      o The system should display a list of scheduled events for the Namal Podcast Audience to view.

12. Deployment Phases:

12.1 Pre-deployment:

- **Objective:**

      o Ensure all project requirements are met, and the system is ready for deployment.

      o Conduct final testing to identify and fix issues before production.

      o Prepare necessary documentation for deployment.

- **Key Activities:**

      o Verify User Authentication:

          ▪ Confirm Namal Community authentication using Namal University email credentials.

          ▪ Test guest and speaker authentication with unique access credentials.

      o Test Live Session Features:

          ▪ Validate the capability of hosts to initiate and schedule live video sessions.

          ▪ Verify audience access and interaction features during live sessions.

      o Test Archived Sessions:

          ▪ Ensure the archiving of live sessions functions correctly.

          ▪ Confirm the accessibility of recently concluded videos for the audience.

      o Test Upcoming Event Announcements:

          ▪ Validate the display of upcoming events on the homepage.

12.2 Deployment:

- **Objective:**

  o Release the Namal Podcast platform to the production environment.

  o Minimize downtime and disruptions during the deployment process.

- **Key Activities:**

  o Deploy Authentication System:

    ▪ Implement secure authentication processes for Namal Community and guests/speakers.

  o Deploy Live Session Features:

    ▪ Enable hosts to start live video sessions in the production environment.

    ▪ Ensure audience access and interaction features are active.

  o Deploy Archived Sessions:

    ▪ Activate the automatic recording and availability of archived sessions.

  o Deploy Upcoming Event Announcements:

    ▪ Display the announcement section with relevant details on the homepage.

12.3 Post-deployment:

- **Objective:**

  o Ensure stability, gather feedback, and address any issues post-deployment.

- **Key Activities:**

  o Monitor User Authentication:

    ▪ Track successful and unsuccessful authentication attempts.

    ▪ Address any authentication-related issues promptly.

  o Monitor Live Session Features:

    ▪ Observe the behavior of live video sessions in the production environment.

    ▪ Address any issues related to audience interaction during live sessions.

  o Monitor Archived Sessions:

- Confirm the proper recording and accessibility of archived sessions.

- Address any issues with the availability of recently concluded videos.

o Monitor Upcoming Event Announcements:

- Ensure the accurate display of upcoming events on the homepage.

- Address any discrepancies or issues with event announcements.

13. Future Scalability for Namal Podcast:

Ensuring the long-term success of Namal Podcast involves strategic planning for future scalability. As the user base grows, the platform must fortify user authentication mechanisms to seamlessly accommodate a larger Namal University community and external participants. Managing an expanding repository of diverse educational content necessitates scalable storage solutions and content delivery networks. To sustain heightened engagement during live sessions, adopting scalable real-time communication technologies and load balancing strategies is imperative. As the number of scheduled events increases, optimizing event scheduling modules becomes vital for efficient management. Lastly, the platform's adaptability to evolving technology and educational methodologies requires regular updates, a modular architecture, and openness to emerging educational technologies. By proactively addressing these scalability aspects, Namal Podcast can position itself as an enduring and innovative educational platform.

14. Conclusion:

The Namal Podcast project is an ambitious endeavor to revolutionize the educational experience at Namal University. By leveraging modern technology to facilitate live video sessions, encourage real-time interaction, and provide on-demand access to recorded content, the platform addresses the evolving needs of students and educators. The carefully outlined functional and non-functional requirements, coupled with thorough testing and deployment phases, underscore the commitment to delivering a robust and secure educational platform. As the Namal Podcast project transitions to production, it not only marks a significant milestone in technological integration for education but also signifies Namal University's dedication to fostering an engaging and contemporary learning environment. The platform's future scalability ensures its adaptability to the ever-changing landscape of education, making it poised for continuous growth and innovation.