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| **LinguaLearn | Translation App** | An innovative language learning application that offers a multitude of features to facilitate and enhance the language learning experience. Whether you're a beginner or an advanced learner, this app provides a versatile platform to engage with and master a new language.  Meher Amir(22i1973) | Sahil Kumar(22i2048) | Raiha Adnan (22i1875) |

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| **Subject**: Software Development Project |
| **Project** **Name**: LinguaLearn – Translation App |
| **Group** **Members**: Meher Amir(22i1973) | Sahil Kumar(22i2048) | Raiha Adnan (22i1875) |
| **Deliverable** **Number**: D4 |
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**Main Body**

**a. Project Title and Introduction**

LinguaLearn is a language learning and translation application designed to assist users in learning new languages and enhancing their translation capabilities. LinguaLearn is a versatile language learning and translation software that offers a comprehensive platform for language enthusiasts and those seeking efficient translation services. It allows users to select the language they wish to learn, tailoring content and interactions, accordingly, making it accessible for learners from diverse linguistic backgrounds. What sets LinguaLearn apart is its interactive AI conversations, which simulate real-life interactions in the target language, enabling users to engage with AI characters in real-time conversations. Additionally, the software employs speech recognition technology to evaluate users' pronunciation and fluency, providing immediate feedback and enhancing speaking skills. Offline mode ensures uninterrupted learning, even in areas with limited connectivity, and the vocabulary builder offers cultural insights and etiquette advice to deepen users' understanding of language nuances. With translation services, progress tracking, and a holistic approach to language learning, LinguaLearn offers a comprehensive language learning and translation experience that caters to a wide range of user needs. This document outlines the contents for Sprint 1, where we aim to develop key features and functionality of the app. Sprint 1 serves as the foundation for the LinguaLearn application, setting in motion the development of key features that make the app a powerful language learning and translation tool. It emphasizes personalization, interactivity, and feedback to enhance the language learning experience. As this sprint progresses, the app will be closer to offering users a comprehensive platform for learning new languages and improving their translation skills.

**b.User Stories**

Certainly, let's explain the selected user stories for development in each Sprint and their associated sub-user stories:

1. **User Interface for Login and Sign-Up:**

**Objective:**

Enhance user accessibility by creating an intuitive interface for login and sign-up processes, including options for Facebook, Google, and standard registration.

**Sub-User Stories:**

* Design visually appealing login and sign-up screens, ensuring ease of navigation.
* Integrate authentication methods for Facebook, Google, and standard email registration.
* Implement responsive design for consistent user experience across devices.
* Include error handling for incorrect login attempts.

1. **Language Selection:**

**Objective:**

Allow users to select source and target languages for translations.

**Sub-User Stories:**

* Design an intuitive interface for users to choose source and target languages.
* Compile and regularly update a list of supported languages.
* Enable users to set default source and target languages for a personalized experience.

1. **Interactive AI Conversations:**

**Objective:**

Facilitate interactive conversations with an AI assistant to enhance language skills.

**Sub-User Stories:**

* + Develop a conversational AI interface capable of natural and interactive communication.
  + Implement natural language processing for meaningful interactions.
  + Integrate features to track and analyze user conversations for a personalized learning experience.

1. **Translation:**

**Objective:**

Assist in pronunciation and language learning through speech recognition and translation.

**Sub-User Stories:**

* + Integrate a speech recognition system for understanding and analyzing user speech.
  + Offer translations based on spoken language, enhancing language practice.

1. **Vocabulary Builder:**

**Objective:**

Provide users with an engaging and personalized way to expand their vocabulary systematically.

**Sub-User Stories:**

* + Design an intuitive interface for seamless navigation of the Vocabulary Builder.
  + Curate a diverse and regularly updated list of words and phrases.
  + Offer a personalized learning experience with customizable preferences.

1. **Text-to-Speech:**

**Objective:**

Enhance language comprehension and pronunciation with a Text-to-Speech feature.

**Sub-User Stories:**

* + Successfully implement Text-to-Speech technology for accurate pronunciation.
  + Seamlessly integrate Text-to-Speech into language learning materials.
  + Allow users to customize Text-to-Speech settings for a personalized experience.

1. **Progress Bar:**

**Objective:**

Offer users a visual representation of their language learning progress.

**Sub-User Stories:**

* Implement a visually intuitive Progress Bar for real-time progress tracking.
* Include milestone markers for completed lessons or achievements.
* Ensure a user-friendly interface for easy accessibility and transparency.

1. **Offline Mode:**

**Objective:**

Enable users to continue their language learning journey even without an internet connection.

**Sub-User Stories:**

* + Develop a feature allowing users to download lessons, vocabulary, and practice materials for offline use.
  + Ensure a seamless downloading process and provide a clear indication of download status.
  + Implement functionality that allows users to access AI conversations offline.
  + Ensure that downloaded conversations remain interactive without requiring an internet connection.
  + Prioritize a smooth transition between offline and online modes to maintain a continuous learning experience.

1. **Text-to-Speech:**

**Objective:**

Enhance language comprehension and pronunciation through the integration of a Text-to-Speech (TTS) feature.

**Sub-User Stories:**

* + Implement Text-to-Speech technology that accurately converts written text into spoken words.
  + Ensure a natural and clear pronunciation to aid users in language comprehension.
  + Seamlessly integrate the Text-to-Speech feature into various language learning materials, including vocabulary lists, sentences, and dialogues.
  + Provide users with an auditory reference for correct pronunciation and language rhythm.
  + Allow users to customize Text-to-Speech settings, including speed, accent, and other parameters.
  + Provide a personalized learning experience that aligns with individual preferences.

The inclusion of milestone markers and a user-friendly interface enhances the overall usability and effectiveness of this feature, encouraging users to stay engaged and committed to their language learning goals. These features focus on enhancing spoken language skills, offering real-time feedback, and ensuring that users have access to clear and accurate pronunciation references. These selected user stories and their sub-user stories represent critical components of LinguaLearn's functionality in each Sprint . The development team will work on implementing these features, ensuring that the application aligns with the vision of offering a comprehensive language learning and translation experience. Each user story contributes to making LinguaLearn a valuable tool for language enthusiasts and learners.

**c. Structured Specifications for User Story and Design**

Certainly! Here's a consolidated overview of all the specifications for the LinguaLearn application:

**Specification 1: Language Selection Interface**

**Objective:**

Allow users to choose languages easily for learning and translation.

* + **User-Friendly Interface:** Design an intuitive and visually appealing language selection interface.
  + **Dropdown Menus:** Include dropdown menus for source and target languages.
  + **Supported Languages:** Provide access to a wide range of supported languages.
  + **Default Language Setting**: Allow users to set preferred default source and target languages.

**Specification 2: Supported Languages**

**Objective:**

Manage and maintain the list of supported languages.

* **List Maintenance:** Keep an up-to-date and comprehensive list of supported languages.
* **Regular Updates:** Regularly update the list to include new languages and dialects.

**Specification 3: Default Language Setting**

**Objective:**

Allow users to set and adjust default source and target languages.

* **User-Configurable Defaults:** Enable users to set default languages in their profiles.
* **Persistence Across Sessions:** Ensure default language settings persist across sessions.
* **Ease of Adjustment:** Provide a straightforward way for users to adjust default languages.

**Specification 4: User Guidance**

**Objective:**

Provide clear guidance for users selecting source and target languages.

* **Clear Guidance:** Offer concise guidance for language selection.
* **Tooltips or Explanations:** Provide tooltips or explanations where necessary.

**Specification 5: Vocabulary Builder**

**Objective**:

Develop a Vocabulary Builder feature for systematic language proficiency expansion.

* **Intuitive Interface**: Design an intuitive and visually appealing interface.
* **Diverse Word Offerings:** Maintain a diverse and regularly updated list of words and phrases.
* **Compatibility:** Ensure compatibility with multiple language offerings.

**Specification 6: Text-to-Speech**

**Objective:**

Implement Text-to-Speech for improved language comprehension and pronunciation.

* **TTS Technology:** Successfully integrate Text-to-Speech technology.
* **Integration into Materials:** Embed TTS into language learning materials.
* **Pronunciation Clarity:** Ensure clear and natural pronunciation.
* **Compatibility**: Provide compatibility with various language materials.

**Specification 7: Progress Bar**

**Objective:**

Offer a visual representation of language learning progress.

* **Visual Intuitiveness**: Design and implement a visually intuitive Progress Bar.
* **Integration:** Integrate the Progress Bar into the user interface.
* **Real-Time Updates:** Implement real-time updates for accurate progress tracking.

**Specification 8: Offline Mode**

**Objective:**

Enable users to learn languages offline.

* **Download Materials:** Allow users to download lessons and practice materials.
* **Offline Access to Conversations:** Enable offline access to AI conversations.
* **Synchronization:** Synchronize user progress and content upon reconnection.
* **Compatibility:** Ensure compatibility with multiple languages and materials.

**Specification 9: Speech-to-Text Integration**

**Objective:**

Implement Speech-to-Text functionality to enhance language learning and practice.

* **Speech Recognition System:** Integrate a robust speech recognition system within LinguaLearn.
* **Real-Time Feedback:** Provide real-time feedback on pronunciation and intonation.
* **Speech-to-Text Conversion:** Enable speech-to-text conversion for language practice.
* **Compatibility:** Ensure compatibility with various language learning materials and offerings.

These structured specifications outline the key objectives and detailed requirements for each user story, guiding the development process of each feature within the LinguaLearn application.

**d. Design:**

1. **Activity diagram**
2. **Use case diagram:** Use case diagrams are a visual representation of the interactions between a system and its users. They help to identify the requirements and functionality of a software application, and can be used to communicate these details to stakeholders and developers.
3. **Sequence diagram:** Sequence diagrams are a visual representation of the interactions between objects in a system. They help to identify the flow of data and control between objects, and can be used to identify potential issues or bottlenecks in the system.
4. **Class diagram:** Class diagrams are a visual representation of the classes and objects in a system. They help to identify the relationships between classes, and can be used to communicate these details to developers and stakeholders.

**e. Architecture:**

Our language learning app is built on a versatile and scalable architecture, designed to offer a seamless and personalized learning experience for learners of all levels. diagrams can be used to identify the requirements and functionality of the app, as well as the interactions between users and the app.

**f. Scrum Board**

We have set up our Trello board to manage the Sprint 1 tasks. The Trello board will be managed by our team leads. Here are the three snapshots as requested:

**g. Implementation screen shots**

**h. Boundary value analysis**

Boundary value analysis testing involves evaluating the behavior of a system at the extreme boundaries or limits of the input space. For the sign-up and login interfaces, we'll consider scenarios at the boundaries of valid and invalid input ranges. Here's an example:

**Sign-Up Interface**

**1. Valid Input**

* Minimum valid length for the username and password that is at least 6 characters.
* Maximum valid length for the username and password that is at most 8 characters.
* Valid characters for the username and password that must contain one small and one capital letter
* Valid email format.

**2. Invalid Input**

* Username and password below the minimum length.
* Username and password exceeding the maximum length.
* Special characters, spaces, numbers, or invalid symbols in the username and password.
* Invalid email formats (e.g., missing '@', no domain, etc.).
* Attempt to submit the form with empty fields.

**Login Interface**

**1. Valid Input**

* Successful login with a valid username and password.
* Valid characters for the username and password.

**2. Invalid Input**

* Failed login attempts with an incorrect username or password.
* Entering the username and password below the minimum length.
* Entering the username and password exceeding the maximum length.
* Special characters, spaces, or invalid symbols in the username and password.
* Attempt to login with empty fields.

**Considerations for Both Interfaces**

**3. Boundary Testing**

* Test the upper and lower boundaries of the character limits for both username and password.
* Check the behavior when the fields are filled with the maximum allowed characters.
* Validate the response when the form is submitted with inputs just at the edge of the allowed range.

**4. Edge Case Testing**

* Test with the smallest possible input (minimum length, valid characters).
* Test with the largest possible input (maximum length, valid characters).

**5. Concurrency Testing**

* Simultaneous sign-up attempts with the same username or email.
* Multiple login attempts with the same or different credentials.

**6. Session Management**

* Verify the handling of multiple concurrent sessions.
* Check session timeout scenarios.

**7. Performance Testing**

* Evaluate the response time under normal and peak loads.

By conducting boundary value analysis testing with these scenarios, you can ensure that the sign-up and login interfaces handle various inputs effectively, providing a robust and secure user experience.

### Burn Down Chart

The burn down chart will track the progress of each task and ensure timely delivery of the project. The chart will be updated daily to reflect the current status of each task and any changes in the estimated completion date.

**Benefits of Using a Burn Down Chart**

* Provides a clear and concise view of the project’s progress, allowing for better decision-making and resource allocation.
* Helps identify potential roadblocks or delays early on, allowing for proactive problem-solving.
* Encourages collaboration and communication among team members, as everyone can see the project’s progress and contribute to its success.

**j.Work Division:**

**1. Team Lead (Scrum Master): (Sahil Kumar)**

Sahil plays a pivotal role in the agile development process by facilitating various aspects of the team’s workflow. During Sprint Planning, he takes the lead in guiding the team through the selection of user stories and the setting of sprint goals, ensuring that the team is aligned with project objectives. He maintains a proactive presence in daily stand-up meetings, where he ensures that team members report their progress, and any impediments are promptly addressed. Task coordination is another area where Sahil excels, making sure that responsibilities are clear and well-distributed among team members. Additionally, he meticulously manages the Trello board, ensuring that it accurately reflects the status of tasks and user stories, providing the team with a clear and organized view of their project’s progress. Sahil’s contributions are instrumental in keeping the team on track and delivering high-quality results in an agile development environment.

**2. Designer (UX/UI Specialist): (Meher Amir)**

Meher plays a crucial role in enhancing the user interface and experience design of the LinguaLearn app. She dedicates her efforts to crafting visually appealing and user-friendly interfaces by creating wireframes, mockups, and design prototypes for the application. Her collaboration with the development team is vital, as it ensures that design elements are seamlessly integrated into the app, resulting in a cohesive user experience. Meher follows an iterative design approach, allowing her to adapt to changing requirements and continuously refine the design throughout each sprint. Her commitment extends to actively participating in Sprint Reviews, where she presents her completed design work to stakeholders and team members, gathering valuable feedback to further enhance the app’s usability and aesthetics. Meher’s contribution significantly contributes to the overall success of the LinguaLearn app by providing an engaging and well-crafted user experience.

**3. Project Manager (Product Owner Role): (Raiha Adnan)**

In the agile development process, Raiha plays a crucial role in ensuring the success of the sprint. She collaborates with the team to prioritize user stories, focusing on delivering the most valuable features in Sprint 1. Raiha also places a strong emphasis on requirement clarity, ensuring that user stories are well-defined with clear acceptance criteria, which serves as a guide for the development team. During the Sprint Review, she works closely with the team lead to accept user stories as “done.” Additionally, Raiha excels in stakeholder communication, effectively managing feedback and expectations. On the other hand, the development team takes charge of implementing the technical aspects of selected user stories, actively participating in daily stand-up meetings to share progress and coordinate efforts. They engage in collaborative problem-solving with the team lead to overcome any impediments and embrace iterative development, making continuous improvements based on feedback and changing requirements throughout the sprint. Together, Raiha and the development team ensure a well-organized and adaptive sprint process.

**k. Lesson Learnt**

1. **Focus on User Experience**

One of the biggest lessons we learned was to prioritize user experience throughout the design and development process. We found that by putting ourselves in the shoes of language learners, we were able to create a more intuitive and engaging platform.

1. **Iterate and Test Frequently**

Another important lesson we learned was the value of iterating and testing frequently. By gathering feedback from users early on, we were able to identify and address issues before they became major problems.

1. **Collaboration is Key**

Finally, we learned that collaboration is key to the success of any project. By working closely with our team members, we were able to create a platform that truly meets the needs of language learners of all levels.

This work division ensures that each team member has clear responsibilities and that their roles align with the Scrum framework. It facilitates efficient collaboration, allows for adaptability, and helps meet the sprint objectives effectively. Additionally, it's essential to maintain open communication among team members to ensure a successful Sprint 1. This document outlines our progress in Sprint 1 and provides the necessary information and artifacts as per the project requirements.