Group 03

Bilinguo
Software Development Plan
Version 1.0

Revision History

Date	Version	Description	Author
15/04/2024	1.0	Initial version	Trần Minh Triết Nguyễn Tấn Phát Nguyễn Thị Ngọc Châm

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Software Development Plan

1. Introduction

This document provides a definition of the project, including an overview of the project, purpose, scope, definitions, milestones, management phases, tasks/role of each member, and other related information.

2. Project Overview

2.1 Project Purpose, Scope, and Objectives

a. Purpose

- The project's goal is to provide an accessible and effective platform for learners to learn English while also creating resources and tools for teachers to enhance their teaching quality.
- Our target users are students looking to improve their English skills, as well as teachers looking for new teaching resources and professional development opportunities.
- Our app sets itself apart by delivering variant features to digitalize traditional learning methods such creating flashcards, dictionaries and specialized tools for designing tests, assigning homework and tracking students' progress.

b. Scope

- From the very early phase, we intended to release a version for Windows at first. Lately, we have adjusted and decided to launch a web-based version with the intention to expand to Windows later. It will offer separate interfaces and functionalities specialized for both learners and teachers.
- Key features for learners include giving a tool to memorize vocabulary with spaced repetition methods and grammar by practicing with given questions and tests. For teachers, they can keep track on students' homework progress and prepare teaching materials such as quizzes or tests.

c. Objectives

- Acquire 100,000 users within the first six months.
- Achieve a user retention rate of 60% after three months.
- Increase average session duration to 20 minutes per user.
- Release beta versions for learner and teacher interfaces within three months.

2.2 Assumptions and Constraints

a. Constraint

- Budget: The project operates with a limited budget relied on sponsorships.
- Schedule: The project has a fixed timeline of 12 weeks (about 3 months) from inception to initial launch, with specific milestones and deadlines for development, testing, and release.
- The project team consists of 5 members with no more staff assigned above the basic team size.

b. Assumptions:

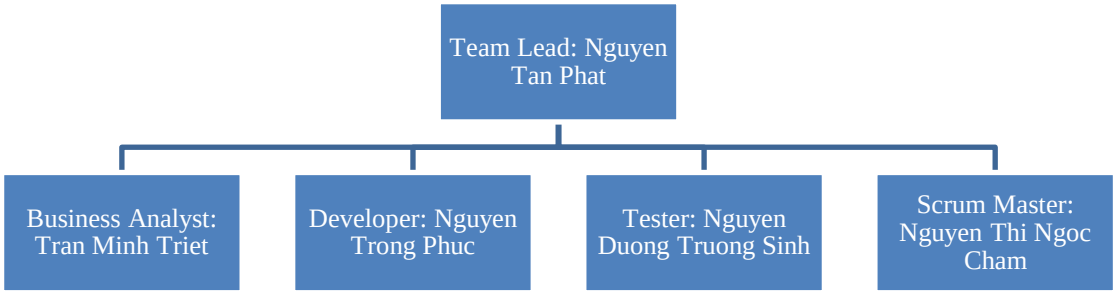
- User demand: The project considers that there is a considerable need for English-learning solutions in the target market, based on market research that shows a growing interest in language acquisition applications.
- It is expected that the target audience will have access to the appropriate technological devices and services, such as dependable internet connectivity.

2.3 Project Deliverables

- Project Plan Document: outlining the project's scope, objectives, timeline, roles and responsibilities, and other key details.
- User Requirements Specification: including the functional and non-functional requirements from the perspective of learners and teachers.
- Use-case Specification: describing the functional requirements of the English-learning App through various use cases, outlining the interactions between users and the system.
- Software Architecture Document: outlining the software architecture such as the design, components and deployment considerations.
- Test Plan and Pre-Launch Presentation: testing the app, including functional testing, usability testing, and performance testing and introducing products to customers.

3. Project Organization

3.1 Organizational Structure



3.2 Roles and Responsibilities

Person	***Role***
TMT, Business Analyst	*As a bridge between the stakeholders and the development team.* *Responsible for gathering and analyzing business requirements, understanding the needs of the stakeholders, and translating them into actionable insights and specifications for the development team.* *Participate in sprint planning meetings and collaborate with the development team to ensure that the delivered software meets the business objectives and user needs.*
NDTS, Tester	*Create and execute test cases, identify bugs, and report them to developers for resolution.* *Ensure that the software meets the specified requirements and functions correctly across different scenarios.*

NTP, Developer	*Responsible for designing, coding, and implementing software solutions according to project requirements.* *Work closely with stakeholders to understand the software requirements and translate them into technical specifications.* *Collaborate with testers to identify and fix bugs, and with team members to integrate their code with the rest of the system.*
NTP, Team leader	*Provide guidance, support, and mentorship to team members, helping them achieve their goals and improve their skills.* *Facilitating communication and collaboration within the team and with other stakeholders, such as project managers and clients.*
NTNC, Scrum Master	*As servant-leaders for the Scrum team, removing impediments, and helping the team to self-organize and collaborate efficiently.* *Facilitating Scrum ceremonies such as sprint planning, daily stand-ups, sprint reviews, and retrospectives, ensuring that they are conducted effectively and that the team stays focused on achieving its goals.*

4. Management Process

4.1 Project Estimates

- Resource: For an app, there might be able to get by with a team of 5 people (Project Manager, Developer, Tester, UI/UX Designer, and Translator). Some other resources are Online Courses, App Development Frameworks, Content & Learning Resources such as TEFL/TESOL, Bilingual Children's Books..., and Community, Online Forums & Support. Equipment and technology are also important: Integrated Development Environment (IDE), Design Tools, Project Management Tools like Slack, or Jira, Drive, ...
- **Timeline: 2-month timeframe overall**

PHASE	TASKS	TIMES	DESCRIPTION	ESTIMATED COST & RESOURCES
Phase 1: Planning & Design	Project Definition	1-2 days	This involves defining the app's purpose, target audience, core features, and functionalities.	1 Team Leader - $40-$80
	User Research & Competitor Analysis	1-2 days	Research user needs and analyze existing language learning apps to identify strengths and weaknesses for inspiration.	1 Business Analyst - $80-$160
	Content & Curriculum Planning	1-2 weeks	Develop the learning content for English language acquisition, considering the target language and learner level.	1 Business Analyst - $200-$400

	Wireframing & User Interface (UI) Design	1-2 weeks	Create mockups and prototypes to visualize the app's layout, user flow, and overall user experience.	1 UX/UI designer - $200-$400
Phase 2: Development	Front-End Development	2-4 weeks	Building the user interface based on the approved designs, ensuring it functions across different devices.	2 front-end developers - $800-$1600
	Back-End Development	2-4 weeks	Developing the server-side logic (if needed) to handle data storage, user accounts, and any integrations with APIs.	1 back-end developers - $400-$800
Phase 3: Testing & Deployment	Quality Assurance (QA) Testing	2-3 weeks	Rigorously testing the app for functionality, bugs, and user experience across different devices and languages.	1 QA & tester - $400 -$600
	App Store & Deployment	1-2 weeks	Preparing the app for submission to app stores (iOS App Store and Google Play Store) and launching the app or web.	Scrum Master and Business Analyst - $200-$400

- **Some risk factors:**

  + User needs and preferences can change throughout development. Be prepared to adapt to user feedback while maintaining the core functionality of the app.

  + Underestimating the technical complexity of certain features, like speech recognition or gamification elements, can lead to development delays and require additional resources.

  + Unforeseen development costs or the need for additional resources can lead to budget shortfalls, forcing the team to either scale back features or secure additional funding.

- **Project scope:** Bilinguo English learning application should address the core aspects of language acquisition to provide a well-rounded learning experience.

  1) Vocabulary Learning:

  + Focus on relevant vocabulary: Cater to target audience's needs by providing words and phrases commonly used in everyday situations or specific contexts (business English, travel English, etc.).

  + Multiple learning methods: Employ various techniques to reinforce vocabulary retention, such as flashcards, spaced repetition algorithms, quizzes, and matching exercises.

  + Visual aids: Enhance memorization with images or illustrations for each word.

  2) Grammar Practice:

  + Targeted grammar drills: Cover essential grammar points from basic sentence structure to more complex topics, tailored to different learning levels.

  + Interactive exercises: Make grammar practice engaging with fill-in-the-blank exercises, sentence building tasks, and error correction activities.

  + Clear explanations: Provide concise and easy-to-understand explanations for each grammar concept.

  3) Listening Comprehension:

  + Variety of audio materials: Incorporate diverse audio content like dialogues, conversations, interviews, and news reports to expose learners to various accents and speaking styles.

  + Interactive listening exercises: Integrate listening exercises with multiple-choice questions, gap-filling tasks, or dictation exercises to test comprehension.

  + Adjustable playback speed: Allow users to adjust the audio playback speed for better control and enhanced listening practice.

  4) Speaking Practice:

  + Speech recording and analysis (optional): If possible, incorporate a speech recognition feature that allows users to record themselves and compare their pronunciation to native speakers.

+ Shadowing exercises: Provide audio recordings of native speakers that users can listen to and repeat to improve pronunciation and fluency.
+ Dialogue practice: Include sample dialogues or conversation starters to help users practice spoken English in practical situations.

5) Enhancing the Learning Experience: While the core features lay the groundwork, these additional functionalities can significantly elevate Bilinguo English learning application:
+ Note Taking: Allow users to take notes on learned vocabulary, grammar rules, or key points from listening exercises for easy reference and revision.
+ Testing: Integrate self-assessment tests in various formats (multiple choice, sentence completion, short answer) to gauge learning progress and identify areas that need improvement.
+ Teacher Connection (Premium): Provide an optional premium feature that connects learners with qualified teachers for personalized feedback, guidance, and conversation practice.
+ Gamification (Optional): Implement game mechanics like points, badges, leaderboards, and rewards to make learning more fun and engaging, especially for younger learners.
+ Progress Tracking: Track user progress through the app, highlighting completed lessons, earned points, and areas for further study.

- **Platform: Web**

4.2 Project Plan

4.2.1 Phase and Iteration Plan

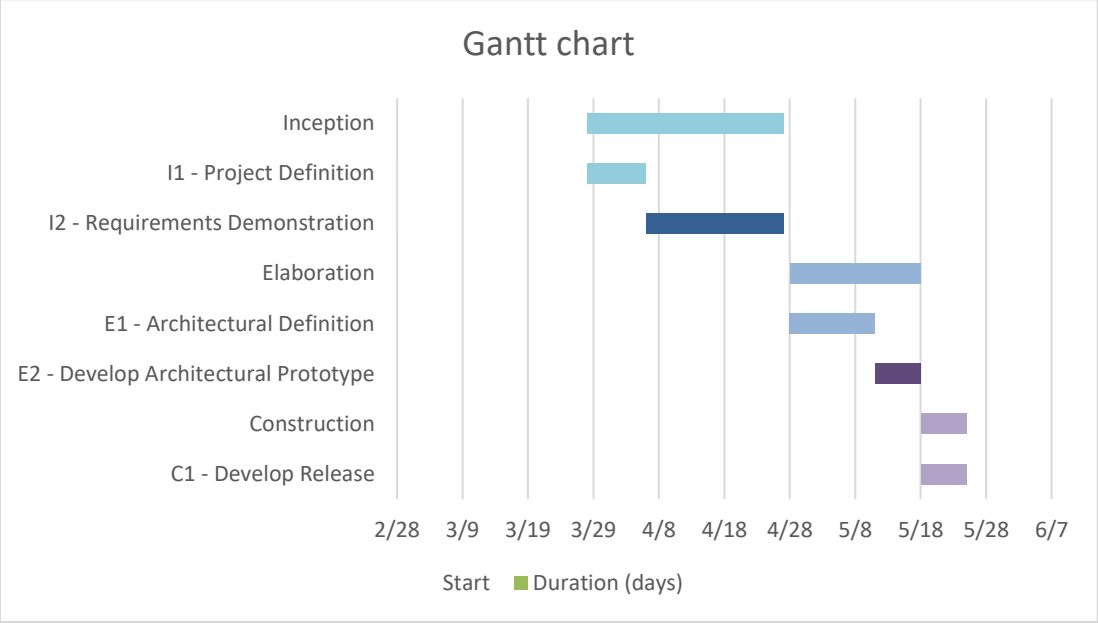
In this project, we have 3 phases (Inception, Elaboration and Construction) to experience. The description of these phases is shown in the table below:

Phase	No. of Iterations	Start	End
Inception	2	28/03/2024	27/04/2024
Elaboration	2	28/04/2024	18/05/2024
Construction	1	18/05/2024	25/05/2024

Specific content of each phase:

Phase	**Iteration**	**Description**	**Associated Milestones**	**Risk Addressed**
Inception	I1 – Project Definition	Define project plan, vision document, requirements and business case.	Business Case Review	- Clarifies user requirements up front. - Develops realistic project plans and scope. - Determines feasibility of project from a business point of view
	I2 – Requirements Demonstration	- Complete vision document and update project plan. - Demonstrate requirements in Use-case model	Use-case Diagram	Clarifies key and detailed requirements in Use-case model
Elaboration	E1 – Architectural Definition	- Complete analysis and design for all use case - Define software architecture and demonstrate architectural components in Class diagram	Class Diagram	Determines components and connection of them in architecture
	E2 – Develop Architectural Prototype	- Complete architectural analysis. - Sketch UI prototype	Architectural Prototype	- Show the key scenarios following use case - Early prototype for user review.
Construction	C1 – Develop Release	Implement and test use cases	Software Release	- All key features from architectural perspective implemented. - Quick release addresses customer satisfaction. - All key functionality provided in System by full Release.

To more views about iterations of each phase, you can refer to this Gantt-chart:



4.2.2 Releases

The project has 1 release that is completed in the construction phase and to be published.

4.2.3 Project Schedule

Category	Task Name	Duration (days)	Start	Finish	Assignees	Done	Notes
Phase	INCEPTION	30	28/03/2024	27/04/2024		☑	
Iteration	I0 - Setup	9	28/03/2024	06/04/2024		☑	
Task	Group registration		28/03/2024	28/03/2024	Trọng Phúc	☑	
Task	Set up Workspace: Slack, Jira, Github, Gdrive	1	02/04/2024	03/04/2024	Ngọc Châm	☑	
Meeting	First Meeting		04/04/2024	04/04/2024	All	☑	
Task	Answer PA0 requirements, write the project description	2		06/04/2024	Minh Triết	☑	
Meeting	**Sprint 1 Planning meeting**		**06/04/2024**	**06/04/2024**	**All**	☑	
Milestone	**Submit the Project Proposal - PA0**				**Ngọc Châm**	☑	
Iteration	I1 - Project Definition	14	06/04/2024	20/04/2024		☑	
Meeting	Sprint1 Weekly Scrum meeting 1		08/04/2024	08/04/2024	All	☑	
Task	Initiate planning phase by trying to fill the Software Development Plan PA1.a	7	08/04/2024	15/04/2024	Minh Triết + Tấn Phát	☑	
Task	Plan the initial schedules and objectives for the upcoming five sprints				Ngọc Châm	☑	
Task	Prepare an initial version of the Vision Document - PA1.b	4	11/04/2024	16/04/2024	Trọng Phúc + Trường Sinh	☑	
Meeting	Sprint1-Weekly Scrum meeting 2		12/04/2024	12/04/2024	All	☑	
Task	Update weekly scrum meeting notes PA1.c	1	12/04/2024	13/04/2024	Minh Triết	☑	
Meeting	Sprint1 Review Sprint meeting		16/04/2024	16/04/2024	All	☑	
Meeting	Sprint1 Planning Next Sprint meeting		18/04/2024	18/04/2024	All	☑	
Milestone	**Submit PA1**		**20/04/2024**	**20/04/2024**	**Ngọc Châm**	☐	
Iteration	I2 - Requirement Demonstration	7	20/04/2024	27/04/2024		☐	
Task	Revised project plan - PA2.a		20/04/2024	20/04/2024	Ngọc Châm	☐	
Task	Detailed vision document PA2.b				Tấn Phát	☐	
Task	Update weekly scrum meeting notes	1	20/04/2024	21/04/2024	Trọng Phúc	☐	
Task	Use-case model PA2.c	4	21/04/2024	25/04/2024	All	☐	
Task	Use-case specification PA2.d	4			All	☐	
Meeting	Sprint2 - Weekly Scrum meeting 2		24/04/2024	24/04/2024	Minh triết	☐	
Task	Review and finish	2	24/04/2024	26/04/2024	All	☐	
Task	Update weekly scrum meeting notes PA2	2			Trường Sinh	☐	
Meeting	Sprint2 - Review Sprint meeting		26/04/2024		All	☐	
Meeting	Sprint2 - Planning Next Sprint meeting		27/04/2024	27/04/2024	All	☐	
Milestone	**Submit PA2**		**27/04/2024**	**27/04/2024**	**Ngọc Châm**	☐	

Phase	ELABORATION	20	28/04/2024	18/05/2024		☐
Iteration	E1 Architectural Definition	13	28/04/2024	11/05/2024		☐
Meeting	Sprint3 Weekly Scrum meeting 1		28/04/2024	28/04/2024		☐
Task	Use-case specification - 2nd submission	5		03/05/2024		☐
Task	Define software architecture	5				☐
Task	Model class diagrams for for each of the key components defined in the architecti	5	03/05/2024	08/05/2024		☐
Task	Review and finish		08/05/2024	08/05/2024		☐
Task	Update weekly scrum meeting notes PA3.d					☐
Meeting	Sprint3 - Review Sprint meeting		08/05/2024	08/05/2024		☐
Meeting	Sprint3 - Planning Next Sprint meeting		10/05/2024	10/05/2024		☐
Milestone	**Submit PA3**		**11/05/2024**	**11/05/2024**		☐
Iteration	E2 User Interface Design	7	11/05/2024	18/05/2024		☐
Task	Revise SAD	4	11/05/2024	15/05/2024		☐
Task	UI prototype	4				☐
Meeting	Sprint4-Weekly Scrum meeting 2		15/05/2024	15/05/2024		☐
Task	Update weekly scrum meeting notes PA4.c					☐
Task	Review and finish	1	15/05/2024	16/05/2024		☐
Meeting	Sprint4 Review Sprint meeting		16/05/2024	16/05/2024		☐
Meeting	Sprint4-Planning Next Sprint meeting		17/05/2024	17/05/2024		☐
Milestone	**Submit PA4**		**18/05/2024**	**18/05/2024**		☐
Phase	CONSTRUCTION	7	18/05/2024	25/05/2024		☐
Task	Implement all key features	5	18/05/2024	23/05/2024		☐
Task	Test plan and test cases for all functions	3	20/05/2024	23/05/2024		☐
Meeting	Sprint5 Weekly Scrum meeting 1		20/05/2024	20/05/2024		☐
Task	Update weekly scrum meeting notes PA5.c					☐
Task	Test case execution and test report	2	22/05/2024	24/05/2024		☐
Task	Slide for representation	2	22/05/2024	24/05/2024		☐
Task	Update weekly scrum meeting notes	1	23/05/2024	24/05/2024		☐
Milestone	**Submit PA5**		**25/05/2024**	**25/05/2024**		☐

4.3 Project Monitoring and Control

4.3.1 Reporting

There are 4 meetings for each sprint:

- 1 sprint planning meeting: plan for the next sprint
  - This meeting needs to be held at the end of the current sprint and before the next sprint.
  - Identify and prioritize tasks, user-story or a part of a use-case for the next sprint.
  - Assign tasks to team members.
- 2 weekly scrum meetings:
  - Each member answers 3 questions:
    - What have I done since last week?
    - What will I do until next week?
    - What issues / problems /obstacles do I have?
  - Use a single document for all scrum meetings.
- 1 sprint review (retrospective) meeting:
  - This meeting is held at the end of each sprint to review and evaluate the results of the current sprint.
  - In this meeting, the team needs to discuss and record the following.
    - What went well.
    - What went wrong.
    - What problems and what caused the problems.
    - What can be done differently in the next sprint to improve the project.
    - What lessons we could learn.

Corresponding to each meeting, there will be a corresponding report.

4.3.2 Risk Management

Risk ID	*Risk Description*	*Probability*	*Impact*	*Risk Exposure*	*Priority*	*Mitigation Strategy or Contingency Plan*
01	Code conflicts between members	80%	70%	0.56	High	- Encourage developers to communicate and coordinate their work to minimize the chances of conflicts. - Define coding standards and guidelines to reduce the likelihood of conflicting changes.
02	Requirements change	80%	70%	0.56	High	Conduct assessments on performance capabilities corresponding to customer needs, promptly update changes to all team members.
03	Poor Communication	60%	70%	0.42	Medium	Actively exchange, contribute ideas, and understand each other better.
04	The amount of work is overloaded	50%	60%	0.3	Medium	Project managers base their work on the status of human resources and time budget to allocate appropriate tasks to avoid pressure.

4.3.3 Configuration Management

Tools:

- GitHub, Google Drive (for storing and sharing code, documents)
- Messenger, Google Meeting (for communicating between members)
- Microsoft Word (for composing document)
- Jira, Slack, Google Sheet (for planning and managing work)