



វិទ្យាស្ថានជាតិប្រៃសណីយ៍ ទូរគមនាគមន៍ បច្ចេកវិទ្យាគមនាគមន៍និងព័ត៌មាន
National Institute of Posts, Telecoms and ICT

Department of Computer Science

Project Report Topic
“Distance-Learning”

Submitted by: Mrs. Veth Suyngorn

Under the supervision of:

Mr. Mao Hieng

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I. INTRODUCTION

1. Objective

This subject is conducted from a school of Computer Science which requires students of year 3 to build a team consisting of 3 to 6 people and choose 1 among 9 projects to complete within a 10-week period. Moreover, the purpose of the subject is to teach students how to manage a team as a real project and assign a member to do a role that they are good at such as front-end developer, back-end developer and database administrator

2. Duration

The Duration of Project I subject for year 3 student takes 10 weeks. Students had to work as a team with a suitable time in their own project. The subject complement starts from Tuesday, April 28th, 2020 until Friday, 10th, July 2020. The individual report will be submitted on July 10th, 2020.

II. PRESENTATION OF THE PROJECT

1. Problematic

There has been an outbreak of the virus that has killed so many people in the world and so governments in many countries have allowed it to stop education. Due to the suspension, students are being dropped off, so there is also an online learning program.

2. Objective

Froome is a Mobile First Online Distance Learning that brings students new feel of experience in learning through our friendly application that includes spaces for self study, communications and a separately space where they can join into classrooms and learn from the contents provided by their teachers including Lessons, Videos and such as assignments and quizzes where they can do it online from anytime anywhere with only Android, iOS or our Web Application.

3. Team

In the progress of develop the project, there are three members:

- Chheun Chansreytoch: Leader + Frontend
- Yeun Peachreaksmey: Frontend
- Veth Suyngorn: Database + Backend + Frontend
- Sem Sreyreach: Frontend
- Tep Veasna: Backend + Frontend + Server APIs

4. Platforms

As it is the first step of making such a project we have planned only to make mobile apps for both android and IOS that are using, students can learn from home easily with our online Distance Learning app that provides spaces for self learning and classes that make them feel like a real classroom even in that kind of situation.

5. Working table

This project is planned to be completed within 10 weeks and counted as one term. It starts from project initialization until production.

Down below is the working table of the whole project.

Task	Week 1 & 2	Week 3 & 4	Week 5 & 6	Week 7 & 8	Week 9	Week 10
Analysis Phase						
Design Phase						
Development Phase						
Testing Phase						

Table 1: Work breakdown Structure

III. ANALYSIS AND GENERAL CONCEPT

1. Requirements

1.1. Functional Requirements

The functional requirements are all needed features that will be use in the application.

❖ Authenticate

- Allow users to login their account which user has been created before
- Allow users to sign up a new account if they are a new user for this application platform

❖ User feature

- Can View and Upload Materials (Videos, Links, Slides, Docs and PDFs)
- Can Join Class and Create class

- Can View Lessons and Videos

1.2. Non-Functional Requirements

Beside the functional requirements, we also need to consider as well as about non-functional tasks. That's a way would help to improve the quality and usability of the application. Here are few non-functionalities:

- **UX/UI:** The UX/UI must be simple, intuitive and user- friendly so that users can navigate on our system smoothly and painlessly.
- **Performance:** All steps in developing the new intranet must always give regard to the impact of performance because it is vital to make our system run quickly and efficiently without any errors.
- **Maintainability:** The system must be designed and programmed in a way that is easy and hassle-free for the next developers to maintain.

2. System User

This application can use by everyone. In order to use this application, they need to have an account and if they are a new user, they need to require a new account create. And user can join class, can View and Upload Materials (Videos, Links, Slides, Docs and PDFs) and View Lessons and Videos.

3. Usecase Diagram

This is the use case diagram that show how power user can do in out mobile application.

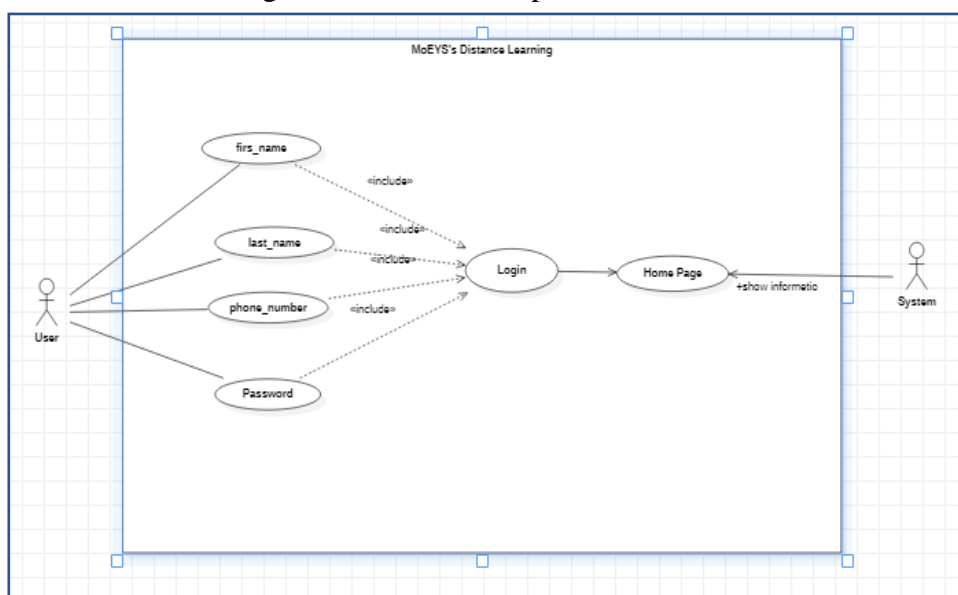


Figure 1: Use Case Diagram

4. Activity Diagram

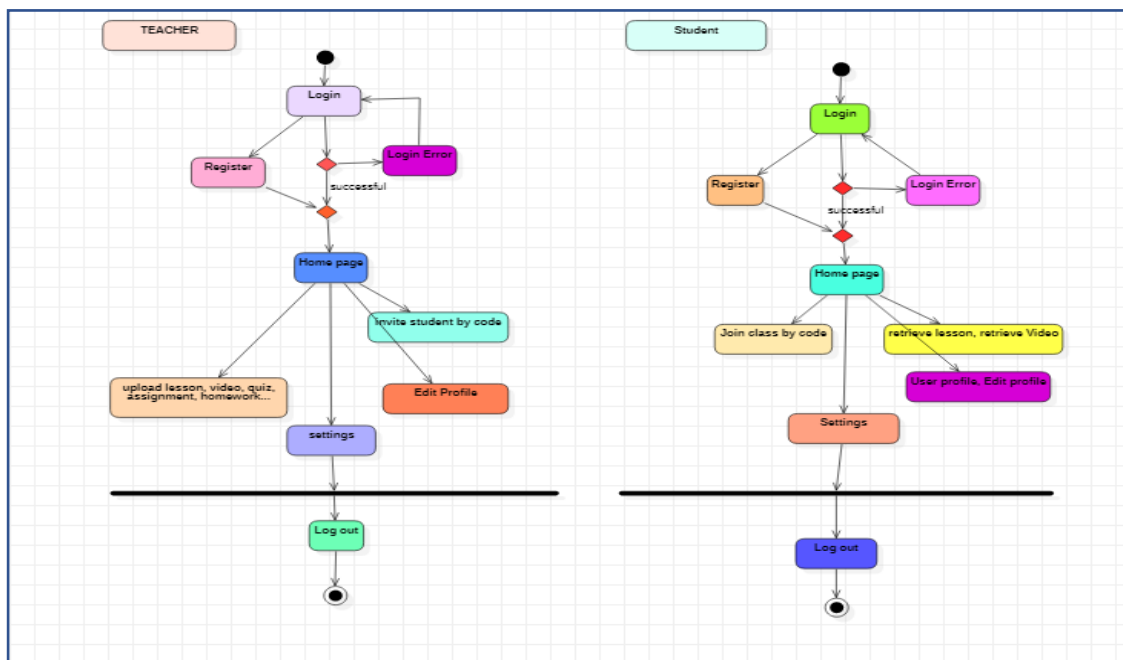


Figure2: Login and Register Diagram

This diagram below is illustrated about Activity diagram between user and system in this project.

IV. DETAIL CONCEPT

1. Choice of Technologies

Google has introduced us Flutter technology which is the new open source library to create mobile applications. This technology may be the solution to create a cross-platform mobile application with a beautiful user interface. Basically, Flutter technology is the mobile app SDK to build high performance, high fidelity, apps for iOS and android both platforms from the single codebase.



Figure3: Flutter logo

1.1. Languages and Libraries

In order to achieve effective outcome, several languages and libraries were used as following:



Figure4: Dart logo

Dart: is a client-optimized language for fast apps on any platform.

1.2. Tool

The following tools help me in the project development in an effective and smooth manner:



Figure5: Android Studio Logo

Android Studio: is the official integrated development environment for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development.



Figure 6: Postman Logo

Postman: is an application that uses for testing with API.



Figure7: Telegram Logo

Telegram: is an application use to communicate with our teammate.



Figure8: Wamp server Logo

WampServer is a Windows web development environment. It allows you to create web applications with Apache2, PHP and a MySQL database. Alongside, PhpMyAdmin allows you to manage easily your database.



Figure9: Visual Studio Code Logo

Visual Studio Code is a source code editor developed by Microsoft for Windows, Linux and macOS. It includes support for debugging, embedded Git control, syntax highlighting, intelligent code completion, snippets, and code refactoring



Figure10: Laravel Logo

Laravel is a free, open-source PHP web framework, created by Taylor Otwell and intended for the development of web applications following the model–view–controller architectural pattern and based on Symfony.



Figure11: GitHub Logo

GitHub is a Git repository hosting service, but it adds many of its own features. While Git is a command line tool, GitHub provides a Web-based graphical interface. It also provides access control and several collaboration features, such as



Figure12: Figma Logo

Figma is an online collaboration UX/UI Designing tool. Users can work as a team and it's easy and can be used anywhere anytime.



Figure13: Google meet Logo

Google Meet is a video-communication service developed by Google. It is one of two apps that constitute the replacement for Google Hangouts, the other being Google Chat.

2. Architecture of the Application

2.1. System architecture

Like mention above this project, user used the mobile application to and request to the API (Laravel) and the API request to the web server. When the web server saw the request and response to the API and the API response to the user.

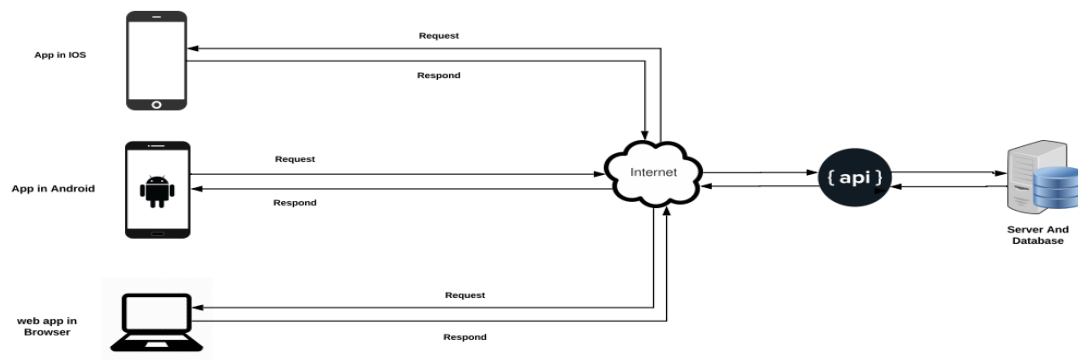


Figure14: System Architecture Diagram

3. API

This is the API list with mobile:

Nº	API Name
1	Check Login
2	Create Class (post, get)
3	Video (post, get)
4	Link (post, get)
5	Lesson (post, get)
6	Document (post, get)
7	File PDF (post, get)
8	Slide (post, get)

Table 2: API

V. IMPLEMENTATION

1. Project Structure

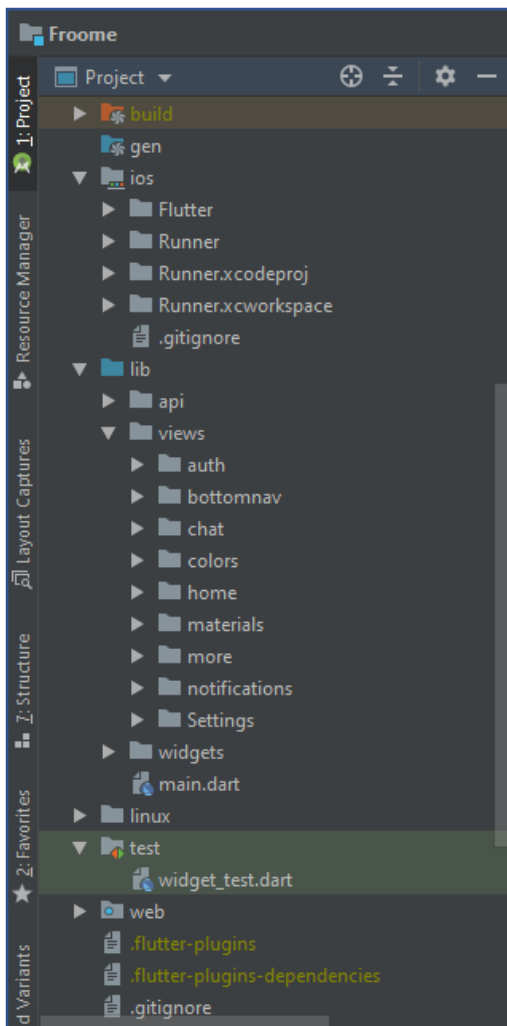


Figure15: Structure

- ❖ **Lib:** is a main folder and also be a default folder for starting a project that is known for every development.
 - **api:** is a directory used for storing api url for other classes to get.
 - **Views:** is a directory which is used the implement all the frontend code into dart file.
 - **Widgets:** is a directory used for creating new widgets that is needed in project front-end.
- ❖ **Assets:** is a directory which is used to store the image files, svg files and fonts for the app usages.
- ❖ **pubspec.yaml:** is the file that we can input library , font, images and environment.

VI. CONCLUSION

1. Results

After 10 weeks of effort, project is 70% complete.

Mobile	FROOME		
	1	Use Login	Completed
	2	User (post, get)	Completed
	3	Messenger or Chat	Incomplete
	4	Upload Video, link (post, get)	Completed
	5	Upload Doc, PDF, Slide (post, get)	Completed
	6	Upload Lesson (post, get)	Completed

Table 3: Task Complete

2. Difficulties

Nothing is easy and enjoy all the time, we are facing difficulties everyday in our life but we must stay strong, keep going forward and not to give up. When we first joined this project, it must face a problem and difficult situation or tasks we could perform to do it will. Because in the project, it's new technology for us and we never know about it so we must learn by ourselves and ask team to help. Secondly, we have problem with Git because we don't know much about it. And third we have a problem with connecting with API, well we don't know how to connect it and make it easily.

3. Experiences

As experience for project, we have a lot about coding, how to optimize code, how to perform a code, how to fix bugs, research new library or what we going to use in my mobile application and how to connect API with mobile easily. Not only coding skill, we have also gain soft skill. we have learned how to work as a team and communicate with teammates.

4. Perspective

From perspective forward this term, we hope this application will be the app that can help education system in Cambodia that learn by online better then and make more education system modern in Technology sector with mobile app that create by our own country.

5. Conclusion

In conclusion, we strongly believe that this term has given us the opportunity to make a challenging as raise above as well as the previous work experiment. Learning about the workflow of the project with really awesome and excited teammates. Furthermore, we also believe that it's kind of discover ourselves to know what we are passionate in which type of job for our future career. Finally, we would like to thank you from the bottom of our heart to NIPTICT's lecturers, stuffs that provide us such great subject for this term program.

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