1. **Project Initiation**

This is the first step of the project. There are two main processes in the first phase which include: i) Create the Project Charter and ii) Identify the Project Stakeholder [1].

1.1 Create the project charter

Project charter is the process of developing a document that formally authorizes a project and documenting initial requirements that satisfy the stakeholders needs and expectations. Project charter is shown in the below table:

Project charter

Project title: Mobile App for School of Maths
Start date: 15 November 2022
Finish date: 15 March 2023
Budget information: The budget is 5,000.00 USD. The project is fully funded by School of Maths, represented by Ms. Khy Srey Sros.
Project manager: Mr. Touch Sopheak, (+855) 89987900, touchsopheak@yahoo.com
Project objectives: To build a mobile app for School of Maths
Approach:
  - Schedule data collection at School of Math
  - Assign the channel to communicate well with all stakeholders.
  - Define clear requirements with the client.

Roles and Responsibilities:

Role	Name	Organization/Position	Contact information
PM	Mr. Touch Sopheak	Project manager	+855 89987900
Developer	Mr. Pen Chentra	Developer	+855 12252525
User, Tester	Ms. Chheang Sreypich	Tester	+855 10452654

Contract:

  - Progress meeting every Monday at Data Solution meeting room from 9am.
  - Meeting with the client every month on the 15th
  - The major channel for communication is telegram group

1.2 Identify the project stakeholder

This is the process to identifying all people or organizations impacted by the project and documenting relevant information regarding their interests, involvement and impact on project success. **Outputs:** Stakeholder register, Stakeholder management strategy. For this particular project, the stakeholder register and stakeholder management strategy are shown in table 1 and table 2 below.

Stakeholder register

Name	Organization/Position	Internal/External	Project Role	Contact information
Ms. Khy Srey Sros	CEO of School of Maths	Internal	Client	+855 11757475
Mr. Touch Sopheak	Project Manager of Data Solution	Internal	Project manager	+855 89987900
Mr. Pen Chentra	Developer of Data Solution	Internal	Developer	+855 12252525
Ms. Chheang Sreypich	Tester of Data Solution	Internal	Tester	+855 10452654
All teachers at School of Maths	Teachers	External	Users	
All parents of students studying at School of Maths	Parents	External	Users	
All students studying at Shool of Maths	Students	External	Users	

Table 1. Stakeholder register

Stakeholder management strategy

Name	Level of Interest	Level of Influence	Potential Management Strategies
Ms. Khy Srey Sros	High	High	She is the client of this project. She has short time for meetings, focuses on results and financial benefits.
Parents of student	Low	Hight	Parents may not interest in this project, but they are likely to high influence on this project as they are the clients of School of Maths.

Sign off the project

Name	Internal/External	Project Role	Contact information	Signature
Ms. Khy Srey Sros	Internal	Client	+855 11757475	
Mr. Touch Sopheak	Internal	Project manager	+855 89987900	
Mr. Pen Chentra	Internal	Developer	+855 12252525	

Ms. Chheang Sreypich	Internal	Tester	+855 10452654	

2. Project Planning

With the respect to the School of Maths' mobile app, the project planning processes required to establish the scope of the project, refine the objectives and define the course of action required to attain the objectives of the project.

2.1 Develop Project Management Plan (Integration):

Process of documenting is necessary to define, prepare, integrate and coordinate all subsidiary plans. In other world, this process is about creating the project management plan. **Outputs**: Project Management plan. With the project management plan, our project team will use Microsoft office such as world and excel to plan the project. Moreover, we look forward to use Microsoft project in the next project due to lack of experience in Microsoft project. The Project Management Plan is shown below:

Mobile App for School of Maths

Introduction:

This project is to build **School of Maths** a mobile app that will be used as communication platform between the school admin, teachers, parents and students. This project will make a great benefit to **School of Maths** if it succeeds.

Objectives:

The objectives of this project are:

- To build a mobile app that can transfer paper works to this app
- To connect parents/students/teachers with the school
- To make it easy for the school to extend

Scope:

Build **School of Maths** an app that can be both used by Android and IOS.

Key Stakeholders:

Client	School of Maths, represented by Mrs. Khy Srey Sros
Contractor	Data Solution, represented by Mr. Touch Sopheak

Resources and Tools:

- Native mobile app development tools
  - Xcode

- Android Studio
- AppCode
- Cross-platform mobile app development tools
    - Appcelerator
    - Xamarin
    - Adobe PhoneGap
    - Ironic
    - React Native
    - MobiLoud
    - Ninox
    - Sencha
    - NativeScript
    - Onsen UI
    - OutSystems
    - Fliplet
    - TrackVIA
    - AppSheet
    - Quick Base
    - Alpha anywhere
    - BuildFire

Milestone list:

First, for client meeting/update, our team have to send the update to the project client every month. In addition, for progress meeting, we use waterfall software developing life cycle having one per week the project progress meeting on every Monday morning. For other tasks will be shown in the table of milestone list below:

Milestone	Description	Date
Complete Requirement Gathering	All requirements for mobile app must be determined to mobile app-based architecture design upon	15/12/2022
Complete mobile app architecture design	All database, back-end and dataflow will be design	31/12/2022
Complete UI Design	The UI is design for normal user easy to understand and use.	31/01/2023
Complete transaction Design	All the transaction of mobile will be discussed and designed to one agreement.	15/02/2023
Complete Coding	All coding is finished	25/02/2023

Complete Testing	Use test case to test all the transaction of website	01/03/2023
Complete implementation	The rest of the time is to implement with SEO update and applying	12/03/2023
Closing the project	All processes are done to close the project.	15/03/2023

Approval Signature

Mrs. Khy Srey Sros
Director of School of Maths

Mr. Touch Sopheak
CEO of Data Solution

Scope Requirement:

For scope requirement to me, I think it is not necessary to make it because it is already specified from the client already.

2.2 Collect requirements (Scope):

With the respect to this mobile project, the process of collecting requirements the process of defining and documenting stakeholders' needs to meet the project objectives. And the output of this process contains 2 document types which include: requirements documentation and requirements traceability matrix. The below description shows the detail of Requirement Specification which include requirements documentation and requirements traceability matrix:

Requirement Specification

Review by:
Project Manager: Touch Sopheak
Version: 1.0
Dated: 15 November 2022

Requirement Specification			

Document Change Record

The table below shows the Project Change Update in version 1.0

Date	Version	Author	Change Description

20/11/2022	1.0	All	Create Requirement Specification document

Document Review:

The following table identifies all management authorities who have successively approved the present issue of this document.

No	Reviewer	Position	Sent	Returned
1	Mrs. Khy Srey Sros	Project Client	15-11-2022	22-11-2022

i. Introduction

This project is to build School of Maths a moibile app. This app will be used as the communication platform between the school, parents, students and lecturers.

ii. The Stakeholders

- Sponsor
- Users
- Technology experts
- System architect
- Maintainers
- Support
- Current system specialists / Administer
- Project manager
- Business leaders
- Business analysts
- Designers
- Programmers
- Testers

iii. Use case for shared calendar

Functional Properties:

F1. The user must login or register.

F2. The user can connect gmail or facebook.

F3. User have to pay for some value document or course

F4. User can get certificate after finishing a short course

F5. The user can get links, videos, and e-books.

F6. The user can read online for links, videos, and e-books

F7. The user can search by title, author name, and keywords

F8. The user can search by date, rank and other.

F9. The user can preview links, videos, and e-books

F10. The user can share material on facebook

F11. The user can vote the rate on links, videos, and e-books

F12. The user can see notification for material update

F13. After finish

F14. The administrator manage user

F15. The administrator upload material

iv. Requirements Description

School of Maths mobile app will be exclusively used by School of Maths admin and provide access to teacher, parents and students. Admin can manage all aspect of the app.

iv.1 Functionality Requirements

UsrReq001

1. The product shall retrieve e-books, videos and links from data source and show sort the files by date, by alphabet of the name file, by popularity or by content.

UsrReq002

2. The product shall mange client by check username and password.

UsrReq003

3. The product shall support .pdf file types.

UsrReq004

4. The product shall have update files.

UsrReq005

5. The product shall have the preview feature before the user download the file. By reviewing the file, the users will not need to download the file if the information in the file is not useful to time.

UsrReq006

6. Search function is important for libraries. If the search function has high capability, it can satisfy the users. Good indexing means that when a user search by a keyword, not only the

search function reads the tiles or headlines of the file but also it is necessary to look the text inside the documents.

UsrReq007

7. The product shall provide the popular files (Ranking) up-to-date so that users can know the trend and get up-to-date knowledge.

UsrReq008

8. The product shall have social sharing feature so that the members of the library can show the interesting files, videos and news of the library to their co-workers, friends and their society. Every time the files are shared, information about the library and the mission can lead to increasing awareness. Twitter and Facebook are popular social media for sharing information of libraries.

UsrReq009

9. The product shall have a popular online community platform that let the members of library to get access the files from one central location.

UsrReq010

10. The product shall have notifications and alerts to users when there is update in the library. Sometimes, when the user search something but it is not on the library. So, the library asks the users to send notification when the file is available on the library. Some libraries have this feature.

UsrReq011

11. The User have to pay for short course of MIS course, then after finish the certificate will be provided.

iv.2 Non-Functionality Requirements

iv.2.1 Performance Requirements

NFRsReq001

1. Any interface between a user and the automated system shall have a maximum response time of 5 seconds.

NFRsReq002

2. The product shall download the real data within 5 minutes of a change.

NFRsReq003

3. The product shall cater for 10,000 simultaneous users and maximum loading at other periods will be 6,000 simultaneous users.

iv.2.2 Reliability and Availability Requirements

NFRsReq004

4. The product shall be available for use 24 hours per day, 365 days per year.

iv.2.3 Security Requirements

NFRsReq005

5. The product shall provide 10 minutes of emergency operation should it become disconnected from the source or the product shall protect itself from intentional abuse.

NFRsReq006

6. Only administrator can see the personnel records of their user.

NFRsReq007

7. The security settings depend on the founders of library. Some files can be accessed only by the members of the libraries.

NFRsReq008

8. The product shall protect private information in accordance with the relevant privacy laws and the organization's information policy.

NFRsReq009

9. Personal information shall be implemented so as to comply with the Data Protection Act.

3.2.3 Usability Requirements

NFRsReq010

10. The product shall be easy for bachelor's student to use.

NFRsReq011

11. The product shall be used by people with no training, and possibly no understanding of English.

NFRsReq012

12. The product shall be able to be used by members who will no receive training before using it.

NFRsReq013

13. The product shall use symbols and words that are naturally understandable by the user community.

NFRsReq014

14. The product shall hide the details of its construction from the user or the product shall be usable by partially sighted users.

3.2.4 Look and Feel Requirements

NFRsReq015

15. The product shall comply with the Window and Smart phone guideline.

NFRsReq016

16. The product shall appear simple to use.

NFRsReq017

17. The product shall have the white-gray theme and the style is neat and tidy.

iv.3 Mandated Constraints
1. The product shall connect to the Internet.
2. The product shall operate using Windows and Mac OS (Web Application).
3. The product shall operate using Smart phone android and IOS.

Requirement Traceability Matrix

Requirement No.	Name	Category	Source	Status
R1	Laptop	Hardware	Project Charter and cooperate laptop specification	Complete, laptop order meets the requirement
R2	Keyboard	Hardware	Project Charter and cooperate laptop specification.	Complete, Keyboard order meets the requirement.
R3	Monitor	Hardware	Project Charter and cooperate laptop specification.	Not complete, Monitor order does not meet the requirement.

Approval Signature

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_____                    _____
Mrs. Khy Srey Sros                                   Mr. Touch Sopheak
Director of School of Maths                          CEO of Data Solution
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2.3 Define scope (Scope):

In the planning step, the defining scope process is another process of developing a detailed description of the project and product. With the respect to the PCC project the output of this prefers to be Project Scope Statement and Project Document Update. These two documentations will show the detail of project and product: **(Outputs:** Project scope statement, project document updates)

Mobile App for School of Maths
Project Scope Statement

Project Name: Mobile App for School of Maths

Team Member: Mr. Pen Chentra, Ms. Chheang Sreypich

Project Manager: Mr. Touch Sopheak

Date: Monday, 15/12/2022

Prepared by:

Document Owner	Project/Organization Role
Mr. Touch Sopheak	Project Manager

Project Closure Report Version Control

Version	Date	Author	Change Description
1	15/11/2022	Mr. Touch Sopheak	Create document…
2	30/12/2022	Mr. Pen Chentra	Update document…
3			Revise document…

Table 3: Project Document Updates

2.4 Create WBS (Scope):

 The creation of work breakdown structure (WBS) is another process in project planning which in this project is a process of subdividing project deliverables and project work into smaller, more manageable components. Generally, the **Outputs of this process include**: WBS, WBS dictionary, scope baseline, project document updates. The detail below will show the format and detail of WBS, WBS Dictionary, Scope Baseline, and Project Document Update with respect to the current project.

Work Breakdown Structure

 With the work breakdown structure, we prefer to use the tabular view of WBS which is shown below:

Level 1	Level 2	Level 3
School of Maths mobile app	1.1 Initiation	1.1.1 Evaluation & Recommendations 1.1.2 Develop Project Charter 1.1.3 Deliverable: Submit Project Charter 1.1.4 Project Sponsor Reviews Project Charter 1.1.5 Project Charter Signed/Approved
	1.2 Planning	1.2.1 Create Preliminary Scope Statement 1.2.2 Determine Project Team 1.2.3 Project Team Kickoff Meeting 1.2.4 Develop Project Plan 1.2.5 Submit Project Plan 1.2.6 Milestone: Project Plan Approval
	1.3 Execution	1.3.1 Project Kickoff Meeting 1.3.2 Verify & Validate User Requirements 1.3.3 Design System 1.3.4 Procure Hardware/Software 1.3.5 Install Development System 1.3.6 Upload MIS resource to system 1.3.7 Testing Phase 1.3.8 User Training
	1.4 Control	1.4.1 Project Management 1.4.2 Project Status Meetings 1.4.3 Risk Management 1.4.4 Update Project Management Plan
	1.5 Closing	1.5.1 Audit Procurement 1.5.2 Document Lessons Learned 1.5.3 Update Files/Records 1.5.4 Gain Formal Acceptance 1.5.5 Archive Files/Documents

Table 4: WBS of School of Maths mobile app

2.5 Plan Schedule Management:

2.6 Define activities (Time):

2.7 Sequence activities (Time):

2.8 Estimate activity resources (Time):

2.9 Estimate activity duration (Time):

2.10 Develop Schedule (Time):

2.11 Estimate costs (Cost):

2.12 Determine budget (Cost):

3. **Project Execution**
4. **Project Monitoring and Controlling**
5. **Closing The Project**