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|  |
| Capstone Project Document |
| **Remote Learning System** |
|  |
| |  |  |  | | --- | --- | --- | | **RLS Team** | | | | **Project team** | Nguyễn Thị Trang | SE05803 | | Nguyễn Đức Thiện | SE05883 | | Lê Thị Thu Trang | SE05909 | | Đỗ Ngọc Khanh | SE06047 | | Đỗ Trung Đức | SE05844 | | **Supervisor** | Mr. Trần Đình Trí | | | **Project code** | RLS | | |
|  |

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| **Ha Noi, 13**th **August 2020** |

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# **Acknowledgements**

# **Definitions and Acronyms**

# **Chapter 1 : Introduction**

# 1.1 Purpose

This chapter provides an overview of the project including background information, describes the scope of the document, gives a brief explanation and raises a proposal for ideas of improvement.

# 1.2 Project Information

* Project name: Remote Learning System
* Project code: RLS
* Project group name: RLS team
* Product type: Website
* Business domain: Education
* Timeline: August 13th 2020 - 2020

# 1.3 The people

## 1.3.1 Supervisor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Full name** | **Phone** | **E-Mail** | **Title** |
| Supervisor | Trần Đình Trí | 0913091952 | tritd@fe.edu.vn | Lecturer |

*Table 1.1: Supervisor's information*

## 1.3.2 Team members

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Full name** | **Student code** | **Phone** | **E-Mail** | **Role in Group** |
| 1 | Nguyễn Thị Trang | SE05803 | 0337631111 | trangntse05803@fpt.edu.vn | Leader |
| 2 | Nguyễn Đức Thiện | SE05883 | 0566662225 | thienndse05883@fpt.edu.vn | Member |
| 3 | Lê Thị Thu Trang | SE05909 | 0961818500 | tranglttse05909@fpt.edu.vn | Member |
| 4 | Đỗ Ngọc Khanh | SE06047 | 0971703376 | khanhdnse06047@fpt.edu.vn | Member |
| 5 | Đỗ Trung Đức | SE05844 | 0962481497 | ducdtse05844@fpt.edu.vn | Member |

*Table 1.2: Team member's information*

# 1.4 Background

In the era of technology 4.0, recently remote learning systems are experiencing rapid development. The advantages of learning through a global network are manifold and obvious: the independence of time and space, learners can learn at their own pace and suitable for all ages and all trades. However, distance learning will not be disciplined and does not carry a higher efficiency than the traditional school approach.

In the early 2020 Covid-19 epidemic influenced many special many trades, including the education sector, which is suffering the consequences of the closure of most schools around the world. Making learning online is more used. With the current widespread use of computers and the internet, online learning platforms are one of the optimal solutions for both teachers and learners.

Understanding this issue, the Remote Learning System was born to help learners access knowledge anywhere at any time in all different fields, professions, and levels by the most effective methods.

With a Remote Learning System, teaching and learning have never been easier!

# 1.5 Problem

Today, there are many people who need to learn new things, new coding languages, etc. But don’t have any remote learning system easy to learn for vietnamese people. Therefore, our team created a survey to collect information about the distance learning needs of all subjects.

survey : to do

# 1.6 The existing systems

|  |  |  |
| --- | --- | --- |
| **Features** | **Coursera** | **Funix** |
| Support Vietnamese | **x** | **x** |
| Search for the member according of certificate |  |  |
| Minimum duration of watching video to pass | **x** |  |
| Minimum reading time |  |  |
| Suggest a course by specialty and level | **x** |  |
| Course evaluation | **x** |  |
| Comment on each lecture |  |  |
| Students can review the exercises for each other | **x** |  |
| Percentage test pass | **x** | **x** |
| Evaluate the quality of each course provider | **x** |  |
| Customize course duration according to each group's needs |  |  |
| Assist in contributing to the translation of lectures | **x** |  |

## 

# 1.7 The proposal of system

Our team's idea is to create a web-based application where everybody can study new knowledge from a variety of courses and a place where people can share their knowledge using online courses. Besides, we also provide remote learning services for universities and organizations.

## 1.7.1 System functions

* Guest
  + Browse all public courses (alphabet, day, category, tag, organization).
  + View course overview(description, Introduction of chapters, reviews, Instructor info,... ).
  + Send requests to create an organization.
* Common functions (for both Instructor and Student)
  + Login with (username password, facebook, google).
  + Logout.
  + Reset password.
  + View personal information.
  + View info of another Instructor and Student.
  + Send feedback to the system.
  + Report courses violate the community standards.
* Instructor
  + Update some personal information.
  + View the overview of the courses created.
  + Create new courses
    - Set properties for the course (category, tag).
    - Create lectures
      * Lectures text.
      * Lectures video.
      * Lectures audio.
    - Create chapter question bank
      * Create title of question bank.
      * Create question (multiple choice)
        + Set question.
        + Set answers.
        + Set correct answers.
    - Create quiz
      * Set title for Quiz.
      * Select chapter question bank (can select multiple question bank for 1 quiz)
        + Set the number of questions they take from each chapter.
      * Set time for practice test.
      * Set maximum number of the test.
      * Set the ratio of questions to be answered correctly to pass the quiz.
      * Set deadline of quiz.
    - Set the minimum time it takes students to pass through lectures. (hỏi thầy)
    - Save draft course.
  + Continue the course saved draft.
  + Edit course they are entitled
    - Change order of lectures.
    - Change order of quiz.
    - Edit question banks.
* Student
  + Register Account with (username password, facebook, google).
  + Update personal information.
  + Find Organizations.
  + Browse all public courses (alphabet, day, category, tag, organization).
  + View course overview before enroll (description, Introduction of chapters, reviews, Instructor info,... ).
  + Enroll course.
  + Unenroll course.
  + View course progress that studying
  + Comment on each lecture of the course.
    - Rep another comment
    - Vote and unvote comment
  + See the accomplishments achieved.
  + Rate and comments on the course after finishing (on a 5-star scale)
* Manager (Organization Manager)
  + See organization overview (Instructor, Student, Course,...).
  + Edit organization info (name, description, ...).
  + Course management
    - Set category to course.
    - Change status course.
    - Add student to course.
  + Manage instructor (add, update, delete).
  + Manage students who are studying in the organization's course.
  + View statistics of courses in the organization subject to user Report.
* Staff (RLS Staff)
  + Login with Staff account.
  + View feedback.
  + Manage requests to create an organization.
  + Manage category (add, update, delete).
  + Manage Manager (Organization Manager) account.
* Administrators (RLS Admin)
  + Manage staff' accounts including change role, status, create a new account.

## 

## 1.7.2 Out of scope functions

However, due to the limitation of team’s effort, we will not implement these following functions in the Ascending initial version 1.0.0 release of the project but not permanently excluded, and will be developed in future version 2.0.0, although we are aware that they so also important:

* + Allows the user to view the job offer according to the certificate obtained.
  + Allows users to contribute to the translation of the lectures.
  + Allows users to update personal information such as a resume.
  + Allows users to create curriculum vitae templates.
  + Allows users to search for other users by information (certificates, years of experience, degrees, ...)
  + Allows use of private messages with other users.
  + Allows users to create group chats.
  + Allows users to donate paid courses to other users.
  + Allows users to post status to ask questions to other users.
  + Allows users to post recruitment information.
  + Allows users to update payment information.
  + Allows users to create paid courses.
  + Allows users to submit scholarship applications to organizations.
  + allows Institutional leaders to design certificates for their courses.
  + Allows the instructor to rate users for good performance.
  + Allows organization leaders to grant scholarships to each user, providing scholarships for each specific condition.
  + Allow organization leaders to post notification status, general information.

## 1.7.2 Special approaches

* For backend system
  + Using HTTP Methods according to the RESTful API standard.
  + Using HTTP Status Codes Correctly if something goes wrong while serving a request, we must set the correct status code for that in the response.
  + Using JWT (Json Web Token) for authentication and authorization.
  + Using real-time WebSocket technology with STOMP protocol.
* For frontend system
  + Using Angular Framework for web component rendering.

# **Chapter 2: Project Plan**

# 2.1 Purpose

This chapter provides an overview of the project plan including project organization and project management plan.

## 2.1.1 Software Process Model

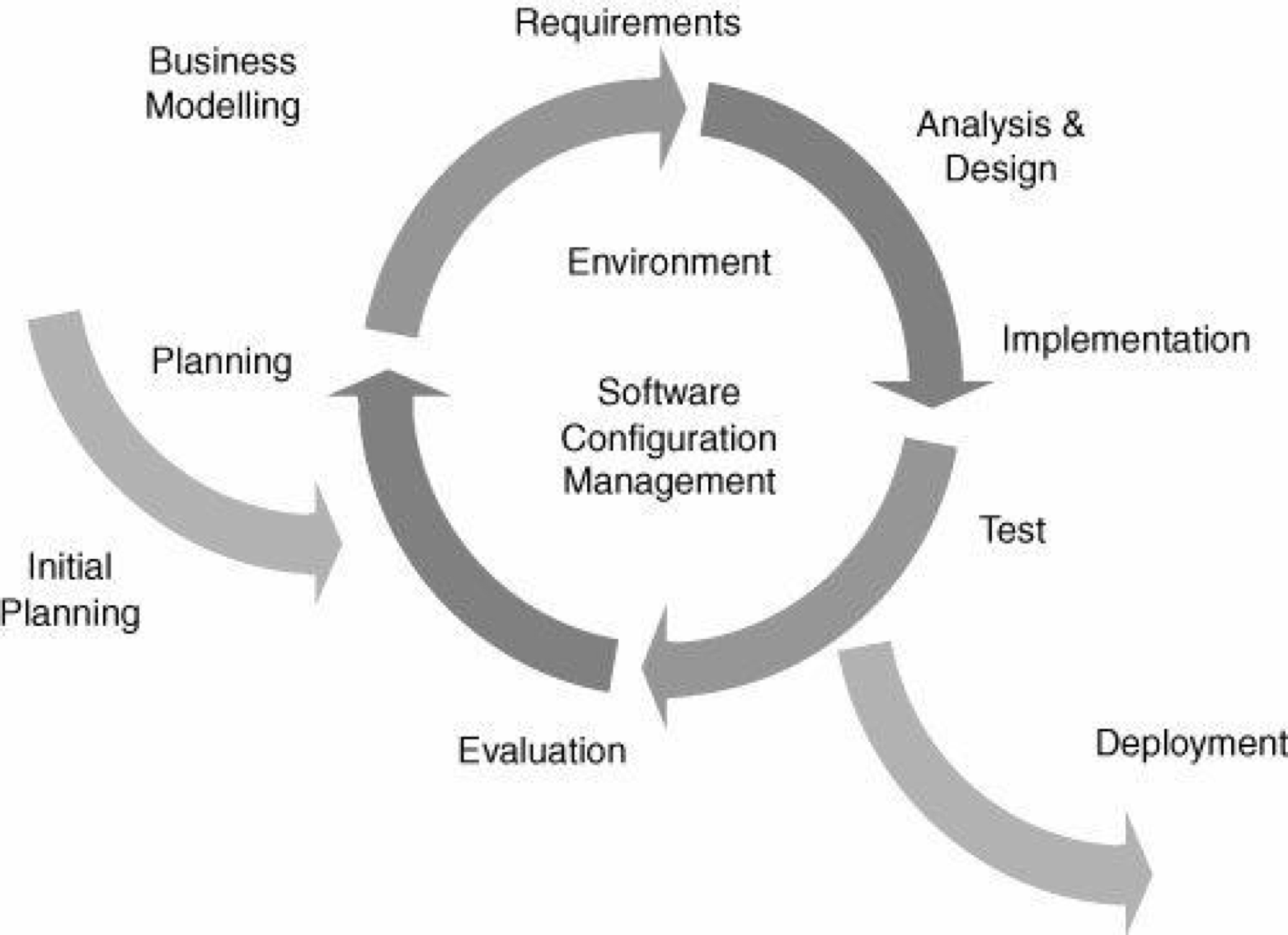


Figure 1: Software Process Model

The Iterative and Incremental Software Process Model is mostly used when the scope of the project is big, the major requirements are defined clearly, some more details will be added later in software development. By using this software process model, we break down the developing system task into a series of smaller tasks which will be completed separately, allowing us to take advantage of what was learned during development of earlier parts of the system. In addition, the iterative model is easier than other models when the issues are discovered. They are fed back to the team, and solutions will be found while the project is still in development.

## 2.1.2 Roles and Responsibilities

|  |  |
| --- | --- |
| Role | Responsibility |
| Project Manager | Planning, developing schedules, coordinating communication, generally responsible for keeping the team’s focus on the main goal. |
| Programing leader | Responsible for choosing and deciding what technologies should be used, as well as for overseeing the work being done by other  developers. |
| Design leader | Involve to design the product's user interface. |
| Test leader | Involve to test the product. |
| Analyst leader | Analyzes an organization or business domain and documents its business or processes or systems. |

Table 2.1: Roles and Responsibilities

## 2.1.3 Organization Structure

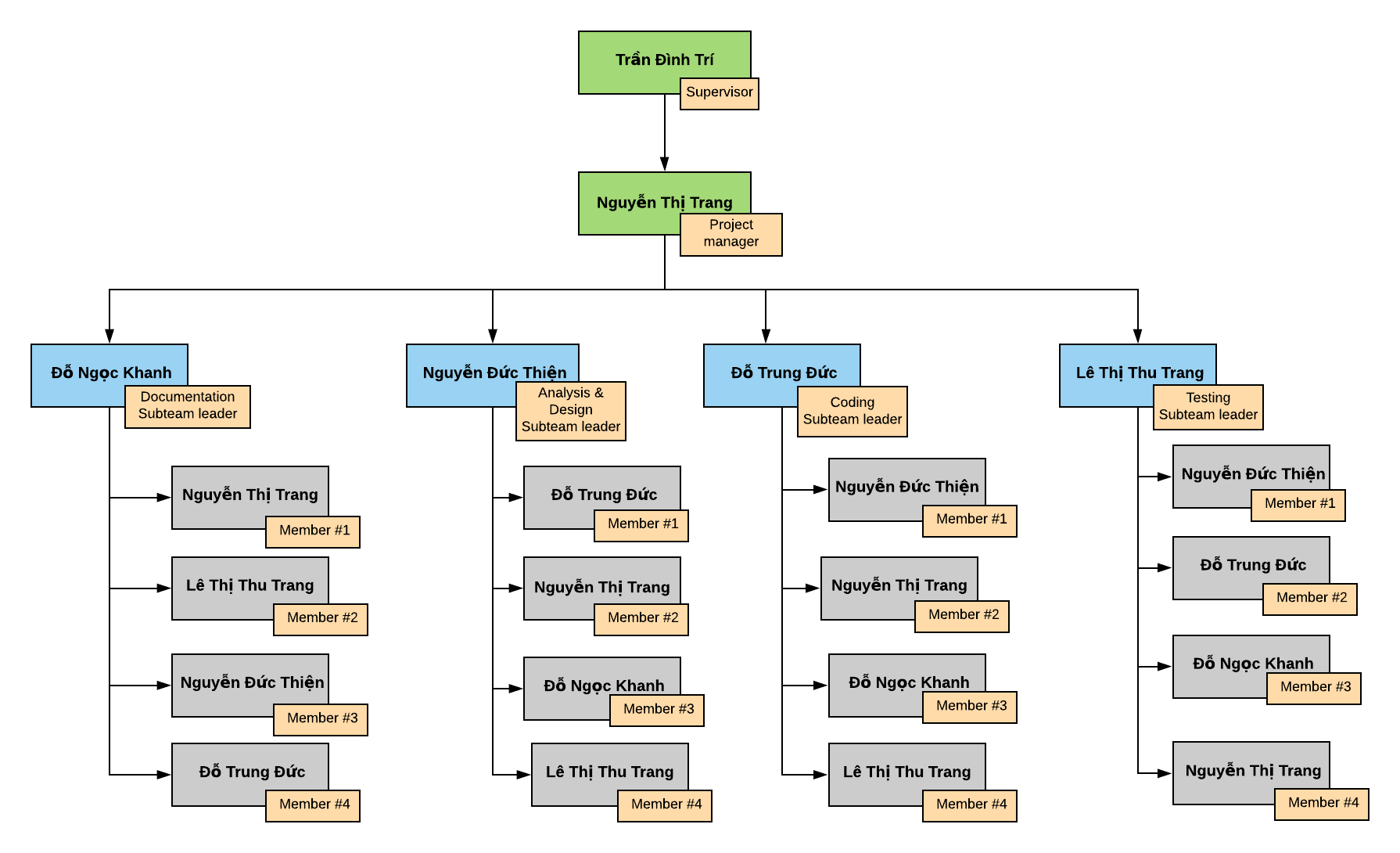


Figure 2: Organization structure

## 2.1.4 Project Team Member

|  |  |
| --- | --- |
| Team member | Role |
| TrangNT | Team leader, Design, Programing, Analyst |
| ThienND | Design leader, Programing, Test |
| TrangLTT | Test leader, Analyst |
| KhanhDN | Analyst leader, Programing |
| DucDT | Programing leader, Design, Test |

Table 2.2: Project Team Member

## 2.1.5 Tools and Techniques

|  |  |
| --- | --- |
| Programing languages | Nodejs, Javascript (Java ????) |
| Framework | Angular 8, ExpressJS, Socket.IO |
| API |  |
| DBMS | PostgreSQL |
| IDEs,Editors | Visual Studio Code |
| UML tools | Visual Paradigm, Astah UML |
| Version Control | Github |
| Deployment server | Kubernetes |
| Project management tool | Microsoft Project, Trello |
| Process model | Iterative and Incremental Software Process Model |
| Development process |  |

Table 2.3: Tools and Techniques

# 2.2 Project Management Plan

## 2.2.1 Tasks

Refer to file “RLS\_ManagementSchedule.mpp”.

### 

Figure 3:RLS management schedule

## 2.2.2 Meeting Minutes

All meeting minutes will be written following this template:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Project Name | | Remote Learning System | Project Code | RLS |
| Project Manager | | Nguyen Thi Trang | Conductor | Tran Dinh Tri |
| Secretary |  |
| Date | |  | Time |  |
| Venue | |  | | |
| 1. Meeting Objective | | | | |
|  | | | | |
| 2. Attendees | | | | |
| No | Full Name | Unit/ Group | Position | Attendance |
| 1 | Tran Dinh Tri | FPT University | Supervisor |  |
| 2 | Nguyen Thi Trang | FPT University | Team Leader |  |
| 3 | Do Trung Duc | FPT University | Team Member |  |
| 4 | Nguyen Duc Thien | FPT University | Team Member |  |
| 5 | Le Thi Thu Trang | FPT University | Team Member |  |
| 6 | Do Ngoc Khanh | FPT University | Team Member |  |
| 3. Done tasks | | | | |
|  | | | | |
| 4. New Tasks | | | | |
|  | | | | |
| 5. Risk & Difficulty | | | | |
|  | | | | |

Table 2.4: Table meeting minutes

## 2.2.3 Coding Conventions

We strictly follow Eslint JavaScript Style Guide. Please refer to JavaScript Style Guide - Eslint.pdf file or the official website at <https://www.npmjs.com/package/eslint>

## 2.2.4 Risk Management Plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Description | Avoidance plan | Contingency plan | Impact |
| R1 | Project team member do not meet deadlines | - Receive tasks suitable to the expertise and time of each individual  - Prioritize important tasks first  - Estimate task after understanding the work to be done | Other members support if the task is an important task | High |
| R2 | Data loss | - Teach members how to use Git and resolve conflicts.  - Always have important backups. | - Restore backed up data from GitLab.  - If a requirement has a new update, all members have to join the meeting to be aware and make decisions. | High |
| R3 | Conflict between team members | Project Manage need to:  - specify clearly about requirement specification for all member  - Give common solutions |  | High |
| R4 | Requirement  changed | - Team members have to analyze requirements carefully up to the team.  - Every new update of requirement has to be reviewed by all team members and supervisors. | - Discuss with the Supervisor to decide which requirements should be implemented.  - Change requirement. Develop for new required func | Medium |
| R5 | Spirit goes down | Limiting conflicts in the team, everyone on the team helps each other when problems are difficult | Communicate regularly to make people more close | Low |
| R6 | Lack of skill and knowledge for a specified work | Members training for each other | Learn more courses on coursera | Medium |
| R7 | Team members may distraction | Team members may not pay enough time for the project. Therefore, the project may be over deadline. | - Understand team members' schedule and assign suitable tasks and set appropriate deadlines.  - Require team members to set high priority for the project. | High |
| R8 | Team members do not understand about requirements | PM disseminated srs to members and each member actively investigated | Every members when join develop the project must join the develop for SRS | Medium |
| R9 | Lack of Supervisor support | Supervisor may not have enough time to support the project team. Therefore, the work may get more mistakes | - Define a meeting schedule with the Supervisor.  - Ask for support from other sources. | Medium |
| R10 | The team may work online | All team members quarantine themselves at home. Therefore, team members may not lose connection with others and take more time to finish tasks. | Make new planning to develop project online. | High |
| R11 | The designed database may be a failure. | The created database is not working well in the project system and it does not have a good architecture. Therefore, team members may spend more time to design the database again and implement code late. | - Team members researchers more about how to design a database.  - Team members discuss and review the project database.  - Ask the support from the supervisor or the database expert | High |
| R12 | Business problem | Any ideas are welcome but members have to discuss with others and always focus on the reality and possibility. | Make sure the business logic of any ideas is carefully analyzed. | Medium |
| R13 | Source code may be conflicted | Two or members in a team can do the same one part. Therefore, the system may not run. | - Pull source code before committing the source code.  - Use the backup version, discuss with other members and continue to work. | Low |

Table 2.5: Table Risk Management

## 

## 2.2.5 Communication Plan

### 2.2.5.1 Weekly meeting schedule:

We use Iterative and Incremental Process Model, then we divide the system into two subsystems (RLS Backend and RLS Frontend), each sub-system is divided into a series of small tasks. Each task is logged to TRELLO then estimated depending on difficulty and the amount of work by the whole team, after that the task will be assigned to team members by the Team Leader and depending on difficulty the Technical Leader will assign deadlines for each task. We will have a meeting every Thursday and Sunday to inform all teams about what each member finished last week, the status (fast, on time or slow), the issues met and how to solve them. If any member raises any issue, the whole team will help to find out a solution together. After that, the team will define detailed stories for next week's tasks.

### **2.2.5.2 Daily meeting schedule:**

Each sub-system has one development team with a different schedule.When starting work-day, each team will have a stand-up meeting to inform others: “What did I do yesterday?”, “What will I do today?” and “Is there any difficulty?”. By focusing on what each person accomplished yesterday and will accomplish today, the team gains an excellent understanding of what has been done and what remains.

### **2.2.5.3 Unscheduled meeting:**

If someone has an important problem that he wants to solve immediately, we will have a meeting for discussion, usually via some online channel: Google meet, Facebook or Phone.

### **2.2.5.4 Communication channel:**

Our main communication channel is google meet. On the other hand, we use face-to-face meetings, Facebook groups, google meet and comment on TRELLO issues. However, we sometimes make a phone call or instant message if someone has a problem

Next chapter here

Chương 3: ERD và UC thầy gợi ý dùng draw.io

Xđ: User group (sd rule) vẽ theo từng rule format Guest-UC01

ex: customer, manager, administration, ….

tạo demo sử dụng api playvideo, text , audio.

tạo demo tìm api(hoặc tự code) tạo quiz từ question bank theo category với số lượng câu trong 1 khoảng time.