

**CAPSTONE PROJECT REPORT**

**HVT**

**DIGITAL TRANSFORMATION**

**SWP490\_G24**

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**CHAPTER 1: INTRODUCTION**

This chapter provides an overview of the HVT Digital Transformation project. This document includes project information, supervisor, project team members, the overview of existing systems, the problems and solution of the project, a brief description of our expected application, and some critical assumptions, constraints. In the end, it will be some out of the scope of the project.

**1. PROJECT INFORMATION**

❖ **Project name:** HVT Digital Transformation

❖ **Project code:** HVT Digital Transformation

❖ **Project group name:** SWP490\_G24

❖ **Project type:** Web Application

❖ **Project category:** New Development

❖ **Scrum master:** Vu Bao Yen

❖ **Timeline:** From 18th May 2020 to 28th Aug 2020

**2. PROJECT TEAM**

**2.1. Supervisor**

**Full name Phone**

**number Email Title**

Supervisor Tran Binh Duong 0936168165 Duongtb@fe.edu.vn Lecturer Supervisor Vuong Thanh Trung 0916819984 Trungvt130584@gmail.com Customer Supervisor Nguyen Tien Dung 0911228595 Dungnthvt@gmail.com Customer

**2.2. Team members**

**No. Full name Student ID**

**Number Email Role in**

**Phone**

**Group**

1 Vu Bao Yen SE05610 0354306555 Yenvbse05610@fpt.edu.vn Leader 2 Pham Trong Kim SE05423 0967191052 Kimptse05423@fpt.edu.vn Member 3 Nguyen Tung Lam SE05790 0347059998 Lamntse05790@fpt.edu.vn Member 4 Nguyen Thi Kim Loan SE05636 0941687957 Loanntkse05636@fpt.edu.vn Member

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**3. INITIAL IDEA**

**3.1. Background**

Hoang Van Thu gifted high school is one of the top schools in Hoa Binh city. The school has been established for nearly 75 years and has made great contributions to the cause of education by helping 95% of ethnic minorities eradicate illiteracy. Not only that, the school has also achieved many great achievements, such as from 2002-

2013, the school had 488 national excellent student prizes in one class, thus creating a tradition of studious learning in Hoa Binh province. Thanks to the quality of teaching and learning, the school has attracted students of the whole province. Currently, the school has more than 1200 students.

With the large number of students, the management task becomes difficult. The management of emulation grades at the school is done manually from jobs such as recording violations in each class, recording violations at the school gate, and summarizing the emulation points. Besides, traditional activities as well as club activities have not been communicated to everyone. Along with that, when there is a change in the schedule, it is difficult for teachers and students to update promptly. The school has not the solution to overcome the problems yet.

Today, Technology 4.0 is the trend of the whole world. It affects our life, economy, social science... In that situation, manual work has become obsolete. Instead, digitization makes it easy, convenient and saves time and resources. Therefore, SWP490\_G24 project team decided to build a website to help the school overcome these difficulties.

**3.2. Digital transformation phase**

The digital transformation has six phases. Include:

1. COMPUTERISATION

2. CONNECTIVITY

3. VISIBILITY

4. TRANSPARENCY

5. PREDICTIVE

6. ADAPTABLE

The digital transformation phase at this school is computerization. The school just have the basis for digitization and different information technologies were used separately from the school. Computer software is mainly used to perform repetitive tasks more effectively.

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**3.3. Problem**

There is some problem defined:

- Students are having trouble way to evaluate the emulation grade like take 15 minutes to summit the paper of grade for teachers, take 20 minutes to write each violation of classes.

- Teachers can not follow and monitor closely with the Red Star team. For example, the Red Star team can change the final grade before they summit grades for teachers and implicit agreement to fix their grades.

- The emulation grade calculation is done manually that use students to evaluate.

- The school have not the complete process for emulation grade yet. The responsibility of each role is not clear and can make mistake when they evaluate.

- The existing website of school have not diversity information about the internal activities and the club activities and the information can not deliver to teachers and students quickly.

- The timetable of the school is offline for student and it’s general for all teachers. Students and teachers waste their time when using complex ways to get timetable like the monitor has a handwritten timetable by getting it at the bulletin board and then shares with classmates, teachers get the excel file in the Facebook group and find their schedule in this file.

- This school is wasting time to assign Red Star for classes. A teacher will create an excel table and fill each element to assign Red Star for each class and there are some constraints that assigning must be followed.

**3.4. Existing Products**

**3.4.1. Website http://chuyenhoangvanthu.hoabinh.edu.vn**

Website of Hoang Van Thu Gifted High School is the school portal. The website provides basic information about the school, its timetables, teaching resources, and school activities.

**Functions:**

- Post information, plan activities

- Search teaching resources

- Look up admission information

- Post the school's decision

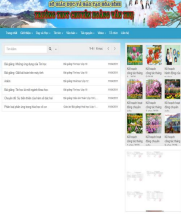
- Look up information for teachers and delegations

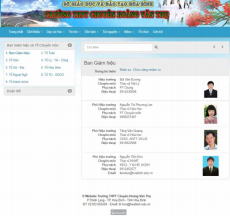
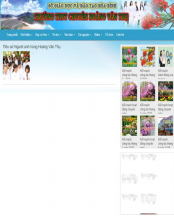
- Review information and biography of the school

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**Some screenshots:**

*****Figure 1: Screenshot of website 1 Figure 2: Screenshot of website 2*

*Figure 3: Screenshot of website 3 Figure 4: Screenshot of website 4*

**Pros:**

- Interface design is simple

- Search documents quickly

**Cons:**

- The document is not updated

- Difficult to use, difficult to post new articles

- Students and teachers do not use the site because the information is not updated

- Only watch function

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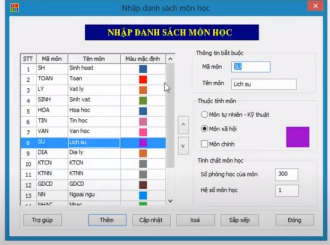
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**3.4.2. Timetable creation software**

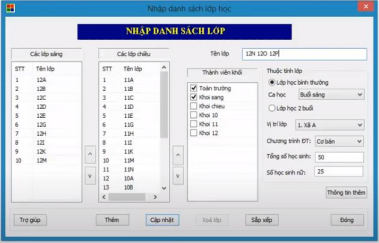
**Functions:**

- Creating timetables:

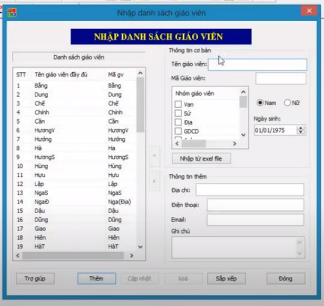
+ Input methods: the system will show the form to user fill the information manually are subject, class, grade and teacher.



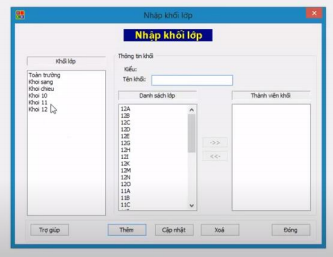
*Figure 5: Enter the subject list in Timetable creation software*

*Figure 6: Enter the class list in Timetable creation software*

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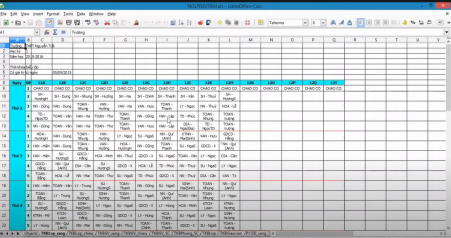
*Figure 7: Enter the teacher list in Timetable creation software*

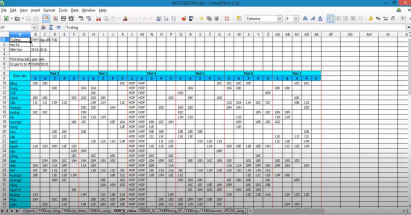
*Figure 8: Enter the grade list in Timetable creation software*

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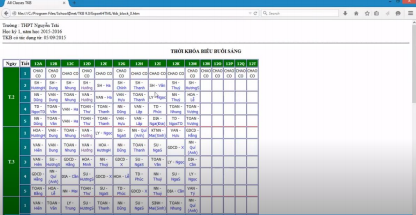
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+ The system output are HTML folder and Excel file.

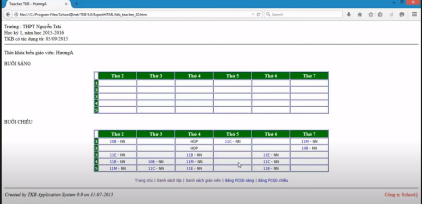
*Figure 9: Timetable of all class as an Excel file*

*Figure 10: Timetable of all teachers as an Excel file*

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*Figure 11: Morning timetable of all class as HTML folder*

*Figure 12: Timetable of teacher as HTML folder*

**Relationship with current system:**

- Provide timetables for the current system.

**3.5. Solution**

In this section, let we explain why using website would be a potential solution in Hoang Van Thu Gifted High School:

- Help students easily in emulation grading.

- Teachers can manage the activities of the Red Star team well.

- Aggregate and calculate the emulation points quickly.

- Develop a complete process for emulation grading.

- Easy to propagate the school and club activities.

- Help students and teachers to follow easily when schedules change.

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**3.6. System Proposals**

Reviewing and analyzing the problem show that in the system there are Red Star team, Club Leader, Monitor, Summarize Group, Admin, Schedule Manager and All Users who use the system without login.

**3.6.1. All users**

All users (no need to login) can use the following functions:

- Log in.

- View school newsletters.

- Search school newsletters by title

- View/ search the timetable of classes.

- View/ search the timetable of teachers.

- View/ search list of violations by day.

- View/ search violation history.

- View violation type list/ violation list.

- View/search violation history.

- View violation entering time.

- View/ search/ download assign Red Star.

- View school week/month/semester/year rank.

- View school week/month/semester/year rank history.

- Search school week/month/semester/year rank by condition.

- Download school week/month/semester/year rank.

**3.6.2. Red Star team**

In addition to the functions that all users can use, Red Star team can use the following functions:

- Logout.

- View personal information.

- Add violation of a class.

- Edit violation of a class.

- Edit the personal information.

- Change password.

**3.6.3. Club Leader**

In addition to the functions that all users can use, Club Leader can use the following functions:

- Logout.

- View personal information.

- Edit the personal information.

- Change password.

- Search newsletter request.

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- Create newsletter request.

- Edit newsletter request.

**3.6.4. Monitor**

In addition to the functions that all users can use, Monitor can use the following functions:

- Logout.

- View personal information.

- Edit the personal information.

- Change password.

- Search newsletter request.

- Add newsletter request.

- Edit newsletter request.

- Edit violation of a class.

- View change request.

**3.6.5. Summarize Group**

In addition to the functions that all users can use, Summarize Group can use the following functions:

- Logout.

- Change password.

- View personal information.

- Edit the personal information.

- Add violation of a class.

- Edit violation of a class.

**3.6.6. Admin**

In addition to the functions that all users can use, Admin can use the following functions:

- Logout.

- View the personal information. - Edit the personal information. - Change password.

- Reset multiple account password. - View account list.

- Search account.

- Create an account.

- Delete account.

- View teacher list.

- Search teacher.

- Add teacher.

- Add violation entering time. - Delete violation entering time. - Create assign Red Star. - Delete assign Red Star. - View violation of a class. - Search violation of a class. - Add violation of a class. - Edit violation of a class. - View change request.

- Search change request. - Accept change request. - Reject change request.

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- Edit teacher.

- Delete teacher.

- View class list.

- Search class.

- Edit information of the class. - Change status of class.

- Add new gifted class.

- Delete gifted class.

- Add new class.

- Update new timetable.

- Edit violation type.

- Add violation type.

- Delete violation type.

- Edit violation.

- Add violation.

- Delete violation.

- View school year list.

- Add new school year.

**3.6.7. Schedule Manager**

- Cancel edit request.

- Create rank week.

- Edit rank week.

- Update week rank.

- Create rank month.

- Edit rank month.

- Create rank semester.

- Edit rank semester.

- Create rank year.

- Edit rank year.

- Add a newsletter.

- Edit newsletter.

- View newsletter request. - Search newsletter request. - Change status of newsletter request.

- Edit information of school year. - Delete school year.

In addition to the functions that all users can use, Schedule Manager can use the following functions:

- Logout.

- View personal information.

- Edit the personal information.

- Change password.

- Update new timetable.

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**CHAPTER 2: PROJECT MANAGEMENT PLAN**

**1. INTRODUCTION**

**1.1. Document Description**

This document is to provide a comprehensive baseline of how the project will be run, what has to be achieved by the project, how it is to be achieved, who will be involved, how it will be reported and measured, how the information will be communicated, and how the risk should be defined.

**1.2. Document Scope**

This document consists of our project overview. In the next, we will discuss the project process which includes the model, lifecycle, and responsibilities of each stakeholder in section 4. In section 5, we will show the tool and the infrastructures that will necessary in this project for coding, managing, and developing. Besides, the schedule of the project will be shown through detailed work with a specific date. In the final, we will define the communication management plan and project risk.

**2. PROJECT OVERVIEW**

**2.1. Project description**

In this project, we will develop an Web application that supports HVT Gifted High School in managing the emulation grade, school activities and timetable. Users can use this application to follow the emulation grade of all classes. Besides, users can also follow school activities. In addition, users will see the online timetable when it changes. This website will improve and complete the process of evaluating the emulation grades. Therefore, users can follow and look at the emulation grades quickly. Students and teachers can have an update on school activities daily and timetables. The Application will be designed so that users have to do least but receive the best result.

**2.2. Project Scope**

This project covers all processes, from planning, requirement specification, design, development, to testing.

Project team will develop a Web Application for users to manage the emulation grade, activities and timetable of HVT Gifted High School.

**2.2.1. Functional**

- Application allows all users to view school activities, the schedule of all classes and teachers, view violation, view violation history, search violation history,

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emulation scores of classes and view rank of school. All users except students and teachers must login to the application to use other functions in application. - Club leaders and monitors can send a request to post media.

- Monitors have requested to change violations of their class daily. - Summarize Group can enter emulation grades of all classes and edit violation of class in entering time and current day.

- Admins see their own timetable. They have been authorized to change the information of all accounts (create, edit, view, delete password). Besides, they import and edit emulation grades of all classes. Admins can set a deadline for importing violations, censoring and deleting newsletters.

- The schedule manager views personal information. Otherwise they can edit information and update the timetable of school.

- All accounts can log out from the system.

**2.2.2. Non-functional**

The Application must be designed for user’s convenience. It should require internet access to run. Interface design should be good looking and easy to understand. Time delay for system processing must be optimized. The interface performance of the system can run almost any smartphone. The system develops to maintain and extend easily.

**2.3. Standard Objectives**

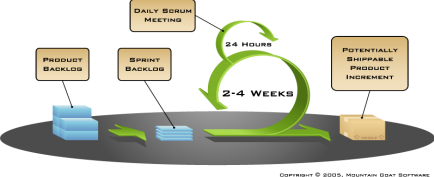
- This project must be finished no later than 28/08/2020.

- The final Application covers 100% of requirements.

- The 4 team members give the best effort to complete the project.

**3. PROJECT TEAM**

**3.1. Software Process Model**

*****Figure 13: Scrum model*

In this project, we apply the Scum model as a development process model.

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**3.2. Project Lifecycle**

In this project, we apply the Scum model as a development process model. Scrum lifecycle is a number of consecutive steps and iterative stages that should be performed during the realization of any Scrum project. The iterative approach is the main principle of Scrum lifecycle. The work on a Scrum project is subdivided into 5 faces including Initiating segment and 4 sprints. The project develops from one sprint to another until the final product is ready. Each sprint is subdivided into several consecutive stages that it must pass from the beginning till the end.

The first step of the project is the stage of gathering necessary information about the future product. We are the person who contacts the customer to understand his vision of the future software. Gathering user stories is also one of his responsibilities. After all user stories are collected and all the customer’s wishes are considered, they are prioritized in a list that is called a product backlog. It is the main document of the project.

After the prioritization of the product backlog items, they are turned into tasks and divided into several sprints. The team makes it during the sprint planning meetings. The main goal of each meeting is to create a sprint backlog. It is a document that contains all tasks for a certain sprint. After the sprint is finished the work of the team will be estimated in accordance with the fulfillment of the sprint backlog requirements.

The next step in the Scrum lifecycle is the process of sprint execution. It includes a consequent performance of all sprint tasks and everyday evaluation of workflow. The progress of the sprint backlog requirements is evaluated during the daily Scrums – the team gatherings where all the positive and negative work issues are discussed.

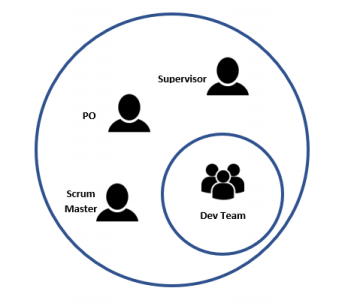
After the sprint comes to its end, all members of the team participate in the sprint review and the sprint retrospectives. These gatherings help to find out what went wrong during the sprint.

The final step of every sprint is the stage of product estimation. The product is evaluated in accordance with the team’s definition of “Done” and provided to the customer to obtain his feedback. Then a new sprint starts, and the cycle repeats.

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**3.3. Roles and Responsibilities**

*****Figure 14: Project Organization Structure*

**Role Full Name Responsibility** - Give instruction for project team

**Supervisor** Tran Binh Duong

**Scrum**

**master - PM** Vu Bao Yen **PO (Product**

- Verify deliverables

- Supervise project team’s status

- Ensure Project process is followed - Ensure a reasonable interaction between PO, Team and Supervisor

- Protect and motivate Team

- Support in organizing activities (such as meetings, infrastructure, etc.)

- Support Team to focus on work and achieve current project goals

- Working with PO to understand requirements, propose solutions, request to change stories

- Support activities such as Team building, developing skills for members, building feedback, etc.

- Detect and solve problems

- Reviewing Product Backlog

**Owner) - Main**

**Customer**

Nguyen Tien Dung

- Regularly monitor the construction of user stories

- Review the functions given in each version

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Vu Bao Yen - Understand requirements, analysis, design, product coding

- Understand and follow the project process

**Develop team**

Pham Trong Kim

Nguyen Tung Lam

Nguyen Thi Kim Loan

- Attend Kick off, Sprint Planning, Sprint Review, Daily Scrum Meeting

- Get the job, estimate and be responsible for your work for the quality and deadline - Design test and execution test

- Bug fixes and product improvement contributions

**4. TOOLS AND INFRASTRUCTURES**

**4.1. Hardware**

- Personal computer for coding and testing with minimum configuration of 4GB RAM, Intel core 2 Duo.

- Smartphones run on web browsers.

- Internet network connection.

**4.2. Software**

**Category Software Name Version Operating System** Microsoft Windows 10 Professional Microsoft Word 2019

**Office Tools**

**Management Tool**

Microsoft Excel 2019 Microsoft Powerpoint 2019 Trello

Google Drive

Facebook

**Design Tool** https://app.lucidchart.com

**Development Tool** IntelliJ IDEA 2020.1.2 **Database Tool** SQL Server 2017

**Source Code**

**Management Tool**

Source Tree 3.3.8 Github.com

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**5. SCHEDULES**

**5.1. Detail Schedules**

*****Figure 15: Schedule for Initiating Phase*

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*Figure 16: Schedule for Sprint 1*

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*Figure 17: Schedule for Sprint 2*

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*Figure 18: Schedule for Sprint 3*

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*Figure 19: Schedule for Sprint 4*

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**5.2. Milestones and Deliverable**

**No. Milestones Deliverable Date 1** Kick-off first Meeting Topic of project 19/05/2020

**2**Complete Initiating Stage

**3**Sprint Planning meeting

Report 1 - Introduction

Project summary 04/06/2020

for sprint 1 Detail plan of sprint 1 05/06/2020 Product Backlog

Report 2 - project management

**4** Complete Sprint 1 **5**Sprint Planning meeting

plan

Report 3 - SRS

Database

Detail Design for Module 1,2,3,4

17/06/2020

for sprint 2 Detail plan of sprint 2 18/06/2020 Complete Module 1,2,3,4

**6** Complete Sprint 2 **7**Sprint Planning meeting

Test plan

Detail Design for Module 5,6,7,8,9,10

08/07/2020

for sprint 3 Detail plan of sprint 3 09/07/2020 Complete Module 5,6,7,8,9,10

**8** Complete Sprint 3 **9**Sprint Planning meeting

Unit Test Report for Module 1,2,3,4

Detail Design for Module 11

26/07/2020

for sprint 4 Detail plan of sprint 4 27/07/2020 Unit Test Report for Module

5,6,7,8,9,10

**10** Complete Sprint 4 **11** Submit final report of

Complete Module 11 Report 4

Report 5

Report 6

25/08/2020

Testing Final Report 31/8/2020 **12** Presentation Completed Project 10/9/2020

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**6. COMMUNICATION MANAGEMENT**

**6.1. Stakeholders and Contacts**

**Name Title Role Contacts**

Tran Binh Duong Mr. Supervisor duongtb@fe.edu.vn (84) 936-168-165

Vuong Thanh Trung Mr. Customer trungvt130584@gmail.com (84) 916-819-984

Nguyen Tien Dung Mr. Customer (84) 911-228-595 Vu Bao Yen Mrs. Leader yenvbse05610@fpt.edu.vn (84) 354-306-555

Pham Trong Kim Mr. Member kimptse05423@fpt.edu.vn (84) 967-191-052

Nguyen Tung Lam Mr. Member lamntse05790@fpt.edu.vn (84) 347-059-998

Nguyen Thi Kim Loan Mrs. Member loanntkse05636@fpt.edu.vn (84) 941-687-957

**6.2. Communication Management Approach**

Scrum master communicates frequently to ensure the progress of each member’s work every day in daily scrum meetings. Scum master report honestly to the Supervisor once a week so that the Supervisor can track the team’s work and give support/advice as needed.

All requests for change or proposal of new ideals must be discussed with the member, PO, and scrum master. If the project team agrees to change, Scrum master must discuss it with the supervisor after that. Once the change is approved, the scrum master will update the plan.

**6.3. Communication Requirements**

The Scrum master will communicate with the Supervisor in order to determine his preferred frequency and time of communication.

As all project team members still take part in classes while doing projects, Scrum master should communicate to understand their schedule, and therefore specify appropriate communication plans for the team.

**6.4. Communication Method and Technologies**

- The project team will have a sprint planning meeting to define the planning that the project will do for the sprint at the beginning of the sprint.

- We have a daily meeting that lasting 15 minutes to answer some questions like What did yesterday do? What will you do today? Are there any problems?

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- Create a Facebook private group for team members to discuss and share informal information and activity. This would be a place for members to communicate freely, and therefore would help in strengthen relationship between members. - Use Google docs to share documents.

- Public weekly reports of team members in Google docs to keep them writing reports. This will help scrum masters in tracking work of team members, and also help team members understand the progress of others.

- Update Work schedule before weekly meeting with Supervisor. - Manage the plan and task above Trello tool.

**7. RISK MANAGEMENT**

**7.1. Risk Management Approach**

The approach to managing risks for this project is the process by which the project team identifies and ranks the various risks. The most likely and high impact risks will be added to the risk register and will be delivered to all team members, to ensure that every member perceives these potential risks. The scrum master must pay attention to all items in the risk register during the project and take appropriate action when risk is triggered. Upon the completion of the project, the scrum master will analyze each risk as well as the management process. Based on this analysis, the scrum master will identify any improvements that can be made to the risk management process and capture these improvements as a part of the lessons learned.

The approach to managing risks for this project is the process by which the project team identifies in every sprint meeting. Scrum master and team members will analyze each risk as well as find the solution after the sprint meeting end up. The scrum master has responsibilities to manage all risks that be defined. The team members will identify any improvements that can be made to the risk management process and capture these improvements as a part of the lessons learned in the sprint retrospection meeting after each sprint.

**7.2. Risk Identification**

Risk identification will be conducted in the sprint meeting. The risks will be written down by a team member when all team members answer the question that is "Are there any problems?". All team members don't need to get detail on how to resolve the risk in the sprint meeting.

Otherwise, the project team can define the project risk in each sprint. The risk will appear when the project is running.

Besides, the project team will review other capstone projects in order to determine the most common risks and the strategies used to mitigate those risks.

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**7.3. Risk Qualification and Prioritization**

In order to determine the severity of the risks identified by the project team, a probability and impact factor will be assigned to each risk. Scrum master will prioritize risks based on their probability and impact. Finally, the scrum master will create a probability – impact matrix.

**7.4. Risk Monitoring**

Risk monitoring will be a continuous process throughout the project. The avoidance plan should be taken care of from the start of the project. In case a risk is about to happen, the Scrum master and the team members will apply a contingency plan to prevent risk. If the risk already happens, Scrum master and the team members will apply to the fall back plan to minimize the impact.

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**7.5. Risk Register**

**7.5.1. Risk description of all project**

**No. Risk Name Description Category Route cause Probability ImpactRisk response Risk Contingency Risk Mitigation**

- Do well at the training

**R1**

Lack of skills and ability for a specified work

Team members may be unable to complete work because they have trouble in how to do. Therefore,

project may be over deadline

Team member may disagree with each

Human

Team members have not studied or not enough experienced

work.

Unclear

requirement

High High

together.

- Find materials and self study.

- The scrum master should understand the ability of each team member and assign the right work for the right person.

- Clear requirement.

- Assign more team members to support or to do the task.

- Ask for the support of external others.

- Negotiate to deal with

**R2** Team member may conflict

**R3** Requirement may change

others and refuse to work. Therefore, project may not enough member to complete the work

The scope may change, unplanned requirements may get added.

Therefore, project can be over

Human

Requirement

specification. Team members do not unify on solutions when problems occur.

Request from Supervisor or customer for new function, or to change

requirement

Medium High Medium High

- Pay attention to team building activities.

- Organize discussion periodic meetings. - Specify software requirement between Supervisor and project team before start of development.

- Give special

conflict in a meeting. - Report to Supervisor

- Discuss with

Supervisor to decide which requirement should be

implemented.

- Change requirement.

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**R4** Team members may distraction

**R5** Schedule may flaw

deadline and raise cost.

Team members may not pay

enough time for the project. Therefore, project may be over deadline.

- Time for one task can be too long or too short.

- Trouble may

occurs during

process that makes task longer than expected

Supervisor may

Human

Estimates

Team members are busy with studying while doing project

- The project is planned

assuming that all will take the most optimistic path possible.

- Poor plan

analysis.

- Poor team

member

assessment.

Communicate

Low High High High

consideration in

requirements.

- Understand team

members' schedule and assign suitable tasks and set appropriate deadlines.

- Require team members to set high priority for the project.

Use the Trello tool to add deadlines for important tasks and remind team members to always follow deadlines.

Develop for new

required functions. - Arrange team work frequently.

- Sketch deadline for the assigned tasks.

- Assign tasks to other members.

- A member who has free time involve in and support to finish the task.

- If there is some task that has more time than usual, member who take responsibilities should help each other.

- Create new time schedule.

**R6**

Lack of

Supervisor support

have not enough time to support project team. Therefore, the

Human

with the

Supervisor

inefficiently.

The supervisor is

Low High Define a meeting schedule with the Supervisor.

Ask for support from other sources.

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**R7** Lack the number of unit testing

The project team

work may get more mistakes.

Team members are can unable to

complete the

implementation of unit testing.

Therefore, when customers use the system, the system may have many bugs.

Members can’t find project documents.

Estimate, Human

a busy personal business and

support many teams at the same time

Lack of

implementation time.

Lack of close supervision

Lack of

Medium High

- Assigning the number of unit tests exactly for each member.

- Scrum master checks the testing progress.

- Save documents in multiple sources such as PC, Driver,...

Create and implement more unit test.

**R8**

may lost project documents

Therefore, it

spends lots of time writing again.

Two or members in team can do same

Human

managing

documents.

- Assign the work for team

members

Medium Medium

- The scrum master manages documents closely.

Create new documents. Use backup version,

**R9** Source code may be conflicted

one part.

Therefore, system may not run.

Human

inefficient.

- Member don't understand their task.

High High Pull source code before commit the source code.

discuss with other members and continue to work.

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**R10 R11**

**R12**

The system may not run in

updated web browser

The project team may

communicate with customer hardly

The project team may lost

member

Some element don't perform well in the web browser.

Therefore, system may not run.

There is some

misunderstanding between the

developer team and customers.

Therefore, the

project team may not solve the

problem of

customers.

The team may not be enough member to develop.

Therefore, project may be over

deadline.

All team members quarantine

Technology Human

Human

Web don't

support for

system

Long-distance between the

developer team and customer.

- When team

members got sick or had accident.

- Be isolated

from corona virus infection.

Low Medium Medium High

Low High

Give a list browser for customers that can run application fluently.

- Communicate frequently in online media.

- Reporting on a specific date with the customer.

- Leader remind members to take care their health

- Members protect

themselves carefully.

Consider and update the website to satisfy the new browser

version.

Come and discuss directly with

customers.

- Assign the task of missing members to others.

- Ask support from the external resource.

**R13** The team may work online

themselves at

home. Therefore, team members may not lose connection with others and

Disease Outbreak of

coronavirus. Low High None

Make new planning to development project online.

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**R14** Product owner may be changed

take more time to finish tasks.

The customer will be disabled to authorize the

managing system. Therefore, it

spends more time to transfer the system.

Human

Customers are busy or to

transfer new work.

Low Medium None

Tranfer the project for new customers who will manage this

system in the future.

**7.5.2. Risk description of Sprint 1**

**No. Risk Name Description Category Route cause Probability ImpactRisk response Risk Contingency Risk Mitigation**

Team members

may have trouble

that they should do

**R15**

Team members may

misunderstand the scrum

process.

exactly in the

project like what is the daily meeting should discuss, what is the scrum master. Therefore, the work may be not finished.

Any report doesn't

Human

Team members don't research about the scrum process.

Team members

Medium High

Leader send the scrum process tutorial for team members.

Leader assigns the

Scrum master retrain team members about the scrum process.

Team members use

**R16** The report may be over deadline

summit for the supervisor on-time. Therefor, it may

Human

don't focus on their task.

High High

specific work for each member.

more effort to finish their task.

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**R17 R18**

The designed database may be failure

Demo code on server task may be not done

affect to other

works.

The created

database is not working well in the project system and it has not a good architecture.

Therefore, team members may

spend more time to design the database again and

implement code late.

The demo code is not shown on-time. Therefore,

customer may be not satisfied.

Human Human

Team members have not to

experience

designing a good database.

- Team members don't focus on their task.

- The task is not estimated exactly.

High High High High

- Team members

researchers more about how to design a database.

- Team members discuss and review the project database.

Scrum master check the task deadline of each members.

Ask the support from the supervisor or the database expert.

- Team members use more effort to finish their task.

- Scrum master set a new deadline for their task.

**7.5.3. Risk description of Sprint 2**

**No. Risk Name Description Category Route cause Probability ImpactRisk response Risk Contingency Risk Mitigation**

**R19** Logic Bug

Team members may misunderstand flowchart of

Human

- Team members don't focus on their task.

High High

- Scrum master check the task deadline of each members.

- Team members use more effort to finish their task.

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function.

Therefore, team members may

spend more time to fix bug.

Team members

- Document is not

enough detailed.- Scrum master check source code.

- Team members

- Scrum master set a new deadline for their task.

- Team member

updates document.

**R20** Source code may conflict

push wrong branch in github.

Therefore, team members may

spend more time to restore code.

Team members may not have

enough knowledge about new

Human

don't focus on their task.

- Team members misunderstand commit code process.

The first time

High High

- Scrum master guides using github process.

- Scrum master check request merger of team members.

Team members ask scrum master to solve problems.

Team members ask

**R21** Risk about technique

The project team

technology to

develop. Therefore, team members may spend time to

research new

technology.

Team members may contact with

Human

team members use spring frame work

- Long-distance between the

High High Team members spend more time to research.

Team members are more

proactive to contact and

master about spring boot to support.

Team members proceed develop function follow

**R22**

may contact with customer hardly

customer hardly that about

exchange more

Human

developer team and customer.

High High

get an appointment with the customer for

convenient working time.

explicit request in advance.

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**R23**

The project team may create

sketchy design for modules

about project

requirements.

Therefore, the

working process may be lated.

The team members may create sketchy designs for

modules.

Therefore, the

system may happen a lot of bug and spend more time designing again.

Human

- Customers are teacher so they are busy on end of year.

Team members have not enough time and contact hardly with

customer.

High High

Team members arrange the working schedules to fit with customer's

working time.

Team members use more effort to design again.

**7.5.4. Risk description of Sprint 3**

**No. Risk Name Description Category Route cause Probability ImpactRisk response Risk Contingency Risk Mitigation**

- Team members use

**R24** Logic Bug

Team members may misunderstand flowchart of

function.

Therefore, team members may

spend more time to fix bug.

Human

- Team members don't focus on their task.

- Document is not enough detailed.

Medium High

- Scrum master check the task deadline of each members.

- Scrum master check source code.

more effort to finish their task.

- Scrum master set a new deadline for their task.

- Team member

updates document.

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**R25**

May execute wrong testing process

Team members may make mistake about how to

execute test

process. Therefore, it may spend more time to test again.

Team members push wrong branch in github.

Human

Team members don't have

experience of testing.

- Team members don't focus on their task.

High High

Team members

researchers more about how to testing.

- Scrum master guides using github process.

Ask support from the external resource.

Team members ask

**R26** Source code may conflict

The working

Therefore, team member may spend more time restoring code.

Team members may not have

Human

- Team members misunderstand commit code process.

Team members have to spend

High High

- Scrum master check request merger of team members.

Scrum master assign tasks

scrum master to solve problems.

Team members use

**R27 R28**

time may be limited

The solution for assigned redstar may have the problem

enough time to finish their tasks

May not find the best solution to solve the assigned Redstar

automatically. Therefore, the system may not do mission well.

Human Human

time for

assignments in class

The assigned problem is very complicated and spent more effort to solve

High High Medium High

effectively with the team members time.

Team members

researchers more about similar problems and how to solve them.

more effort to finish their task.

Ask support from the supervisor.

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**7.5.5. Risk description of Sprint 4**

**No. Risk Name Description Category Route cause Probability ImpactRisk response Risk Contingency Risk Mitigation**

- Team members use

**R29** Logic Bug May execute

Team members may misunderstand flowchart of

function.

Therefore, team members may

spend more time to fix bug.

Team members may make mistake about how to

Human

- Team members don't focus on their task.

- Document is not enough detailed.

Team members don't have

Low High

- Scrum master check the task deadline of each members.

- Scrum master check source code.

Team members

more effort to finish their task.

- Scrum master set a new deadline for their task.

- Team member

updates document. Ask support from the

**R30**

wrong testing process

execute test

process. Therefore, it may spend more time to test again.

Team members push wrong branch in github.

Human

experience of testing.

- Team members don't focus on their task.

Low Medium

researchers more about how to testing.

- Scrum master guides using github process.

external resource. Team members ask

**R31** Source code may conflict

Therefore, team member may spend more time restoring code.

Human

- Team members misunderstand commit code process.

Medium High

- Scrum master check request merger of team members.

scrum master to solve problems.

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**R32**

Overtime dateline of deploying

Team members may have the

problem with how to deploy project. Therefore, it may affect other works and make

customers

dissatisfied.

Team members lost a week for

Human

Team members don't have

experience of deploying.

Team member

High High

Team members

researchers more about how to deploying.

Ask support from the external resource.

Team members use

**R33** The deadline may not on-time

examination.

Therefore,

member's task may not finish on time. Communication with customer

Human

has to finish their final examination for a week.

High High None

more effort to finish their task.

**R34**

The project team may contact with customer hardly

hardly. Therefore, the project team may not solve the problem of

customers.

Human Covid-19 is

spread again. High High None

Team members work on online media like google meet.

**7.5.6. Probability – Impact matrix**

**y**High R1, R5, R9, R16, R17, R18, R19, R21, R22, R23,

R25, R26, R27, R32, R33, R34

**t**

**i**

Medium R8 R2, R3, R7, R11, R15. R24, R28, R31

**l**

**i**

**b**

**a**

Low R10, R14, R30 R4, R6, R12, R13, R29 **b**

**o**

Low Medium High

**r**

**P**

**Impact**

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**7.6. Risk Implement**

**No. Risk Contingency Risk Mitigation Other Risk Mitigation**

**Occurrent Status**

- Do well at the training together.

- Find materials and self-study.

**R1**

- The scrum master should understand the ability of each team member and assign the right work for the right person.

- Assign more team members to support or to do the task.

- Ask for the support of external others.

None Yes

**R2** - Clear requirement.

- Organize discussion periodic meetings.

- Specify software requirement between Supervisor and project

- Negotiate to deal with conflict in a meeting.

- Report to Supervisor

- Discuss with Supervisor to decide which

None Yes

team before start of development.

**R3**

- Give special consideration in requirements.

- Understand team members' schedule and assign suitable tasks

requirement should be implemented. - Change requirement. Develop for new required functions.

None Yes

and set appropriate deadlines.

**R4**

- Require team members to set high priority for the project.

None None No

- A member who has free time involve in

and support to finish the task.

**R5** Use the Trello tool to add deadlines for important tasks and remind team members to always follow deadlines.

- If there is some task that has more time than usual, member who take

responsibilities should help each other. - Create new time schedule

None No

**R6** Define a meeting schedule with the Supervisor. None None No **R7** - Assigning the number of unit tests exactly for each member.

- Scrum master checks the testing progress. None None No **R8** - Save documents in multiple sources such as PC, Driver... None None No **R9** Pull source code before commit the source code None None No

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**R10** None None None No **R11** - Communicate frequently in online media

- Reporting on a specific date with the customer None None No **R12** - Leader remind members to take care their health

- Members protect themselves carefully. None None No **R13** None None None No **R14** None None None No **R15** Leader send the scrum process tutorial for team members. None None No **R16** Leader assigns the specific work for each member. None None No

**R17**

- 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.

- Team members use more effort to finish

Team member gives improved way

database

Yes

**R18** Scrum master check the task deadline of each members

- Scrum master check the task deadline of each members. **R19**

- Scrum master check source code.

**R20** - Scrum master guides using github process.

their task.

- Scrum master set a new deadline for their task.

- Team members use more effort to finish their task.

- Scrum master set a new deadline for their task.

- Team member updates document. Team members ask scrum master to solve

None Yes

None Yes Team members

- Scrum master check request merger of team members.

problems.

cancel request merge.

Yes

**R21** Team members spend more time to research. None None No

**R22** Team members are more proactive to contact and get an appointment with the customer for convenient working time

Team members proceed develop function

follow explicit request in advance. None Yes

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**R23** Team members arrange the working schedules to fit with

customer's working time. None None No - Team members use more effort to finish

**R24** - Scrum master check the task deadline of each members. - Scrum master check source code.

their task.

- Scrum master set a new deadline for their task.

- Team member updates document.

None Yes

**R25** Team members researchers more about how to testing. Ask support from the external resource. None Yes

**R26** - Scrum master guides using github process.

- Scrum master check request merger of team members. **R27** Scrum master assign tasks effectively with the team members time.

**R28** Team members researchers more about similar problems and how

Team members ask scrum master to solve

problems. None Yes Team members use more effort to finish

their task. None Yes

to solve them. Ask support from the supervisor. None Yes - Team members use more effort to finish

**R29** - Scrum master check the task deadline of each members. - Scrum master check source code.

their task.

- Scrum master set a new deadline for their task.

- Team member updates document.

None Yes

**R30** Team members researchers more about how to testing. None None No **R31** - Scrum master guides using github process.

- Scrum master check request merger of team members. None None No **R32** Team members researchers more about how to deploying. Ask support from the external resource. None Yes **R33** None Team members use more effort to finish

their task. None Yes

**R34** None Team members work on online media like google meet. None Yes

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**8. QUALITY MANAGEMENT**

**8.1. Quality Management Overview**

**8.1.1. Organization, Role and Responsibilities for quality management**

**Name Role Responsibilities** - Helps define product quality

Tran Binh Duong Supervisor

Vu Bao Yen Scum Master

Team members:

expectations.

- Determines final acceptance product’s quality

- Create quality plan

- Facilitate resolution of quality issues, escalating as needed.

- Create test plan

- Nguyen Tung Lam - Pham Trong Kim - Nguyen Thi Kim Loan

Developer

- Create test cases - Execute text cases - Report test result

HVT Gifted High School Tester - Execute acceptance tests.

**8.1.2. Tools, Environment, and Interfaces**

**Tool Description**

Cause-and-effect diagram

Used to find the root cause problem when there is a complaint about quality problems.

Flowchart Used to illustrate a solution model for a problem.

**8.2. Quality Planning**

**8.2.1. Define Project Quality**

❖ **System output:**

- A Web application supports evaluating the emulation grades, managing school activities and timetables.

❖ **Functionality:**

- Follow the requirements of the project.

❖ **Performance:**

- Time delay for system processing is less than 10s.

❖ **Reliability:**

- The application is available 24/7.

- Server can handle a least 200 clients concurrently.

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❖ **Maintainability:**

- Web applications are easy to be updated without any crashes. Source code is readability, complies with coding convention.

- System has to be designed to be easy to extend.

❖ **Security:**

- Information of admin and manager on server is secured.

**8.2.2. Measure Project Quality**

**Metric Goal**

Response of the web application Time delay for image processing <= 10s UT: 8 – 9 bugs / KLOC

Bugs/Lines of Code

ST: 2 – 4 bugs / KLOC ( based on Fsoft norms)

Maximum deep of loops <= 4

Algorithm complexity <= O(n^2)

Website support browser Support Chrome version 41.0.xxx.

**8.2.3. Improve Project Quality**

**Issue Action**

Difficult to track project’s progress

- Weekly report, team work 6 days/ week - Using Trello to track team members’ work

Maintainability - Specify coding conventions document - Concentrate on architecture design

Low quality code - Peer review, peer coding among developers

- Teambuilding to increase communication ability

between project’s members

Reward and discipline

- Have punishment rules when:

+ Submit terrible code (which causes to re coding more than 10%)

+ Miss deadline

Acceptance of users Conduct meetings face-to-face and contacts through Facebook, email, phone.

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**8.3. Quality Control**

**Deliverables Goal Quality control activity**

Designer has to:

**Frequency / Interval**

Interface Design Software

- Good looking & easy-to-use.

- Cover all

functions

specified in SRS Design to be easy to

- Ask for advice of some other designer

- Take comment from friends on completed work - Have approve from SRS leader

Have review and judgment

Each time design a new screen

Architecture Design

Integration Test Report

System Test

Report

extend

4 – 5 test cases/ function

Equal or greater than Integration test

from Supervisor On completion design

Scum Master requires

testers to report on work. Twice in a month. Scum Master requires

testers to report on work Twice in a month.

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**CHAPTER 3: SOFTWARE REQUIREMENTS SPECIFICATION**

**1. INTRODUCTION**

**1.1. Purpose**

This document provides developers, testers, QAs a complete and comprehensive description of both the functional requirement and non-functional requirements of the HTV Digital Transformation System. Developers base on this document to develop the system, and testers base on this to assure the quality of the output system. Scrum master

based this document to create a schedule and assign tasks to team members.

**1.2. Scope**

This document defines all functional and nonfunctional requirements for HTV Digital Transformation System.

**1.3. Overview**

Section 2 of this document provides overall information of the project, while excluding the specific requirements. Instead, it provides the background for those requirements, which are defined in Section 3.

Section 3 describes all the requirements in detail, including functional requirements and non-functional requirements. Each function is described based on the following format:

- Use Case: the detailed description of all use cases.

- Screen: The mockup/prototype of the screen which describes the workflow of the Use Case.

**2. OVERALL DESCRIPTION**

**2.1. Scope of work**

Project team will develop a Web Application for users to manage the emulation grade, activities and timetable of HVT Gifted High School.

The Application includes below main module:

- Manage account

- Manage class

- Manage timetable

- Manage violation of class

- Manage newsletter of school

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**3. BUSINESS PROCESS MANAGEMENT**

**3.1. Business Process of Manage Emulation**

Business process of manage emulation describe the management of the emulation

*Figure 20: Business process flow of "Manage Emulation"*

**3.2. Business rules**

**Business Rule Rule Description**

BR\_01 Only admins have the right to manage the account, teacher, and class. BR\_02 - The monitor, Red Star account require the information that is class. - All accounts require username and password.

BR\_03 Admins can delete all account except their account.

BR\_04 Teacher's identifier name must be unique.

BR\_05 When class is locked, monitor and Red Star accounts will be locked too. BR\_06 Class's identifier name must be unique.

BR\_07 Gifted class name must be unique.

BR\_08 Admins do not delete with gifted classes that have active classes. BR\_09 A class have one or more timetable.

BR\_10 Only admins and timetable managers can add timetables.

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BR\_11 When a new timetable adding, if the applying date is same with old timetable, the system will override timetable.

BR\_12 A violation type can have zero, one, and more violations. BR\_13 The violation must have belonged to only one violation type. BR\_14 The grade must be a positive number.

BR\_15 Can not delete a violation type that has any violations. BR\_16 Only admins can create and delete the assigned Red Star. BR\_17 When admins create a new assigned Red Star, the assigned red stars have apply date is bigger or equal imported date will be overridden.

BR\_18 Only admins have the right to add or delete the entering time. BR\_19 The entering time can be only added for Red Stars and summarizing groups.

BR\_20 The violation can be edited when the created date is not ranked in any weeks.

BR\_21 Admins have the right to add and edit the emulation grade of all classes at any time that is not ranked in any weeks.

BR\_22 The summarizing group has the right to grade emulation in the entering time of them.

BR\_23 Red Stars have the right to grade or edit a class that is assigned for them at the current day and with the entering time of them.

BR\_24 Monitors have the right to request change for any violations that are created in the current date.

BR\_25 Admins have the right to view all change requests.

BR\_26 Monitors have the right to view their change requests. BR\_27 Admins have the right to accept or reject any change requests that are not censored.

BR\_28 Monitors have the right to cancel their requests that are not censored. BR\_29 Only admins have the right to create or edit the week rank, the month rank, the semester rank, and the year rank.

BR\_30 Can not edit the week/month/semester rank that is ranked in the corresponding month/semester/year.

When week rank grade updating, all grades must be a positive number; the

BR\_31

learning grade must be smaller than 20, the movement grade and the labor grade must be smaller than 0.2.

BR\_32 Admins have the right to create newsletter directly.

BR\_33 Monitors and club leaders have the right to request create new newsletters. BR\_34 Monitors and club leaders have the right to view/edit/delete newsletters with not censor status yet.

BR\_35 Admins have the right to censor the created newsletter request that is not accepted yet.

BR\_36 Admins have right to edit/delete/post with all newsletters.

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**3.3. Modeling the problem "Assignment of Red Stars"**

**3.3.1. Problem**

In the process flow of "Manage Emulation" have Step is “Add assignment of Red Stars”, that is an important step in the process. This step requires the system to create an “Assignment of Red Star” table automatically so that each assignment of each Red Star in this table suitable for the “Assignment rules”.

“Assignment rules” is stated as follows:

∙ There are n Classes, each Class has more than or equal to two Red Stars. ∙ Find a way to be assigned Red Stars satisfies the following condition: 1. Each class will be estimated by two Red Star in two different Classes 2. Class's Red Stars of the same grade that are not assigned for each other (for example, the Red Stars of Classes belonging to tenth grade will not be assigned for other Classes belonging to tenth grade).

3. If the Red Stars of Classes assigned for other Classes in previous week. Then the next week Red Stars of other Classes will not continue assigning for Classes and do not reverse (for example, in week 1, Red Stars of Class B and Class C assigned for Class A and two Red Stars of Class A assigned for Class D and Class E. Then in week 2, Class A will not be estimated by Class B, C, D, E).

**3.3.2. Modeling the problem**

- Call N denotes the total number of Classes

- Call lj denotes Class j (j ∈ N)

- Call Kj denotes the grade of Class j

- Call Mj denotes the total number of Red Stars that Class j has

- Call sd (i, m) denotes the m-th Red Star of Class i (i ∈ N and m ∈ Mi) - Call X (i, m, j) denotes assigned or not-assigned relationship of the m-th Red Star of Class i with respect to Class j.

⮚ X (i, m, j) = 1 => m-th Red Star of Class *i* assigned for Class *j*

⮚ X (i, m, j) = 0 => m-th Red Star of Class *i* is not assigned for Class *j*

- Call S = {(i, m, j) | (i, j ∈ N) ˄ (m ∈ Mi)} denotes the relation set of the m-th Red Star of class i that assigned Class j in the previous week.

- Find a solution that X (i, m, j) ∀ i, m, j suitable with the following conditions: **Condition 1**: Each Class will be estimated by two Red Stars in two different Classes.

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N

Mi

∑∑X(i, m, j)=2

∀ j ∈N

i=1 Mi

m=1

{

∑X(i, m, j) ≤ 1 m=1

∀ i, j ∈N

**Condition 2:** Class's Red Stars of the same grade that are not assigned for each other.

���� (���� = ����) => ��(��, ��,��) = 0 ∀ i, j ∈ N , ∀ m ∈ Mi

**Condition 3**: If the Red Stars of Classes assigned for other Classes in previous week. Then the next week Red Stars of other Classes will not continue assigning for Classes and do not reverse.

���� (i,m, j) ∈ S => {X(i, m', j) = 0 ∀ m′ ∈ Mi

X(j, m', i) = 0 ∀ m′ ∈ Mi

**3.3.3. Modeling the problem to optimization**

- Call T (s, h, l) denotes a binary value show that X (s, h, l) violate or not violate the “Assignment rules”.

⮚ T (s, h, l) = 0 when X (s, h, l) DO NOT violate the “Assignment rules”. ⮚ T (s, h, l) = 1 when X (s, h, l) violate the “Assignment rules”.

- X (s, h, l) NOT violate the “Assignment rules” when suitable with the one of following conditions:

**Condition 1:** There are more than two Red Stars assigned for Class ��

s

h

∑∑X(i, m, l) ≥ 2

∀ s, l ∈ N , ∀h ∈ Ms

i=1

m=1

**Condition 2:** There are less than two Red Stars assigned for Class ��

s

h

∑∑X(i, m, l) ≤ 1

∀ l ∈ N, s = N − 1, h = Ms

i=1

OR

s

m=1 h

∑∑X(i, m, l) < 2

∀ l ∈ N, s = N, h = Ms

i=1

m=1

**Condition 3:** There are more than or equal to two Red Stars in the same Class assigned for Class ��

h

∑ X(s, m, l) ≥ 2 ∀ s, l ∈ N , ∀h ∈ Ms

��=1

**Condition 4:** Class's Red Stars of the same grade that are assigned for each other.

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(Ks = Kl) ˄ (X(s, h, l) = 1) ∀ s, l ∈ N ,∀h ∈ Ms

**Condition 5:** The Red Stars are Classes assigned for other Classes in previous week and in the next week Red Star of other classes will continue assigning for Classes or reverse.

X(s, h, l)=1 ˄ [( ∃(s, m, l) ∈ S , ∀ m ∈ Ms ) ˅ ( ∃(l,m, s) ∈ S ,∀ m ∈ Ms )]

- Find a solution that optimizes the smallest number of “X (s, h, l) violate the “Assignment rules” ”.

N

Ms

N

∑∑∑T(s, h, l) → Min

s=1

h=1

l=1

**4. FUNCTIONAL REQUIREMENTS**

**4.1. Module 1: Manage Account**

**4.1.1. Use Case Diagram**

*****Figure 21: Use Case Diagram of Manage Account Module*

**4.1.2. Use Case Description**

**4.1.2.1. Login use case**

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**UC ID and Name: UC-1: Login**

Created By: Nguyen Tung Lam Date Created:

Primary Actor: All users Secondary Actors:

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Trigger: Users indicate that they want to login in system.

Description: This use case describes how user login in system. Precondition: Load Login Page.

Postconditions: System access with account of customer and switch to Home page.

Normal Follow: 1. User press “ĐĂNG NHẬP” in menu to send request login to system.

2. System give form to login.

3. User fills username and password in form.

4. User press button “Đăng nhập” to send information

account.

5. System send success dialog “Đăng nhập thành công!”.

6. User press button “Xác nhận”.

7. System directs to Home page with account.

Alternative Flows: None

Exceptions: Exception 4.1: Username doesn’t exist

1. System send the error message: “Tên đăng nhập không

tồn tại”.

Exception 4.2: Password isn’t correct

1. System send the error message: “Mật khẩu không

đúng”.

Exception 4.3: Username is empty

1. System send the error message: “Hãy điền tên đăng

nhập”.

Exception 4.4: Password is empty

1. System send the error message: “Hãy điền mật khẩu”.

Exception 4.5: Forget password

1. User click link “Quên mật khẩu?”.

2. System direct to new page include phone of the account

manager.

Exception 4.6: Username and password are empty

1. System send the error message: “Hãy điền tên đăng

nhập và mật khẩu.”.

Priority: High

Business Rules: None

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*Figure 22: Activity diagram for login*

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**4.1.2.2. Logout use case**

****

**UC ID and Name: UC-2: Logout**

Created By: Nguyen Tung Lam Date Created:

Primary Actor: All users Secondary Actors:

Trigger: Users indicate that they want to logout. Description: This use case describes how user logout. Preconditions: Users already login to the system.

13/06/2020

HVT Digital Transformation System

Postconditions: System direct to Home page without account. Normal Follow: 1. User press “ĐĂNG XUẤT” in menu icon to send request logout to system.

2. System directs to Home page without account.

Alternative Flows: None

Exceptions: None

Priority: High

Business Rules: None

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HVT Digital Transformation – Final Report v.1.1.9 *Figure 23: Activity diagram for logout*

**4.1.2.3. View the personal information use case**

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**UC ID and Name: UC-3: View the personal information** Created By: Nguyen Tung Lam Date Created:

Primary Actor: All users Secondary Actors:

13/06/2020

HVT Digital Transformation System

Trigger: User indicate that they want view their personal information Description: This use case describes how users can view their personal information.

Preconditions: User already login to system

Postconditions: User see their information in system

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Normal Follow: 1. User press menu “THÔNG TIN TÀI KHOẢN” in icon avatar to send request view personal information to system

2. System sends the all information follow role of user

a. If role user as “Lớp trưởng” or “Cờ đỏ”, system

sends information include: “Tên đăng nhập”, “Lớp”,

“Chức vụ”.

b. If role user as “CLB”, system sends information

include: “Tên đăng nhập”, “CLB”, “Chức vụ”.

c. If role user as “Người xếp TKB”, “Nhóm tổng hợp

điểm” or “Admin”, system sends information include:

“Tên đăng nhập”, “Họ và tên”, “Số điện thoại”, “Email”,

“Chức vụ”.

Alternative Flows: None

Exceptions: None

Priority: High

Business Rules: None

*Figure 24: Activity diagram for view the personal information*

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**4.1.2.4. Edit the personal information use case**

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****

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**UC ID and Name: UC-4: Edit your personal information** Created By: Nguyen Tung Lam Date Created 13/06/2020

Primary Actor: Timetable Manager, Admin, Summarize

Group

Secondary Actors:

HVT Digital Transformation System

Trigger: User indicate that they want edit their personal information. Description: This use case describes how users can view their personal information.

Preconditions: 1. User already login to system.

2. User already view their information.

Postconditions: User’s information is updated in system and they can view them.

Normal Follow: 1. User press button “CHỈNH SỬA” in view information page to send request edit information to system.

2. System allow edit information include: “Họ và tên”,

“Email”, “Số điện thoại” in this page.

3. User edit information.

4. User press button “XONG” to send information to

system.

5. System update information and send success dialog

“Thông tin sửa thành công!”.

6. User press button “ĐÓNG”.

7. System displays new information in this page.

Alternative Flows: None

Exceptions: Exception 4.1: Phone is invalid

1. System send the error message “SĐT không đúng định

dạng.”.

Exception 4.2: Email is invalid

1. System send the error message “Email không đúng định

dạng.”.

Priority: High

Business Rules: None

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*Figure 25: Activity diagram for edit the personal information*

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**4.1.2.5. Change password use case**

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**UC ID and Name: UC-5: Change password** Created By: Nguyen Tung Lam Date Created:

Primary Actor: All users Secondary Actors:

13/06/2020

HVT Digital Transformation System

Trigger: User indicate that they want to chance account password. Description: This use case describes how user can change their account password.

Preconditions: 1. Account exists.

2. User already login to system.

Postconditions: User’s password update in system and they can login the system by the new password.

Normal Follow: 1. User press “ĐỔI MẬT KHẨU” in menu icon to send request to system.

2. System sends a new page that include the change password form.

3. User input information include “Mật khẩu cũ”, “Mật khẩu mới”, “Xác nhận mật khẩu mới”.

4. User press button “XÁC NHẬN” to send information to system.

5. System update new password and send success dialog “Mật khẩu thay đổi thành công!”.

6. User press button “ĐÓNG”.

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7. System direct to Login Page without account.

Alternative Flows: None

Exceptions: Exception 4.1: Required Information is empty

1. System send the error message “Hãy điền đầy đủ tất cả

các trường.”.

Exception 4.2: Old password is incorrect

1. System send the error message “Mật khẩu không đúng”.

Exception 4.3: Password is invalid

1. System send the error message “Mật khẩu không đúng

định dạng”.

Exception 4.4: The new password is the same as the old

password

1. System send the error message “Mật khẩu chưa thay đổi”.

Exception 4.5: Password confirm wrong

1. System send the error message “Mật khẩu xác nhận không

đúng.”.

Exception 4.6: Password confirm is empty

1. System send the error message “Hãy xác nhận lại mật

khẩu.”.

Priority: High

Business Rules: None

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*Figure 26: Activity diagram for change password*

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**4.1.2.6. Reset multiple account password use case**

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**UC ID and Name: UC-6: Reset multiple account password**

Created By: Nguyen Tung Lam Date Created:

Primary Actor: Admin Secondary Actors:

13/06/2020

HVT Digital Transformation System

Trigger: Admin indicates that he/she wants to reset the account password of all accounts.

Description: This use case describes how admin can reset the account password of all accounts.

Preconditions: 1. Admin already login to system.

2. Admin already view list account.

Postconditions: Passwords of accounts have reseted

Normal Follow: 1. Admin click checkbox to select one or multiple accounts. 2. Admin click button “Đặt lại MK” to send request to

system.

3. System display popup include: “Mật khẩu mới”, “Xác

nhận mật khẩu mới”.

4. Admin input information.

5. Admin press button “XÁC NHẬN” to send new password to system.

6. System accept new password and send success dialog

“Mật khẩu đã được đặt lại”.

7. Admin press button “ĐÓNG”.

Alternative Flows: None

Exceptions: Exception 2.1: No account to be selected

1. System send the error message “Hãy chọn tài khoản mà

bạn muốn đặt lại mật khẩu

Exception 5.1: New password and confirm password are empty

1. System send the error message “Hãy điền đầy đủ tất cả các

trường.”.

Exception 5.2: New password is invalid

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1. System send the error message “Mật khẩu không đúng

định dạng”.

Exception 5.3: Password confirm wrong

1. System send the error message “Mật khẩu xác nhận không

đúng.”.

Exception 5.4: Confirm password is empty

1. System send the error message “Hãy xác nhận lại mật

khẩu.”.

Exception 5.5: New password is empty

1. System send the error message “Hãy điền mật khẩu mới.”.

Priority: High

Business Rules: None

*Figure 27: Activity diagram for reset multiple account password*

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