Software Requirements Specification

for

Thesis and Project Management Tool

Version 1.0 approved

Prepared by

|  |  |  |
| --- | --- | --- |
| No. | Full name | Student ID |
| 1 | Phan Thanh Nhi | B1400711 |
| 2 | Truong Tu Oanh | B1400714 |
| 3 | Ho Le Anh Thu | B1400730 |
| 4 | Vo Thuy An | B1400743 |
| 5 | Luu Thi Tuyet Huong | B1400760 |
| 6 | Tran Dang Hong Khanh | B1400761 |
| 7 | Nguyen Thi Hanh Nguyen | B1400774 |

Date created: 15/03/2017

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Revision History

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| --- | --- | --- | --- |
| **Name** | **Date** | **Reason For Changes** | **Version** |
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# Introduction

## Purpose

The product we have is Thesis and Project Management Tool, revision or release number being 1.0. The aim of this product is to create a tool that helps teachers easily manage and save information about projects they have guided or joined in, so they can review or advance quality of projects in the future.

## Document Conventions

This document follows APA Format. Bold-faced text has been used to emphasize section and sub-section headings. Highlighting is to point out words in the glossary and italicized text is used to label and recognize diagrams.

## Intended Audience and Reading Suggestions

This document is to be read by the development team, the project managers, testers and documentation writers. Our stakeholders, customers may review the document to learn about the project and to understand the requirements. The SRS has been organized approximately in order of increasing specificity. The developers and project managers need to become intimately familiar with the SRS.

Others involved need to review the document as such:

**System features** – Testers need an understanding of the system features to develop meaningful test cases and give useful feedback to the developers.

**External Interface Requirements** – The hardware developers need to know the requirements of the device they need to build.

**Nonfunctional and Functional Requirements** – The hardware developers.

## Product Scope

* This product has features that help user on managing, searching or projects statistic.
* Apply on teachers who need to apply information technology in teaching.
* Run on Windows platform, use Microsoft SQL Server database.

## References

* MS. Phan Phuong Lan, Introduction to Software Engineering Slide, samples of planning document, requirement specification, design document, Faculty of Informaton & Communication Technology – Can Tho University, 2014.

<Url: http://elcit.ctu.edu.vn/course/view.php?id=1653 >

* Associate Prof., PhD. Huynh Xuan Hiep and MS. Phan Phuong Lan, Introduction to Software Engineering curriculum, Can Tho University, 2011.
* The free encyclopedia Wikipedia:

<Url: https://vi.wikipedia.org >

* MS. Tran Van Hoang, Software Requirement Analysis Slide, sample of requirement specification document, the PIECES Framework, Faculty of Information & Communication Technology – Can Tho University, 2017.

<Url: https://elcit.ctu.edu.vn/course/view.php?id=2530 >

# Overall Description

## Product Perspective

* Information systems in management is applied widely in all areas of society in general and business sector in specific.
* Manual management of the thesis, project topics can make lecturers waste time and data is easy to lose. An application software can replace a notebook, save time, effort and money. Building an application software can meet some demands as: convenient, intelligent, easy to upgrade and develop in the future.
* Recognizing those potentials, NCT team executed the topic: Thesis & Project Management System.

## Product Functions

* Login
* Manage project information
* Search
* Statistics
* Change the password
* Manage report file

## User Classes and Characteristics

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **User class** | **Characteristics** | **Features** | **Role** | **Importance** |
| Teacher | -The age from 25 to 60.  -Informatics level: medium.  -Using frequency: high. | -Login  -Manage project  -Search  -Statistics  -Change the password  -Manage report file | User | Very important |

## Operating Environment

* Operating system: MS Windows XP, 7, 8, 10
* Database system: Microsoft SQL Server Express 2008
* RAM: 1GB
* HDD: 250GB
* CPU: Intel core i3

## Design and Implementation Constraints

* Implementation:
* The system runs directly on server without Internet connection.
* Runs stably in Windows environment and does not conflict with other software.
* Design:
* Programming language : Java
* Simple interface, user friendly, decrease the number of steps to perform a function.
* Database system: Microsoft SQL Server 2008
* The volume of database is large enough to store data in use.
* Software runs on Windows, programs with Java language.
* The system meets safety and security. User has an account to log in to the system.
* User’s password must be encrypted.

## User Documentation

For user documentation and information, please consult section 3: External Interface Requirements.

## Assumptions and Dependencies

* Hardware is damaged suddenly.
* Unstable power supply.
* The product is not delivered in time.
* Change the documents of project suddenly.
* Change employee suddenly.
* Virus infect the system to damage data.
* Unstable power supply or lack of power supply preventive.
* Database Management System Microsoft SQL Server free version is limited.

# External Interface Requirements

## User Interfaces

The tool’s user interface has been designed like common application’s user interface, makes sure the user not take time to figuring out how to use it.

The home menu offers a list of functional buttons that this product provides. The

user can select one of them, and is taken to the respective form. Every functional form displays the home button on the top. The user can click on it and is taken to the home menu. Some functions have additional form on which user can click “Close” button on top right corner so that they can return to the functional main form.

The form offers scroll bar to navigate the forms efficiently. To scroll down any form, simply click the scroll bar on the form and roll down.

## Hardware Interfaces

* Hardware devices must be met the requirements (hardware requirements in index 2.4)
* Insure that hardware devices having ability enough to serve the system working effectively and fastly.
* To manipulate the software, user needs to use mouse or keyboard to move.

## Software Interfaces

* This product is written on Java platform.
* Operating System: Windows XP / 7 / 8 / 10, Linux, Mac.
* Models are built by Power Designer 16.1 and StarUML.
* Database Management System: Microsoft SQL Server 2008.

## Communications Interfaces

None.

# System Features

## Login

### Description and Priority

This use case describes how a user logs into the Project and Thesis Management System.

Priority: High.

### Flow of Events

#### Basic Flow

This use case starts when the user wishes to Login to the Project and Thesis Management System.

1. The system requests that the user enter his/her name and password.

2. The user enters his/her name and password.

3. The system validates the entered name and password and logs the user into the system.

#### Alternative Flows

##### Invalid Name/Password

If in the **Basic Flow**, the user enters an invalid name and/or password, the system displays an error notice. The user can choose to either return to the beginning of the **Basic Flow** or cancel the login, at which point the use case ends.

### Special Requirements

None.

### Pre-Conditions

None.

### Post-Conditions

If the use case was successful, the user is now logged into the system. If not, the system state is unchanged.

### Extension Points

None.

## Manage Project

### Description and Priority

This use case allows user to manage project information. This includes adding, changing, and deleting project information from the system.

Priority: High.

### Flow of Events

#### Basic Flow

This use case starts when the user wishes to add, change, and/or delete project information from the system.

1. The system requests that the user specify the function he/she would like to perform (either **Add a Project**, **Update a Project**, or **Delete a Project**)
2. Once the user provides the requested information, one of the sub-flows is executed.  
   If the user selected “Add“, the **Add a Project** sub-flow is executed.  
   If the user selected “Update“, the **Update a Project** sub-flow is executed.  
   If the user selected “Delete“, the **Delete a Project** sub-flow is executed.

##### Add a Project

The system requests that the user enter the project information. This includes:

* Information about project:
* Name
* Project type (project or thesis)
  + State (Uncompleted, completed, canceled or delayed).
  + Date started
  + Date ended
  + Semester (1, 2 or summer).
  + Year
* Information about students join in:
* ID
* Name
* Mailing address
* Phone number
* Information about teacher:
* ID
* Name
* Mailing address
* Phone number
* Role (Thesis Council Chairman, Member of Thesis Council, Reviewer or Supervisor)
* Score

1. Once the user provides the requested information, the system generates and assigns a unique project id number to the project. The project is added to the system.
2. The system provides the user with the new project id.

##### Update a Project

1. The system requests that the user enter the project name.
2. The user enters the project name. The system retrieves and displays projects base on words the user entered.
3. The user chooses the project he/she wants and selected “Update”. The system displays the detail information about that project.
4. The user makes the desired changes to the project information. This includes any of the information specified in the **Add a Project** sub-flow.
5. Once the user updates the necessary information, the system updates the project record with the updated information.

##### Delete a Project

1. The system requests that the user enter the project name.
2. The user enters the project name. The system retrieves and displays projects base on words the user entered.
3. The user chooses the project he/she wants and selected “Delete”.
4. The system prompts the user to confirm the deletion of the project.
5. The user verifies the deletion.
6. The system deletes the project record from the database.

#### Alternative Flows

##### Project Not Found

If in the **Update a Project** or **Delete a Project** sub-flows, a project with the specified name does not exist, the result table doesn’t display anything. The user can then enter a different name or cancel the operation, at which point the use case ends.

##### Delete Cancelled

If in the **Delete a Project** sub-flow, the user decides not to delete the project, the delete is cancelled and the **Basic Flow** is re-started at the beginning.

### Special Requirements

REQ – 01: A project only has score if its state is “Completed”.

REQ – 02: The button “Update” and “Delete” are disable before the user chooses one project.

REQ – 03: Project name, students’ ID and name, teachers’ ID and name are not allowed null.

### Pre-Conditions

The user must be logged onto the system before this use case begins.

### Post-Conditions

If the use case was successful, the project information is added, updated, or deleted from the system. Otherwise, the system state is unchanged.

### Extension Points

None.

## Search

### Description and Priority

This use case allows user to search for information he/she wants.

Priority: Medium.

### Flow of Events

#### Basic Flow

This use case starts when the user wants to search something.

1. The system requests that the user enter what he/she wants to search.
2. The user enters some words.
3. The system retrieves and displays projects base on words the user entered.
4. The user chooses the project he/she wants and choose “Detail” button.
5. An additional form will appear to show all information refer to the project that the user chose.

#### Alternative Flows

##### Not Found

If in the **Basic Flow**, the words user enters don’t refer to any project in database, the result table doesn’t display anything. The user can then enter different words or cancel the operation, at which point the use case ends.

### Special Requirements

REQ – 04: The system must search on every word the user entered, case-insensitive.

### Pre-Conditions

The user must be logged onto the system before this use case begins.

### Post-Conditions

None.

### Extension Points

None.

## Statistics

### Description and Priority

This use case allows user to make a statistic.

Priority: Low.

### Flow of Events

#### Basic Flow

This use case starts when the user wants data statistic.

* 1. The system requests that the user choose statistic type (on project’s state or on project’s final score), project’s type (project, thesis or all), the semester and the year.
  2. The user chooses what he/she wants.
  3. If the user chooses “Project’s state”, the system will calculate and show result (quantity and percent of every project’s state (uncompleted/completed/canceled/delayed) on the number of project’s type (project/thesis/all) in the semester, year that user chose).
  4. If the user chooses “Project’s final score”, the system will calculate and show result (quantity and percent of every project’s final score (A/B+/B/C+/C/D+/D/F) on the number of project’s type (project/thesis/all) in the semester, year that user chose).
  5. If the user click on “Chart” button, the system will show a chart base on the result of the statistic.
  6. If the user click on “Print” button, the system will export the result and the chart of the statistic into a .PDF file.

#### Alternative Flows

##### No Project Suitable

If in the **Basic Flow**, the user chooses the semester and the year that don’t have any project, the system displays an empty result. The user can choose another semester/year or cancel the operation, at which point the use case ends.

### Special Requirements

REQ – 05: The button “Chart” and “Print” are disable until the statistic result isn’t null.

### Pre-Conditions

The user must be logged onto the system before this use case begins.

### Post-Conditions

None.

### Extension Points

None.

## Change the Password

### Description and Priority

This use case describes how a user changes his/her account’s password.

Priority: Low.

### Flow of Events

#### Basic Flow

This use case starts when the user wishes to change his/her password.

* 1. The system requests that the user enter the old password and the new password twice.
  2. The user enters his/her password.
  3. The system validates the entered password and makes change.

#### Alternative Flows

##### Wrong Format Password

If in the **Basic Flow**, the user enters a wrong format password, the system displays an error message. The user can choose to retype other new password or cancel the operation, at which point the use case ends.

### Special Requirements

REQ – 06: Account’s password has at least 8 characters in which at least 1 uppercase, lowercase, number and special character.

### Pre-Conditions

The user must be logged onto the system before this use case begins.

### Post-Conditions

None.

### Extension Points

None.

## Manage Report File

### Description and Priority

This use case allows user to upload, change and see the report file.

Priority: High.

### Flow of Events

#### Basic Flow

This use case starts when the user wishes to add, change, and/or see the report file from the system.

If the user wants to add, the **Add Report File** sub-flow is executed.

If the user wants to change, the **Change Report File** sub-flow is executed.

If the user wants to see, the **See Report File** sub-flow is executed.

##### Add Report File

1. In the home menu, user chooses “Manage Project”.
2. The user clicks on button “Add”.
3. The system requests that the user enter the project information.
4. The user provides the requested information, clicks on button “Upload Report File” and chooses a file.
5. The project and the report file are added to the system.

##### Change Report File

1. In the home menu, user chooses “Manage Project”.
2. The system requests that the user enter the project name.
3. The user enters the project name that has the report file he/she wants to change. The system retrieves and displays projects base on words the user entered.
4. The user chooses the project he/she wants and selected “Update”. The system displays the detail information about that project.
5. The user clicks on “Change Report File” button and chooses a new file.
6. The system updates the project record with the new report file.

##### See Report File

1. In the home menu, user chooses “Search”.
2. The system requests that the user enter what he/she wants to search.
3. The user enters the project’s name that has the report file he/she wants to see.
4. The system retrieves and displays projects base on words the user entered.
5. The user chooses the project he/she wants and choose “Detail” button.
6. An additional form will appear to show all information refer to the project that the user chose.
7. The user clicks on “See Report File” button, the system will open that file.

#### Alternative Flows

None.

### Special Requirements

REQ – 07: View report files in different formats as .doc, .docx, .pdf.

REQ – 08: A report file is only added or changed if its project’s state is “Completed”.

### Pre-Conditions

The user must be logged onto the system before this use case begins.

### Post-Conditions

If the use case was successful, the report file is added or updated from the system. Otherwise, the system state is unchanged.

### Extension Points

None.

# Other Nonfunctional Requirements

## Performance Requirements

* Maximum allowed execution time for loading data from database is 3 seconds.

## Safety Requirements

* Need user’s confirmation on updating database.
* Make sure report files are still accessed if user deleted it.

## Security Requirements

* Need login account to use this product.
* Account’s password must be encrypted.

## Software Quality Attributes

* Compact, low capacity.
* User friendly interface: harmony color, clear fonts, easy to read, reasonable layout of information.
* Data is displayed from database exactly.
* Can be tested.
* Can be maintained and upgraded when the system arises new problems.
* Project documentation is managed systematically, ready to provide upon request.

## Business Rules

* There are two types of a project in general: project and thesis.
* A project is scored by a teacher who has role “Supervisor”.
* A thesis is scored by three teachers who have role “Chairman”, “Member” or “Reviewer” and the final score is base on the average score of them.
* The score of a project in general is determined as follows:

|  |  |
| --- | --- |
| 9.0 – 10.0 | A |
| 8.0 – 8.9 | B+ |
| 7.0 – 7.9 | B |
| 6.5 – 6.9 | C+ |
| 5.5 – 6.4 | C |
| 5.0 – 5.4 | D+ |
| 4.0 – 4.9 | D |
| Less than 4.0 | F |

# Other Requirements

* Creation database must be clear, coherent, avoid redundancy data. Data must be easy to manage and retrieve, insure safety and secure information.
* Vietnamese is main language in use.
* Language is spelled correctly, suitable with culture, tradition, custom in Vietnam, using popular language, not using slang, local language.
* Ensure that the content is clear, legal, does not contain wrong information, information which related to sensitive issues as politic, reactionary.

Appendix A: Glossary

Appendix B: Analysis Models