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Design Plan: Certificate Management System	Document Name: Problem Definition	SWD/Form No. 1
Effective Date: Oct 9th, 2019	Version: 1	Page No. 1 of 1

DEFINITION OF THE PROBLEM

Problem definition of CERTIFICATE GENERATION SYSTEM Soft

Application:

The Certificate Department works for the "ABC" institute to developing the certification system for the students who have completed the exam. For each student who go to the "ABC" institute for register.

After that the student had registered, they must take an exam for each subject. The role of the exam center will be producing the certificate for the students.

It should also check whether the students have given the exam, if he/she has not given one exam, the certificate for the particular should not get printed instead it should generate the appropriate message to the students for that.

This mean the students have one year after he/she given one exam date, If the exam of the students has been failed or he/she have a special case and must take pause, they will be to take one more exam. The center exam will message the students which extend the date of the exam. If that times the exam is not successful, he/she needs to return registry for that certificate.

This form should be designed in such a way that it should contain name of the institute, name of the student, name of the certificate and exam date.

However, they also wish that when he/she have issued certificate for the students. So, when he/she get a job or apply to a company. Because of the concern that students are granted a certificate at this institute, that company may be look up the information of her/him certificate when it was contact to institute.

The Certificate management system application will be provided the functions:

- User can search Class view description of a selected Class, and Class, update Class and delete Class.
- User will be able to search and generate report of Certificate Type, Student, and Certificate.
- User will be register for the student.

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 10th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: CRS	SWD/Form No. 2A
Effective Date: Oct 11 th , 2019	Version: 1	Page No. 1 of 2

CUSTOMER REQUIREMENT SPECIFICATION DOCUMENT

Client/ Project Undertaken: Certificate Generation System

1. List of inputs to the system

STUDENT (StudentID, StudentName, Address, DOB, Phone, Email, IdentityCard, Gender)

CERTIFICATE (CertificateID, CertificateName, CertificateNum)

STUDENT_CER (StudentID, CertificateID, Exam Date, ID_Num, Avg_Mark, Result)

DETAIL_CER (SubjectID, SubjectName, *CertificateID*)

EXAMMARK (ID_Num, SubjectID, Mark)

CER_MANAGER (No ID, ID_Num, SubjectID)

USER (UserID, Fullname, Username Password, Address, DOB, Phone, Email, Gender, Roles).

COURSES (Exam Date, Course_Name)

2. List of outputs expected from the system

- It should contain fields like (Student, Certificate and Result) will be display in Certificate for the students.
- After testing the student's detail of each certificate. Once the marks of the students is evaluated then the entry of the marks is done in this application system. Exam Center will be entering mark for detail of each certificate then the status of the pass or fail will be display (exam course, mark, detail certificate).

3. Overview of processes involved in the system

- Check registry input from student and login, logout user.
- Get the students selected by admin add to form registered.
- Get detail of each certificate selected by the students add to form result of exam.
- Calculate the mark of each subject for the students and check exam of the student.
- Check valid of the certificate for the students.
- User must create to list of the student who was completed or failed the exam.
- User must create to list of the student who need to reserve that exam course after test date for within a year.
- Check domain, reference of database.
- *HELP (It should display the short explanation of the project in order to guide the end user).*

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 11 th , 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: CRS	SWD/Form No. 2A
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4. Hardware and software required for implementing the project

- **Hardware Requirements:**
 - a. **Client Hardware:**
 - CPU: Intel Core i3-2130U, 2.5GHz
 - RAM: 2GB or higher
 - HDD: 80GB Hard Disk space or higher
- **Software Requirements:**
 - b. **Client Software:**
 - Windows 7 (or higher)
 - Microsoft SQL Server 2012 (or higher).
 - JDBC, JDBC Driver, JDK 1.8 (or higher).
 - Netbeans IDE 8.2 (or higher)

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 13th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Customer's Acceptance Criteria	SWD/Form No. 2B
Effective Date: Oct 14th, 2019	Version: 1	Page No. 1 of 1

CUSTOMER'S ACCEPTANCE CRITERIA

S. No	Customer's Acceptance Criteria
1.	User Login, logout check valid of form
2.	Enter the mark detail of each certificate from form Marks
3.	Create, update, delete and edit a registry form for the students, users
4.	Design, create, update, modify, security and maintain database system
5.	Produce the certificate for the students
6.	It should generate the appropriate message to the students for the particular should not get certificate for the students.
7.	Here the students result is to be displayed.
8.	Valid of certificate for the students.
9.	Database must back up, update, upgrade regularly.

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Project Plan	SWD/Form No. 3
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PROJECT PLAN

1. Project Details

- **Name of the Client:** *Certificate Generation System*
- **Date of Project Plan:** October 9th, 2019
- **Project Vision/ Objectives:**

Project Vision: *The Certificate Department works for the "ABC" institute to developing the certification system for the students who have completed the exam.*

Project Objectives:

 - The solutions to overcome difficult problem of current. They need to increase the efficiency and accuracy.
 - Talking pressure off staff who have too much paperwork.
 - Ensuring better communication between staff and Certificate department.
 - Reducing boring and repetitive task.
 - Reducing loss of data.
- **Scope:**

We will develop and implement certificate maps for the Certificate Department works for some center exam. Further, we will analyze and design user admin support processes and areas that increase students' ability to successfully navigate their way through their educational experience. We will be finished this project about November 2019.
- **Our understanding of the client organization:**

To overcome the above problem the organization had finally decided to computerize its certificate department. Organization wants following things to be implemented in the system. Here should be two logins.

 - Admin registry for the student, and management system about certificate, subject and courses of exam and result of the students pass or fail.
 - User entry mark of the student who have registered.
- **Project Organization with Responsibilities and Authorities:**

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Project Plan	SWD/Form No. 3
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Members	Role and Responsibilities
Nghi Dang Quang	Leader/ Analyst/ Designer/ Developer/ Tester/ Implementation
Khanh Nguyen Le	Analyst/ Implementation / Developer/ Tester
Thang To Toan	Analyst/ Designer/ Developer/ Tester
Thanh Nguyen Phuoc	Analyst/ Implementation / Developer/ Tester

2. Project Initiation/ Requirement Documents

Generate information about Certificate for the students.

- [1] SQL for smarties advanced SQL programming <https://epdf.pub/joe-celkos-sql-for-smarties-advanced-sql-programming7145.html>
- [2] Data Management Using Microsoft SQL Server – Aptech Limited.
- [3] A Programmer's Guide to Java SCJP Certification - A Comprehensive Primer, 3rd edition (Addison-We).
- [4] Lab Java Programming with JDBC SQL Server – HUTECH.
- [5] How to Use JDateChooser or JCalendar in Java - <https://www.youtube.com/watch?v=C0ZZZpkliwVk>
- [6] Java Code Examples for org.apache.poi.xssf.usermodel.XSSFSheet - <https://www.programcreek.com/java-api-examples/?api=org.apache.poi.xssf.usermodel.XSSFSheet>
- [7] Java and DPF with iText - https://www.vogella.com/tutorials/JavaPDF/article.html?fbclid=IwAR1bWzE3oXl0YmAxgghObKri0wSi1nTMq50U_Qq6bb225IYhNQEb84VanqE
- [8] Java and Apache - <https://www.apache.org/dyn/closer.lua/poi/release/bin/poi-bin-4.1.1-20191023.tar.gz> - <https://www.youtube.com/watch?v=RyvvpTelJ4w>

3. Deliverables

- Drive google store about Documents and Source code: <https://drive.google.com/open?id=1d15liqbwws5qoIdXTuiugLT6ouRZ73fy>
- All files *.exe, *.jar, *.sql, *.mdf, *.ldf

4. Project Dependencies

- Depend on Data input
- Depend on System performance
- Depend on User
- Depend on Security Procedures

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Design Plan: Certificate Management System	Document Name: Project Plan	SWD/Form No. 3
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5. Major Project Milestones

- Keep Satisfied
- Keep Interested
- Data entry Staff Receptionists
- Manage closely

6. Quality Plan

- **Review Activities:** We will be meet participants about at least twice a week, each meeting there is a check for each member in group to review processing, help to solve and trouble
- **Testing Activities:** Test spell design document, test case design DFD and database, Function, Coding and Demo.
- **Backup and recovery strategies:** Save files on device storage (USB, HDD) and use GitHub to synchronize all document relative of project. Each member store a copy of project in their own computer and one in their mail drive.

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: GUI Standards Document	SWD/Form No. 4
Effective Date: Oct 17th, 2019	Version: 1	Page No. 1 of 1

DOCUMENT DESIGN

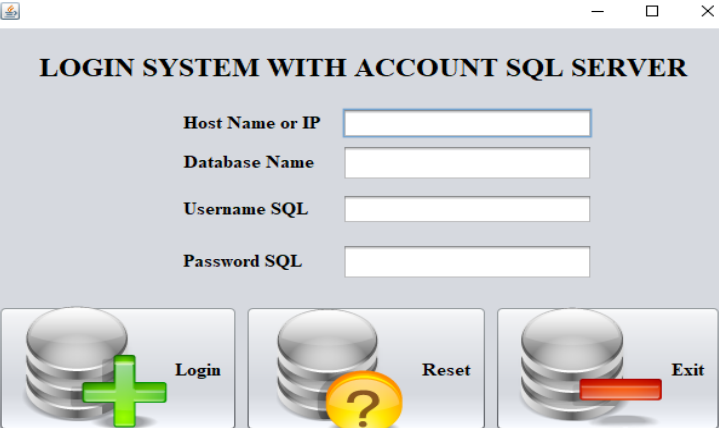
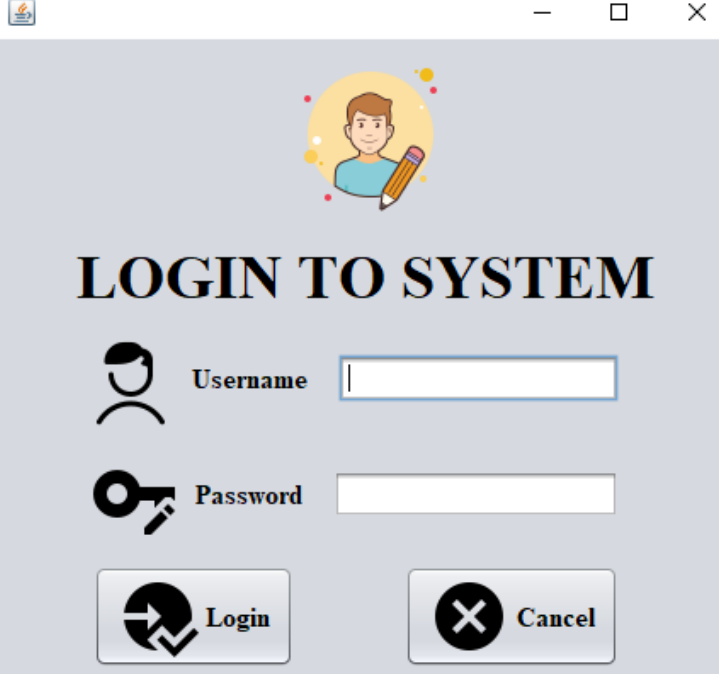
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Title-Font Size	16
Title-Font Color	Black
Title-Font Style	Times New Roman
Title-Alignment	Center
Background color of Controls on the form	White
Foreground color of Controls on the form	Black
Control Caption – Font Size	16
Control Caption – Font Color	Black
Control Caption – Font Style	Times New Roman
Control caption and controls-Alignment	Left
Command button-Alignment	Center

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 18th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Interface Design Document	SWD/Form No. 5
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INTERFACE DESIGN DOCUMENT

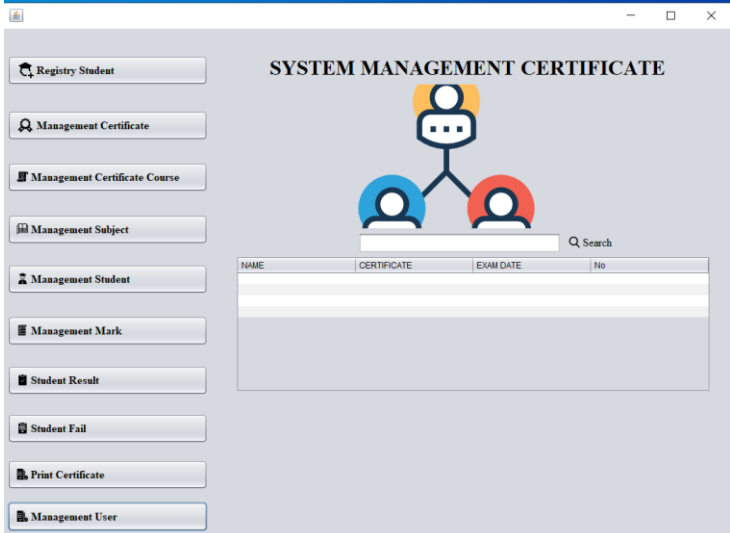
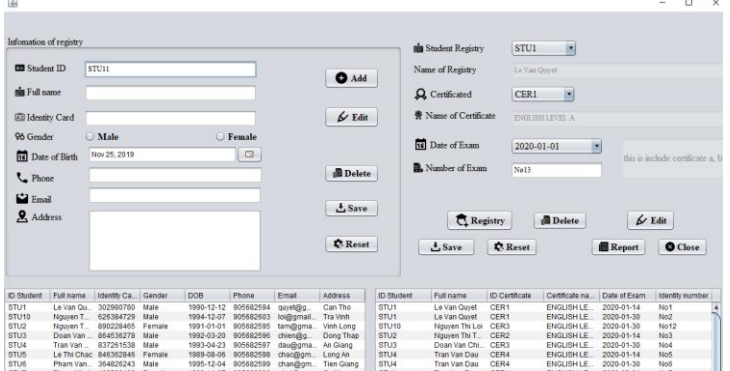
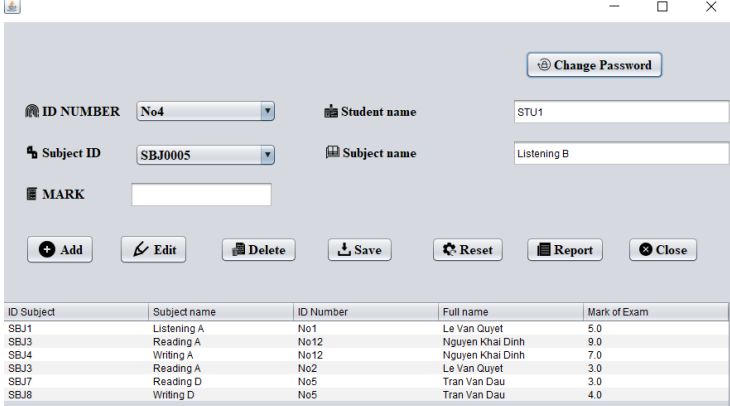
1. List of form to be created

Document Name	Description	Controls on the Document
frLogSQL	The interface used to connect database	
frUserlogin	The interface used to log in	

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

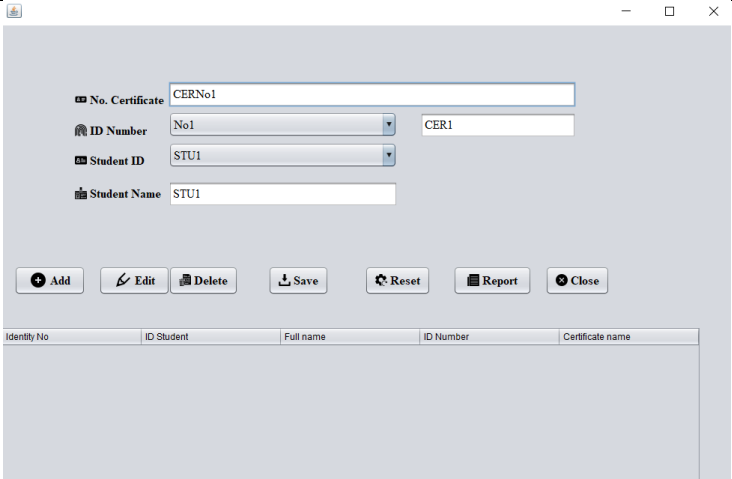
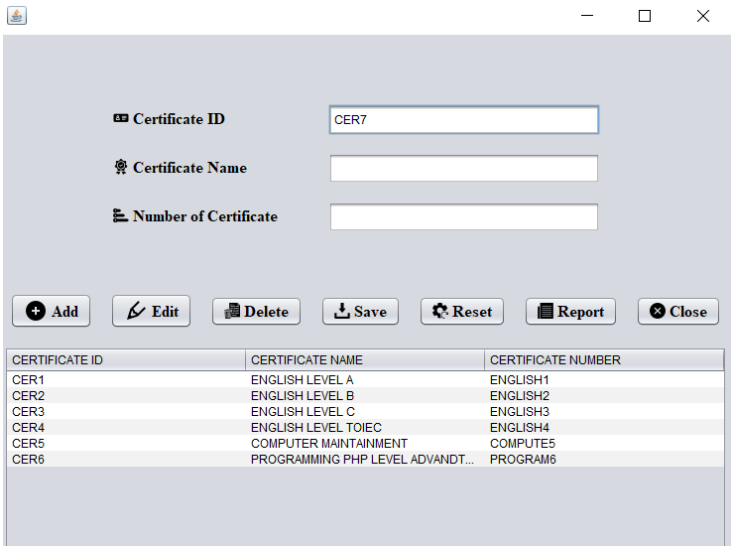
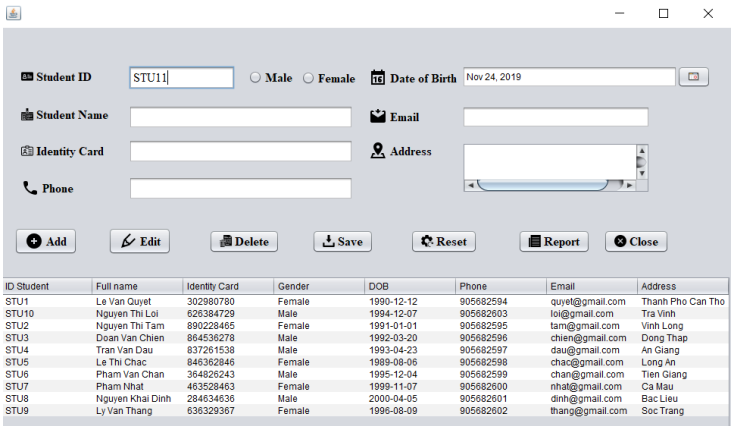
Design Plan: Certificate Management System	Document Name: Interface Design Document	SWD/Form No. 5
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frManager	The interface used to manage main	
frRegister	The interface used to manage students register	
frMarkEntry	The interface used to manage mark	

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

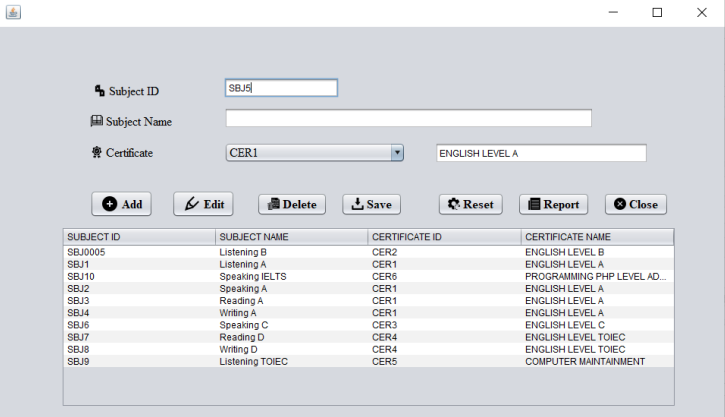
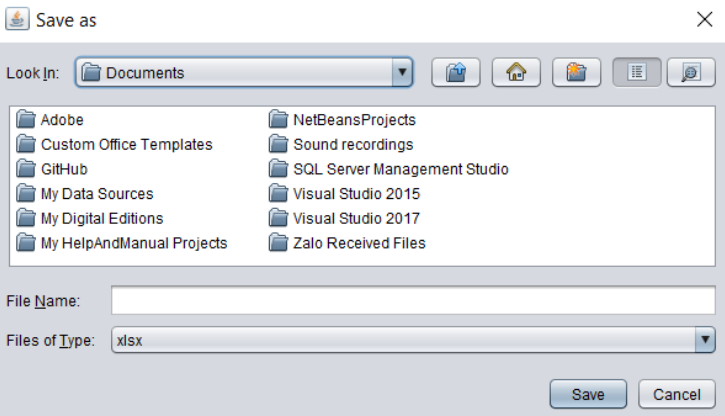
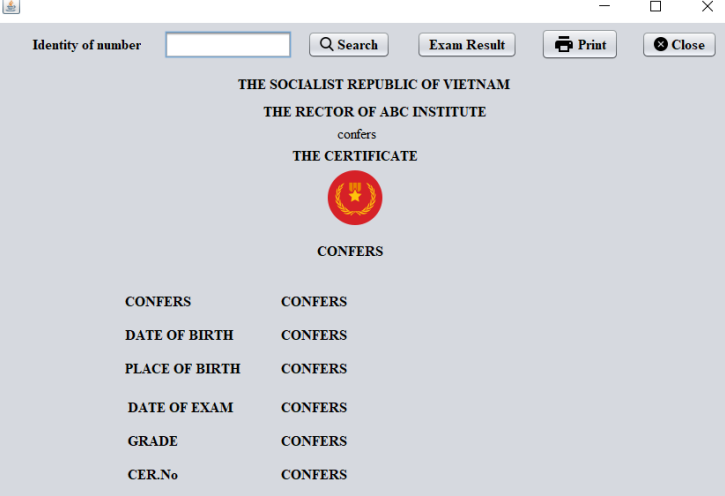
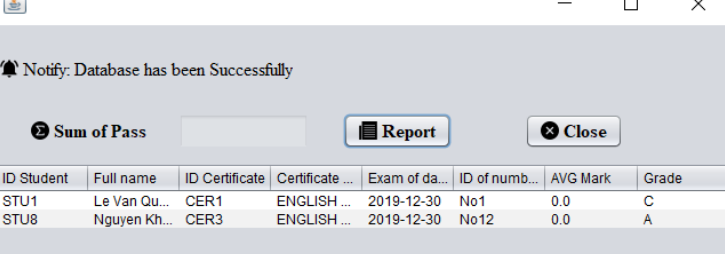
Design Plan: Certificate Management System	Document Name: Interface Design Document	SWD/Form No. 5
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frCerManager	The interface used to manage certificate store	
frMCertificate	The interface used to manage certificate	
frMStudent	The interface used to manage students	

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

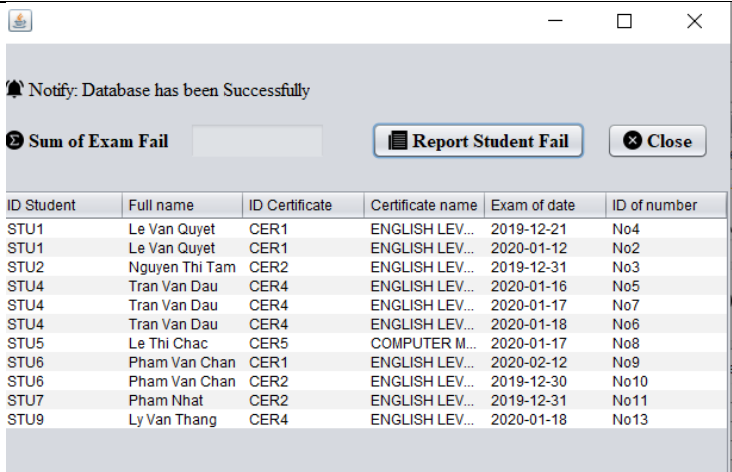
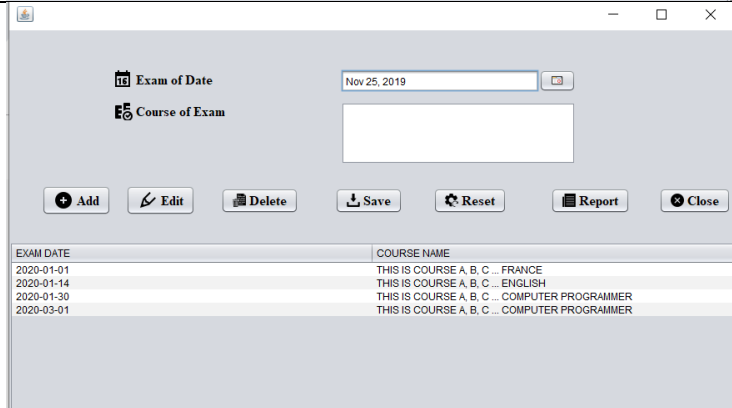
Design Plan: Certificate Management System	Document Name: Interface Design Document	SWD/Form No. 5
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frMSubject	The interface used to manage subject	 <p>The screenshot shows a web application window titled 'frMSubject'. It contains a form with fields for 'Subject ID' (with a dropdown), 'Subject Name', and 'Certificate' (with a dropdown). Below the form are buttons for 'Add', 'Edit', 'Delete', 'Save', 'Reset', 'Report', and 'Close'. At the bottom, there is a table listing subjects with columns: SUBJECT ID, SUBJECT NAME, CERTIFICATE ID, and CERTIFICATE NAME. The table contains 10 rows of data.</p>
frMReport	The interface used to report	 <p>The screenshot shows a 'Save as' dialog box. The 'Look In' dropdown is set to 'Documents'. The file list shows various folders like 'Adobe', 'Custom Office Templates', 'GitHub', etc. The 'File Name' field is empty, and the 'Files of Type' dropdown is set to 'xlsx'. 'Save' and 'Cancel' buttons are at the bottom right.</p>
frMPrint	The interface used to manage print certificate	 <p>The screenshot shows a certificate template. At the top, there is a form with 'Identity of number', 'Search', 'Exam Result', 'Print', and 'Close' buttons. Below this is the text: 'THE SOCIALIST REPUBLIC OF VIETNAM', 'THE RECTOR OF ABC INSTITUTE', 'confers', 'THE CERTIFICATE', and a red circular seal. Below the seal is the word 'CONFERS'. At the bottom, there is a table with two columns: 'CONFERS' and 'CONFERS'. The table contains 6 rows of data.</p>
frMStudent Pass	The interface used to manage students pass exam	 <p>The screenshot shows a notification message: 'Notify: Database has been Successfully'. Below the notification is a form with 'Sum of Pass', 'Report', and 'Close' buttons. At the bottom, there is a table with columns: ID Student, Full name, ID Certificate, Certificate ..., Exam of da..., ID of numb..., AVG Mark, and Grade. The table contains 2 rows of data.</p>

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Certificate Generation

Design Plan: Certificate Management System	Document Name: Interface Design Document	SWD/Form No. 5
Effective Date: Oct 19th, 2019	Version: 1	Page No. 5 of 5

frMStudent Pass	The interface used to manage students fail exam	 <p>Sum of Exam Fail <input type="text"/> Report Student Fail Close</p> <table><thead><tr><th>ID Student</th><th>Full name</th><th>ID Certificate</th><th>Certificate name</th><th>Exam of date</th><th>ID of number</th></tr></thead><tbody><tr><td>STU1</td><td>Le Van Quyet</td><td>CER1</td><td>ENGLISH LEV...</td><td>2019-12-21</td><td>No4</td></tr><tr><td>STU1</td><td>Le Van Quyet</td><td>CER1</td><td>ENGLISH LEV...</td><td>2020-01-12</td><td>No2</td></tr><tr><td>STU2</td><td>Nguyen Thi Tam</td><td>CER2</td><td>ENGLISH LEV...</td><td>2019-12-31</td><td>No3</td></tr><tr><td>STU4</td><td>Tran Van Dau</td><td>CER4</td><td>ENGLISH LEV...</td><td>2020-01-16</td><td>No5</td></tr><tr><td>STU4</td><td>Tran Van Dau</td><td>CER4</td><td>ENGLISH LEV...</td><td>2020-01-17</td><td>No7</td></tr><tr><td>STU4</td><td>Tran Van Dau</td><td>CER4</td><td>ENGLISH LEV...</td><td>2020-01-18</td><td>No6</td></tr><tr><td>STU5</td><td>Le Thi Chac</td><td>CER5</td><td>COMPUTER M...</td><td>2020-01-17</td><td>No8</td></tr><tr><td>STU6</td><td>Pham Van Chan</td><td>CER1</td><td>ENGLISH LEV...</td><td>2020-02-12</td><td>No9</td></tr><tr><td>STU6</td><td>Pham Van Chan</td><td>CER2</td><td>ENGLISH LEV...</td><td>2019-12-30</td><td>No10</td></tr><tr><td>STU7</td><td>Pham Nhat</td><td>CER2</td><td>ENGLISH LEV...</td><td>2019-12-31</td><td>No11</td></tr><tr><td>STU9</td><td>Ly Van Thang</td><td>CER4</td><td>ENGLISH LEV...</td><td>2020-01-18</td><td>No13</td></tr></tbody></table>	ID Student	Full name	ID Certificate	Certificate name	Exam of date	ID of number	STU1	Le Van Quyet	CER1	ENGLISH LEV...	2019-12-21	No4	STU1	Le Van Quyet	CER1	ENGLISH LEV...	2020-01-12	No2	STU2	Nguyen Thi Tam	CER2	ENGLISH LEV...	2019-12-31	No3	STU4	Tran Van Dau	CER4	ENGLISH LEV...	2020-01-16	No5	STU4	Tran Van Dau	CER4	ENGLISH LEV...	2020-01-17	No7	STU4	Tran Van Dau	CER4	ENGLISH LEV...	2020-01-18	No6	STU5	Le Thi Chac	CER5	COMPUTER M...	2020-01-17	No8	STU6	Pham Van Chan	CER1	ENGLISH LEV...	2020-02-12	No9	STU6	Pham Van Chan	CER2	ENGLISH LEV...	2019-12-30	No10	STU7	Pham Nhat	CER2	ENGLISH LEV...	2019-12-31	No11	STU9	Ly Van Thang	CER4	ENGLISH LEV...	2020-01-18	No13
ID Student	Full name	ID Certificate	Certificate name	Exam of date	ID of number																																																																					
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STU6	Pham Van Chan	CER2	ENGLISH LEV...	2019-12-30	No10																																																																					
STU7	Pham Nhat	CER2	ENGLISH LEV...	2019-12-31	No11																																																																					
STU9	Ly Van Thang	CER4	ENGLISH LEV...	2020-01-18	No13																																																																					
fmCourse	The interface used to manage course exam	 <p>Exam of Date <input type="text" value="Nov 25, 2019"/> Course of Exam <input type="text"/></p> <p>Add Edit Delete Save Reset Report Close</p> <table><thead><tr><th>EXAM DATE</th><th>COURSE NAME</th></tr></thead><tbody><tr><td>2020-01-01</td><td>THIS IS COURSE A, B, C ... FRANCE</td></tr><tr><td>2020-01-14</td><td>THIS IS COURSE A, B, C ... ENGLISH</td></tr><tr><td>2020-01-30</td><td>THIS IS COURSE A, B, C ... COMPUTER PROGRAMMER</td></tr><tr><td>2020-03-01</td><td>THIS IS COURSE A, B, C ... COMPUTER PROGRAMMER</td></tr></tbody></table>	EXAM DATE	COURSE NAME	2020-01-01	THIS IS COURSE A, B, C ... FRANCE	2020-01-14	THIS IS COURSE A, B, C ... ENGLISH	2020-01-30	THIS IS COURSE A, B, C ... COMPUTER PROGRAMMER	2020-03-01	THIS IS COURSE A, B, C ... COMPUTER PROGRAMMER																																																														
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	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

Design Plan: Certificate Management System	Document Name: Table Design Document	SWD/Form No. 6
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1. Database Structure

Name of the Table	Table Description	Number of Fields	Primary Key	Related Tables	Foreign Key
Student		8	StudentID	Detail_Certificate, Exammark, Cer_manager	
Certificate		3	CertificateID	Student_Cer, Detail_Certificate, Exammark	
Student_Cer		6	StudentID, ExamDate, CertificateID	Student, Certificate, Cer_manager, Exammark	<u>StudentID, CertificateID, ExamDate</u>
Detail_Certificate		3	SubjectID	Certificate, Examresult, Exammark	CertificateID
ExamMark		5	ID_Num, SubjectID	Student_Cer, Detail_Certificate	ID_Num, SubjectID
Cer_manager		3	No_ID	Student_Cer, Student	
Users		10	UserID		
Courses		2	Exam_Date	Student_Cer	

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 21th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Table Design Document	SWD/Form No. 6
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2. Algorithms and data structures

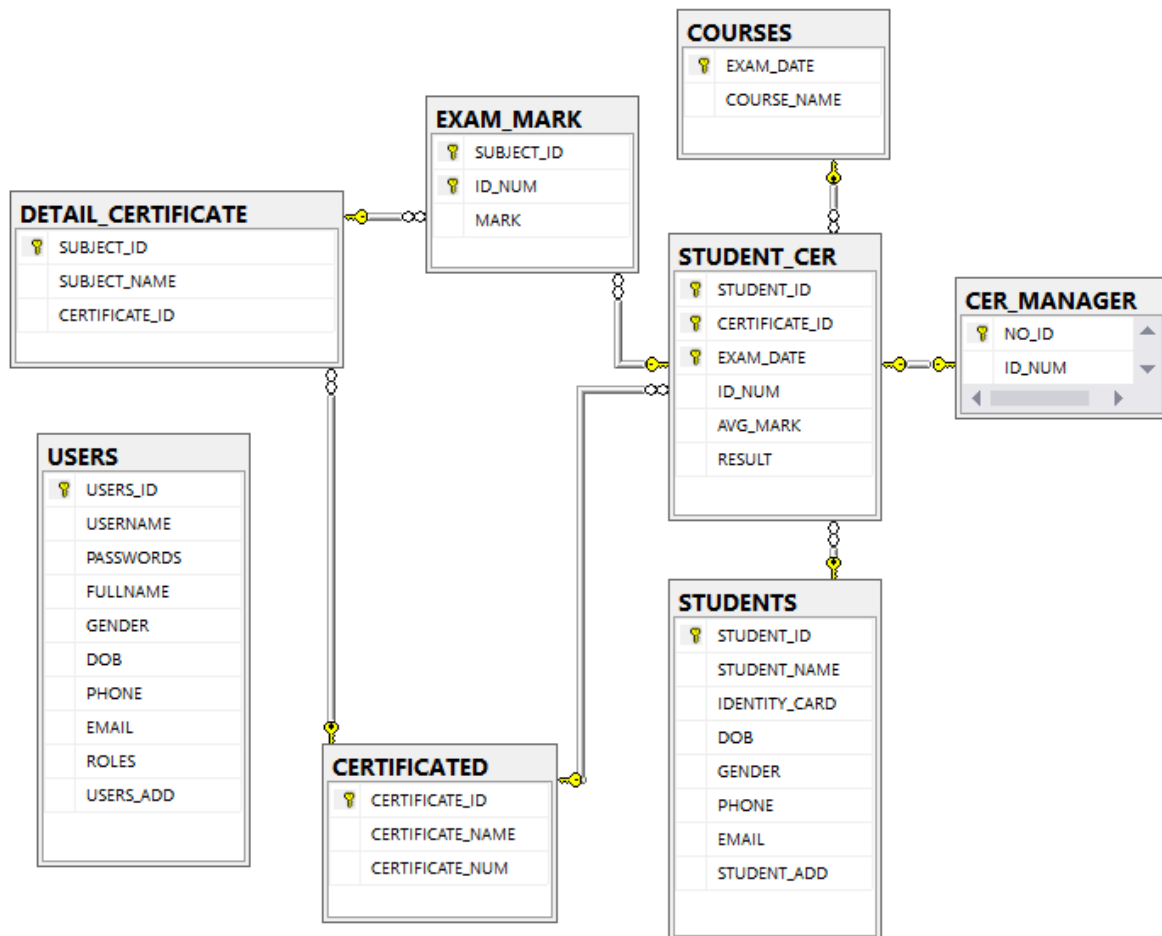


Figure 2.1 Database Diagrams

Field name	Data type	Key	Constraint	description
Table USERS				
USERS_ID	varchar(20)	Primary key	not null	
USERNAME	nvarchar(40)		not null	
PASSWORDS	nvarchar(40)		not null	
FULLNAME	nvarchar(100)		not null	
GENDER	nvarchar(10)		not null	
DOB	Date		not null	
PHONE	varchar(20)		not null, UNIQUE	
EMAIL	nvarchar(40)		not null	
ROLSE	nvarchar(40)		not null	
USERS_ADD	nvarchar(100)		not null	

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 22th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

Design Plan: Certificate Management System	Document Name: Table Design Document	SWD/Form No. 6
Effective Date: Oct 22th, 2019	Version: 1	Page No. 3 of 4

Field name	Data type	Key	Constraint	description
Table STUDENTS				
STUDENT_ID	varchar(20)	Primary key	not null	
STUDENT_NAME	nvarchar(100)		not null	
GENDER	nvarchar(10)		not null	
DOB	Date		not null	
PHONE	varchar(20)		not null, UNIQUE	
EMAIL	nvarchar(20)		not null	
IDENTITY_CARD	varchar(20)		not null, UNIQUE	
STUDENT_ADD	nvarchar(100)		not null	
Field name	Data type	Key	Constraint	description
Table COURSES				
EXAM_DATE	Date	Primary key	not null	
COURSE_NAME	nvarchar(100)		not null	
Field name	Data type	Key	Constraint	description
Table CERTIFICATED				
CERTIFICATE_ID	varchar(20)	Primary key	not null	
CERTIFICATE_NAME	nvarchar(100)		not null	
CERTIFICATE_NUMBER	nvarchar(20)		not null	
Field name	Data type	Key	Constraint	description
Table STUDENT_CER				
STUDENT_ID	nvarchar(20)	Primary key	not null, foreign key, on delete, update cascade	
CERTIFICATE_ID	nvarchar(20)	Primary key	not null, foreign key, on delete, update cascade	
EXAM_DATE	Date	Primary key	not null, foreign key, on	

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 22th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

Design Plan: Certificate Management System	Document Name: Process Design Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page No. 16 of 2

			delete, update cascade	
ID_NUM	nvarchar(20)		not null, UNIQUE	
AVG_MARK	float		null	
RESULT	nvarchar(20)		null	
Field name	Data type	Key	Constraint	description

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

Design Plan: Certificate Management System	Document Name: Table Design Document	SWD/Form No. 6
Effective Date: Oct 25th, 2019	Version: 1	Page No. 4 of 4

Table CER_MANAGER				
NO_ID	nvarchar(20)	Primary key	not null	
ID_NUM	nvarchar(20)		not null, UNIQUE, foreign key, on delete, update no action	
Field name	Data type	Key	Constraint	description
Table DETAIL_CERTIFICATE				
SUBJECT_ID	varchar(20)	Primary key	not null	
SUBJECT_NAME	nvarchar(100)		not null	
CERTIFICATE_ID	nvarchar(20)		not null, foreign key, on delete, update cascade	
Field name	Data type	Key	Constraint	description
Table EXAM_MARK				
SUBJECT_ID	nvarchar(20)	Primary key	not null, foreign key, on delete, update cascade	
ID_NUM	nvarchar(20)	Primary key	not null, foreign key, on delete, update cascade	
MARK	float		null	

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 25th, 2019	Nghi Dang Quang	Anh Luong The

1. ER Diagram

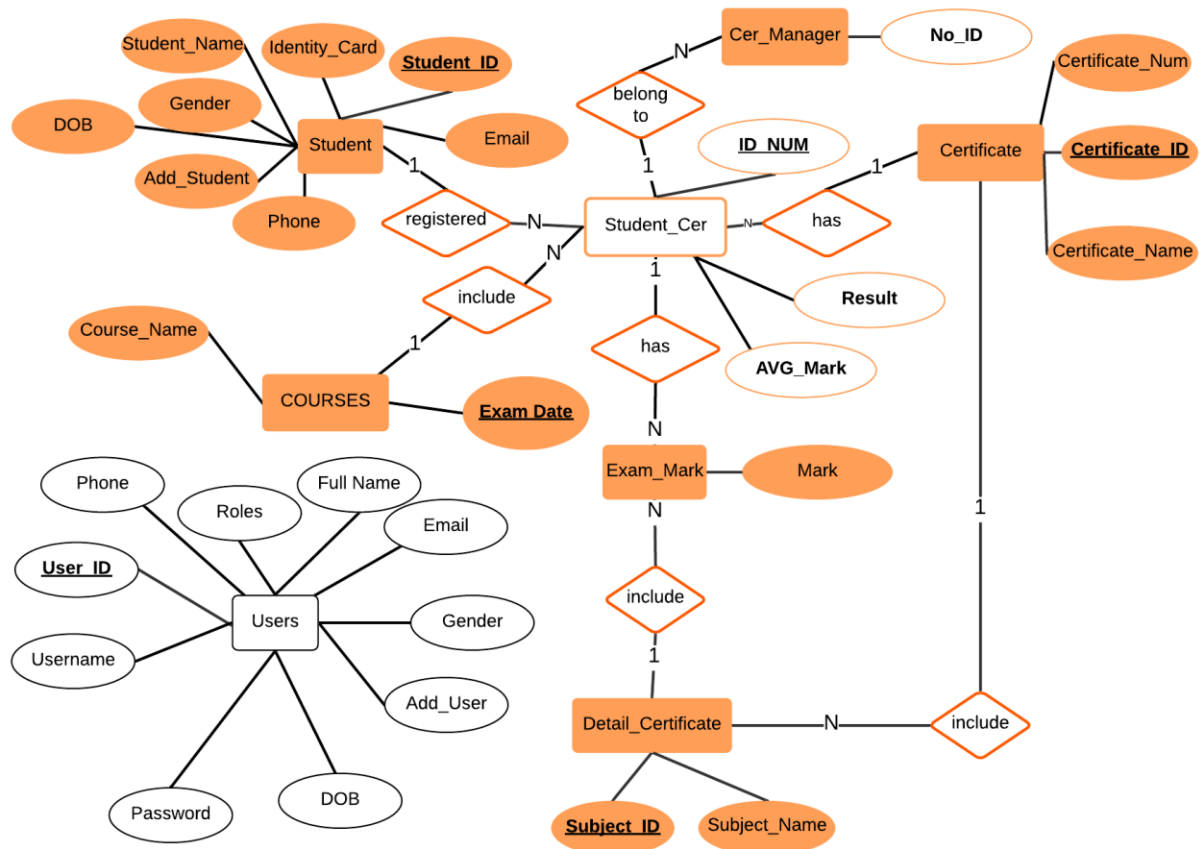


Figure FormNo7.1: ERD

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
Effective Date: Oct 27th, 2019	Version: 1	Page No 2 of 16

2. Data Flow Diagram Context.

Process Name: DFD context.

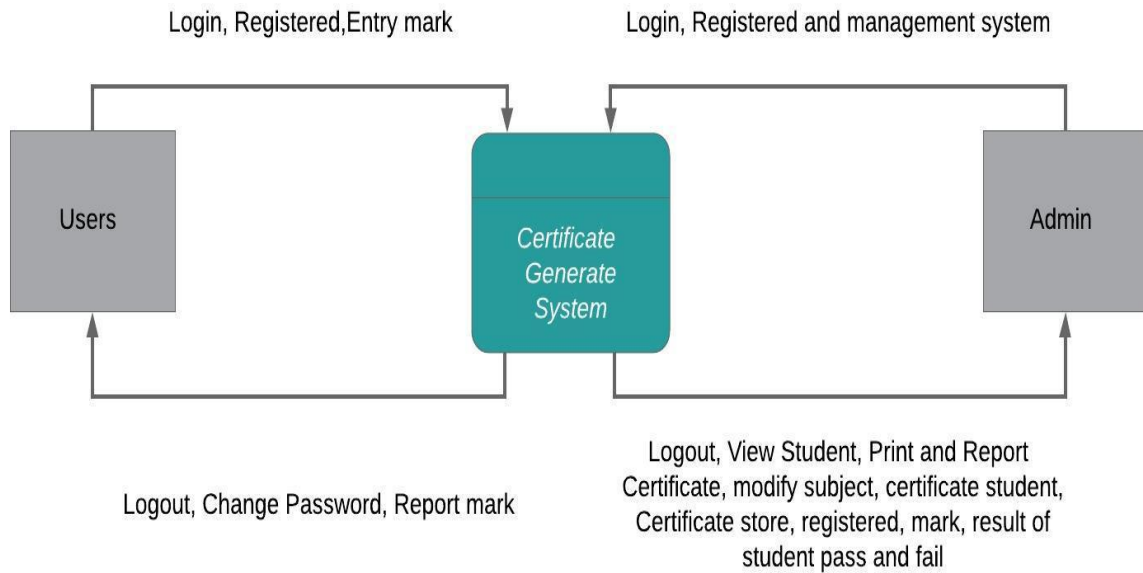


Figure FormNo7.2: DFD Level 1

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 28th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

Design Plan: Certificate Management System	Document Name: Process Design Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page No. 16 of 2

Process Description and Details:

2.1 DFD System:

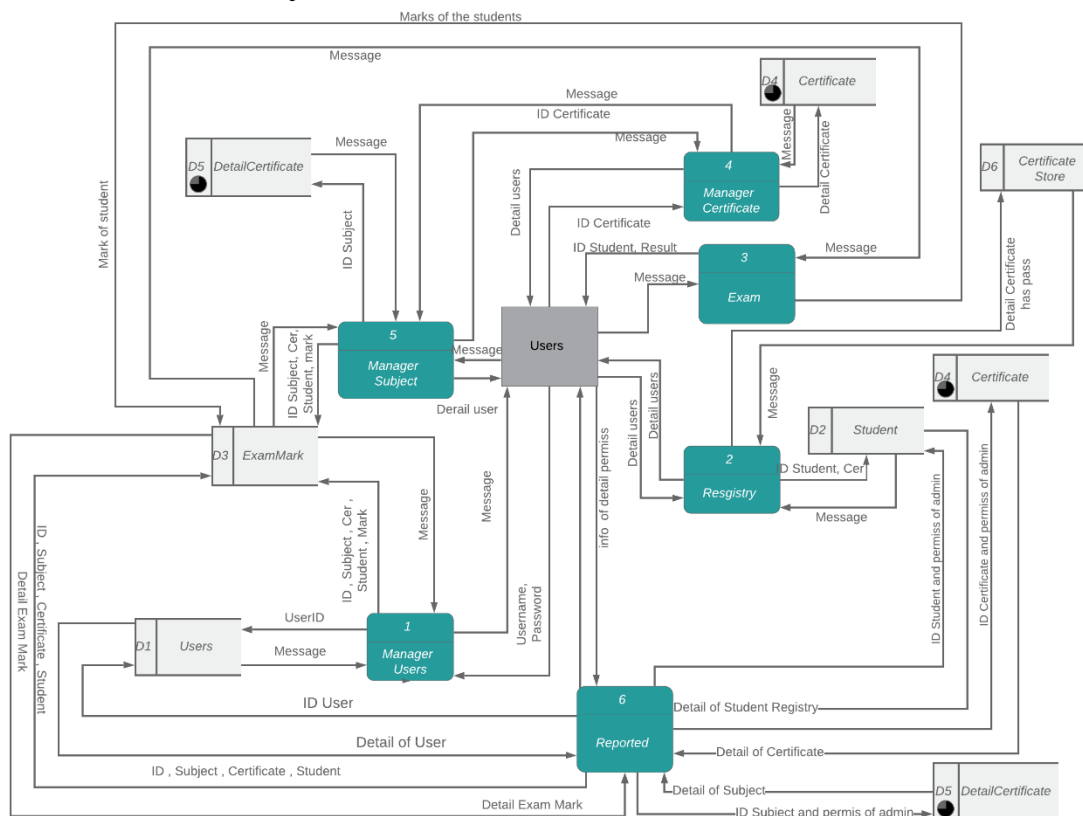


Figure FormNo7.2: DFD Level 1

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
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```

    usecaseDiagram
        actor User
        actor ManagerUsers as 1 Manager Users
        actor Registry as 2 Registry
        actor Exam as 3 Exam
        actor ManagerCertificate as 4 Manager Certificate
        actor ManagerSubject as 5 Manager Subject
        actor Reported as 6 Reported

        User --> 1
        User --> 2
        User --> 3
        User --> 4
        User --> 5
        User --> 6

        1 --> 2
        1 --> 3
        1 --> 4
        1 --> 5
        1 --> 6

        2 --> 3
        2 --> 4
        2 --> 5
        2 --> 6

        3 --> 4
        3 --> 5
        3 --> 6

        4 --> 5
        4 --> 6

        5 --> 6

        6 --> 1
        6 --> 2
        6 --> 3
        6 --> 4
        6 --> 5

        D1[Users] --> 1
        D2[Student] --> 2
        D3[ExamMark] --> 3
        D4[Certificate] --> 4
        D5[DetailCertificate] --> 5
        D6[Certificate Store] --> 6
    
```

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Date: Oct 28th, 2019	Nghi Dang Quang	Anh Luong The

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Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
Effective Date: Oct 29th, 2019	Version: 1	Page No 4 of 16

2.3 DFD process 5

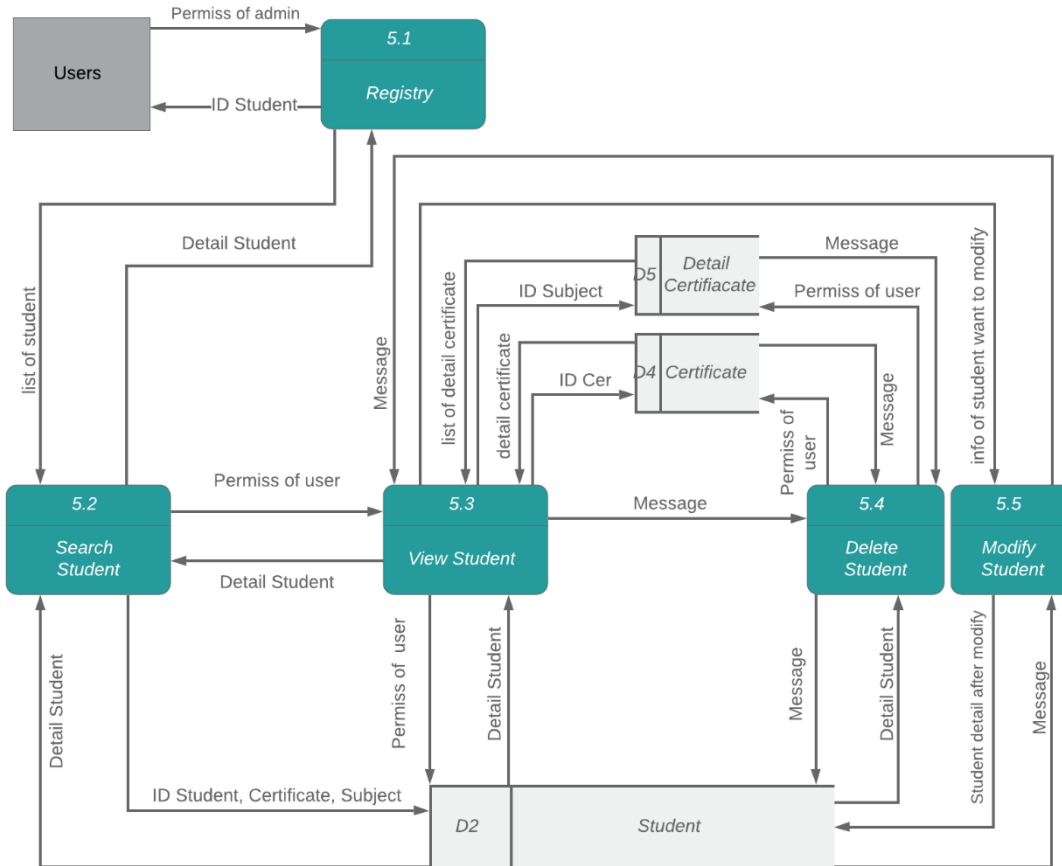


Figure FormNo7.2: DFD Level 1.5

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 29th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page No 5 of 16

2.4 DFD process 8

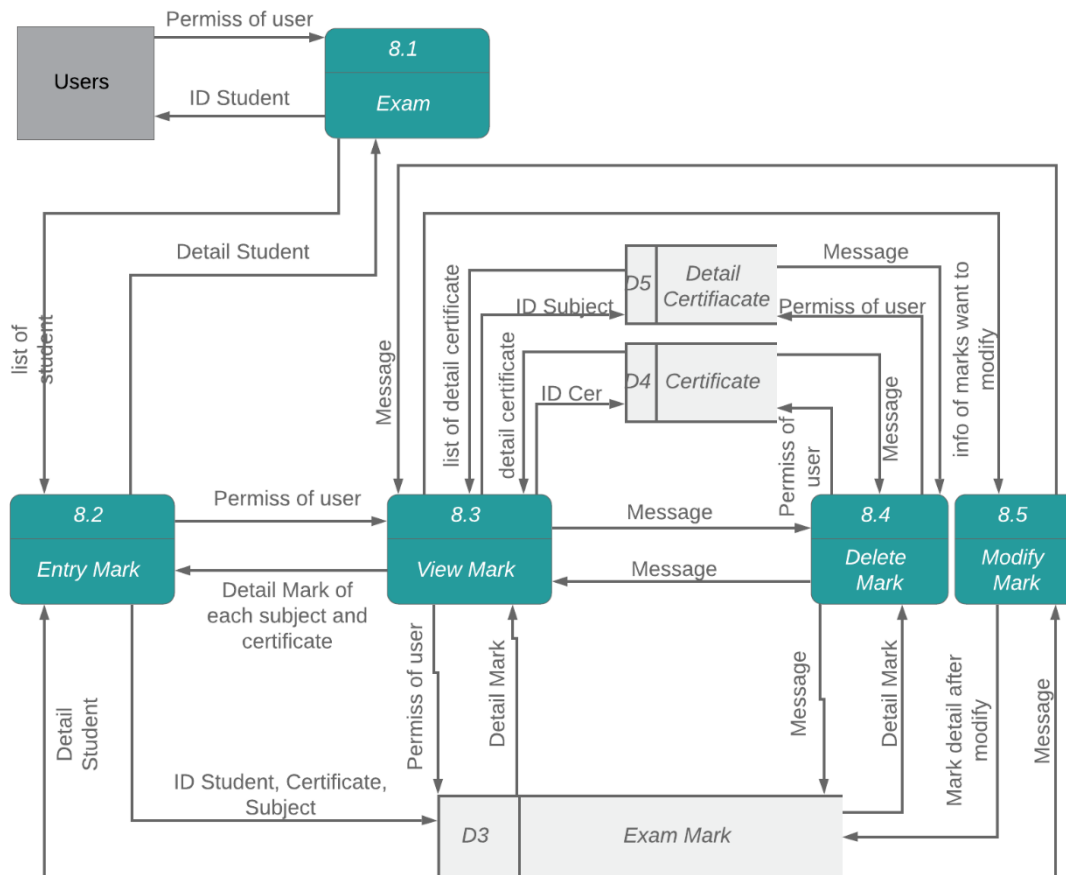


Figure FormNo7.2: DFD Level 1.8

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page No 6 of 16

2.5 DFD process 6

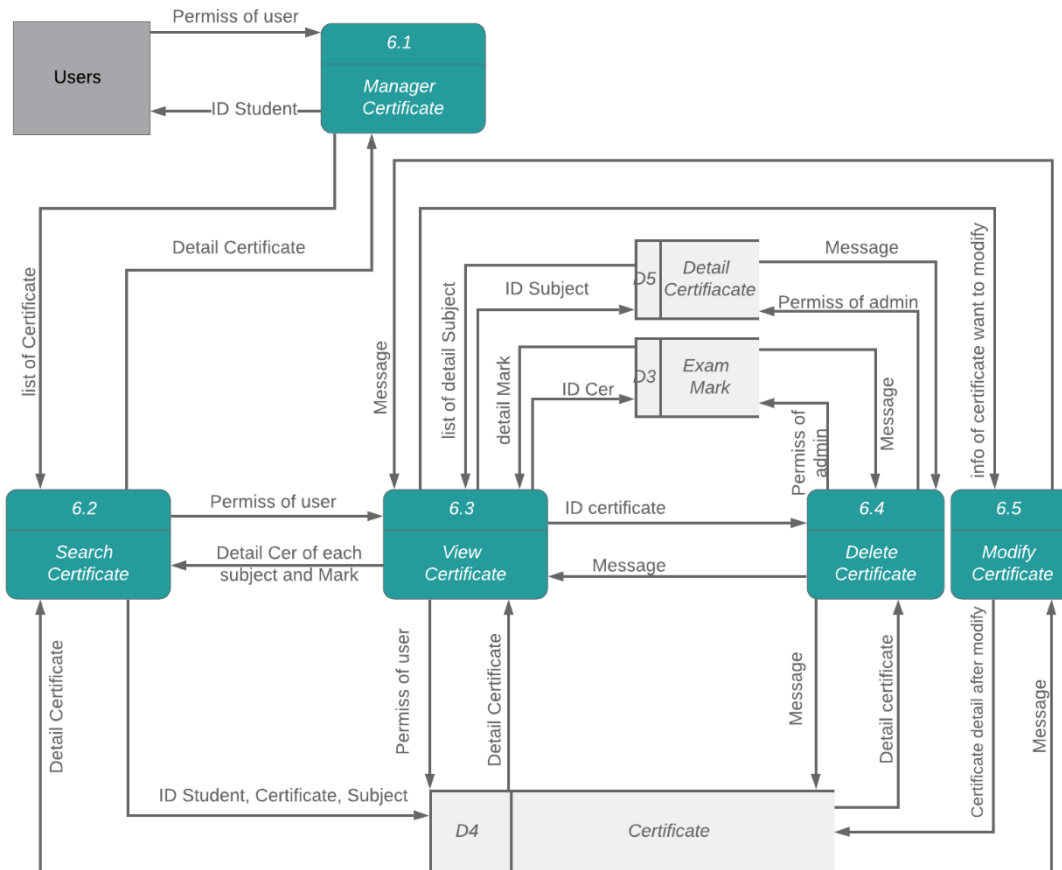


Figure FormNo7.2: DFD Level 1.6

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page No 7 of 16

2.6 DFD process 7

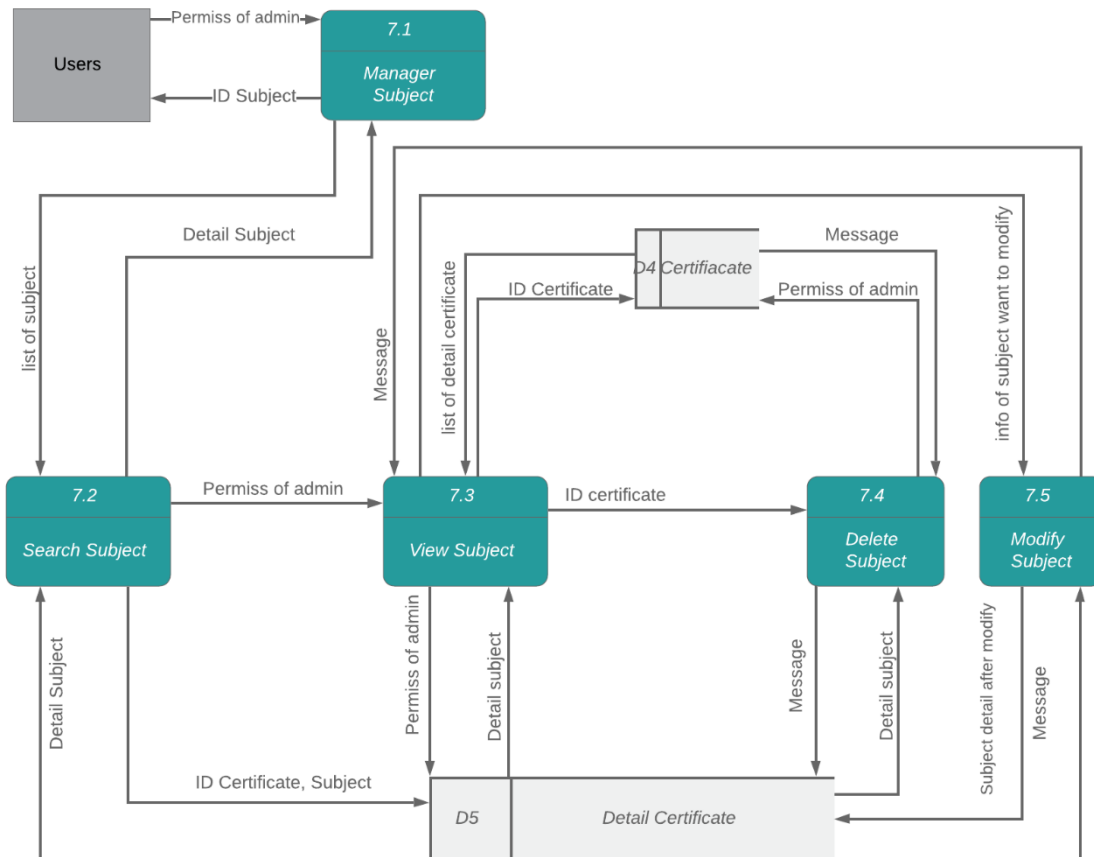


Figure FormNo7.2: DFD Level 1.7

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
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2.7 DFD process 10

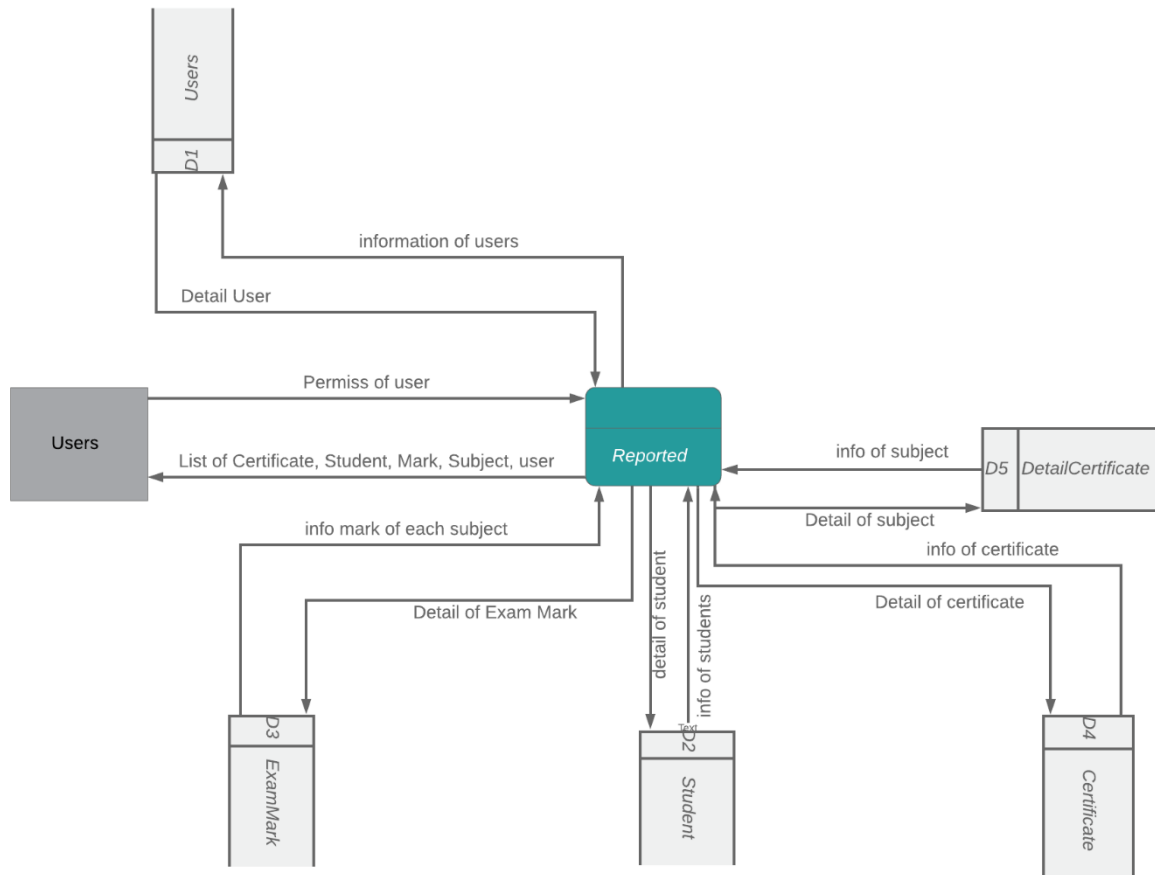


Figure FormNo7.2: DFD Level 1.10

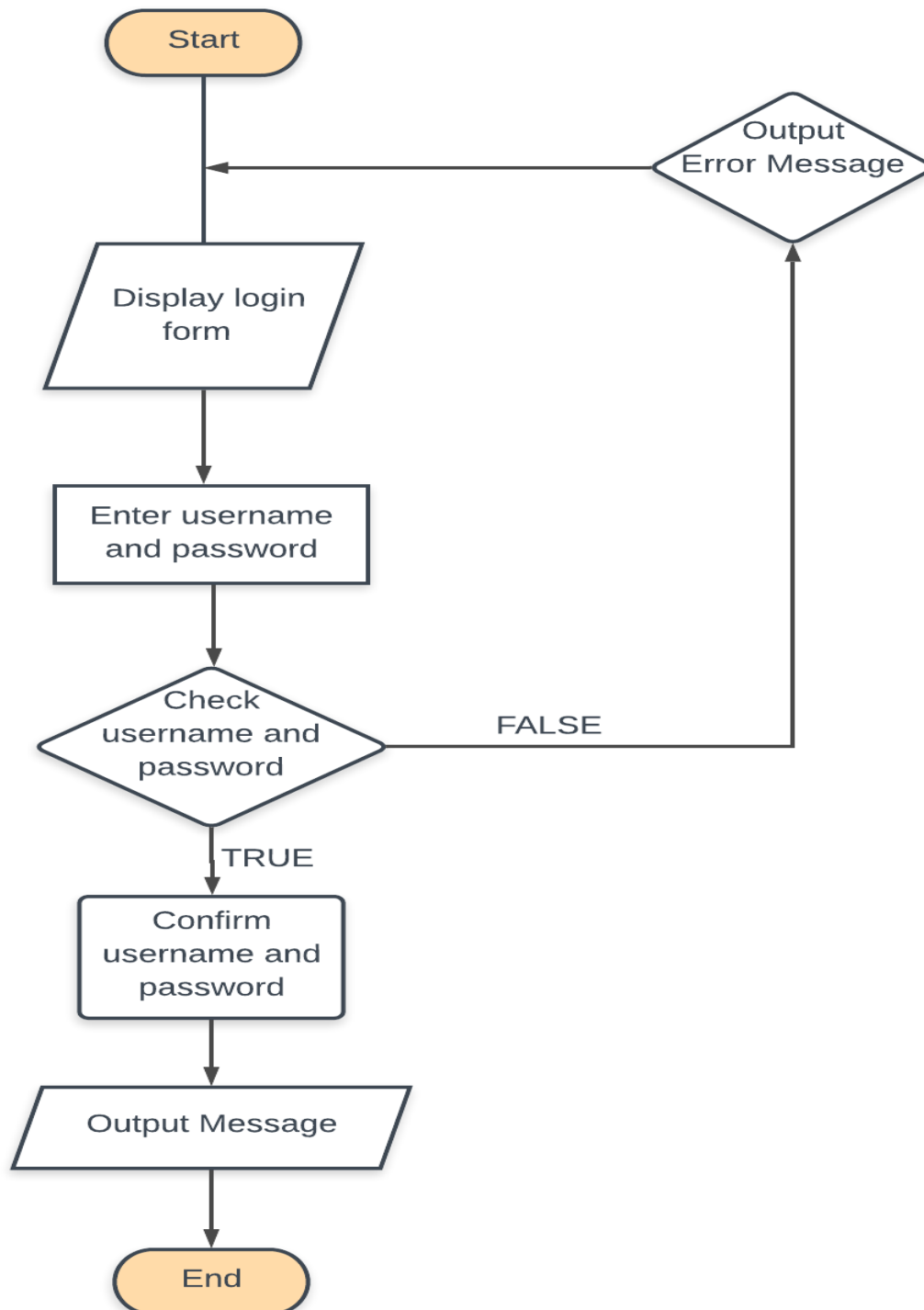
	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page No 9 of 16

3.1 Process Name Flow Chart:

Process Description and Details:

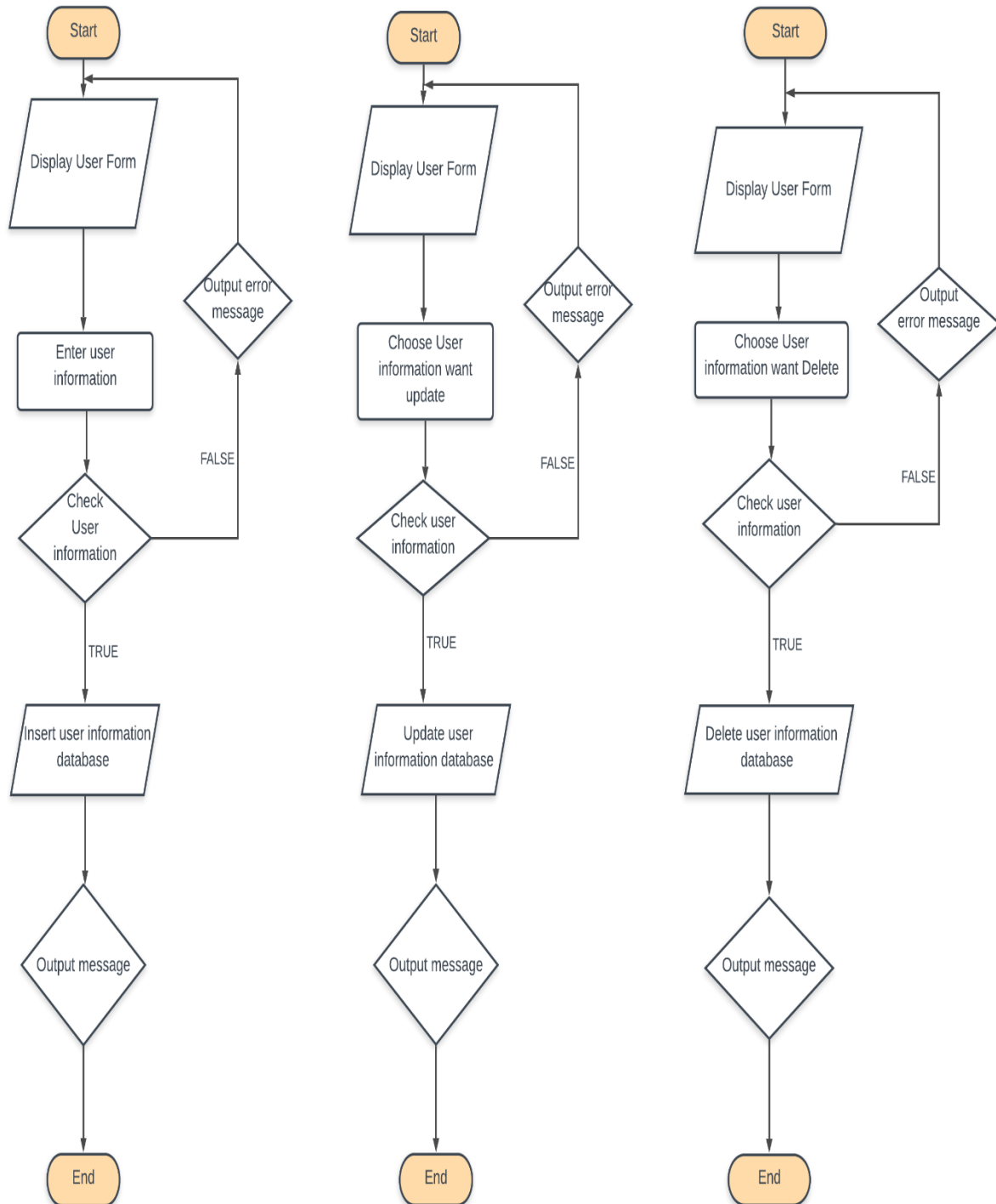
3.1.1 Login System.



	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
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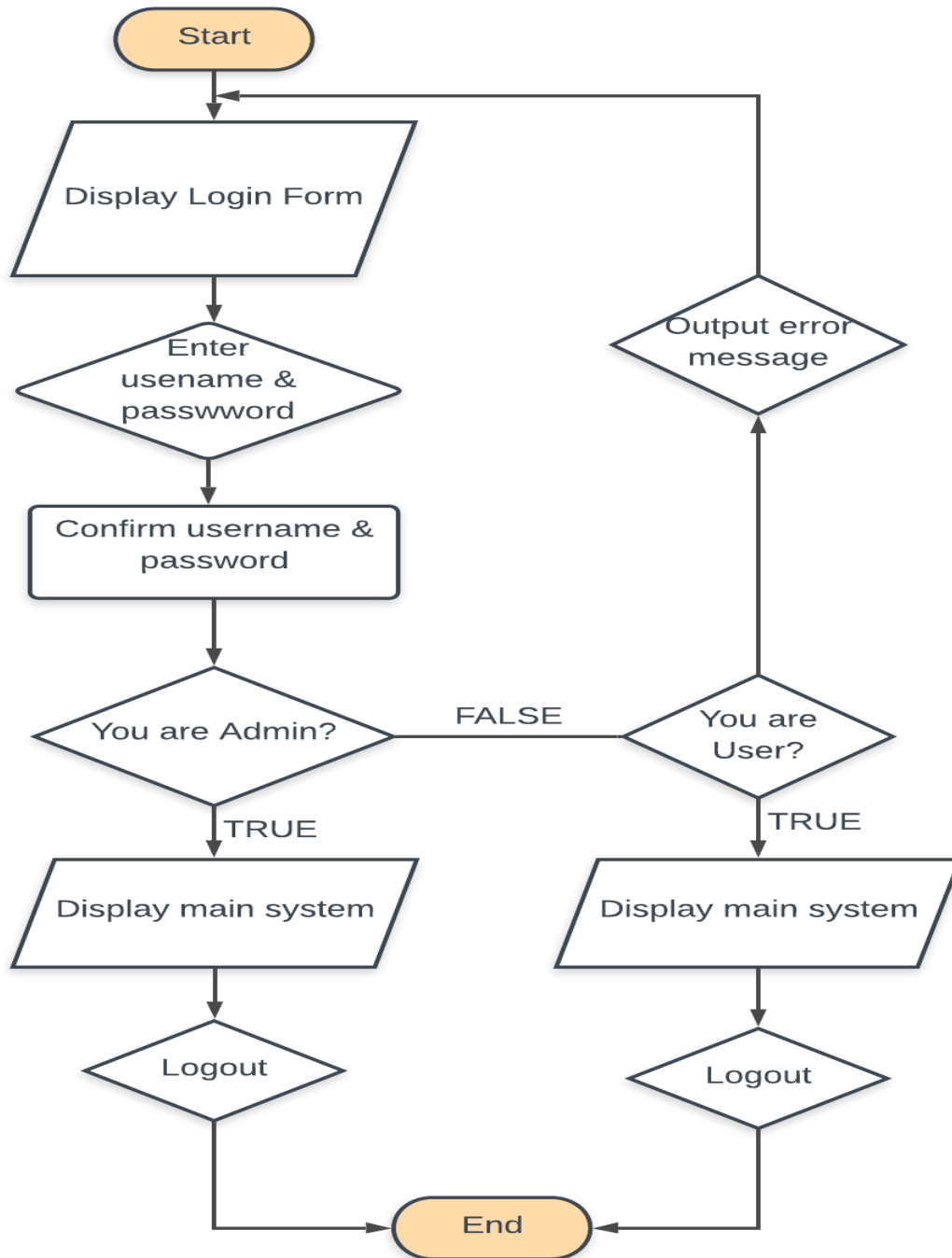
3.1.2 User management



	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page 11 of 16

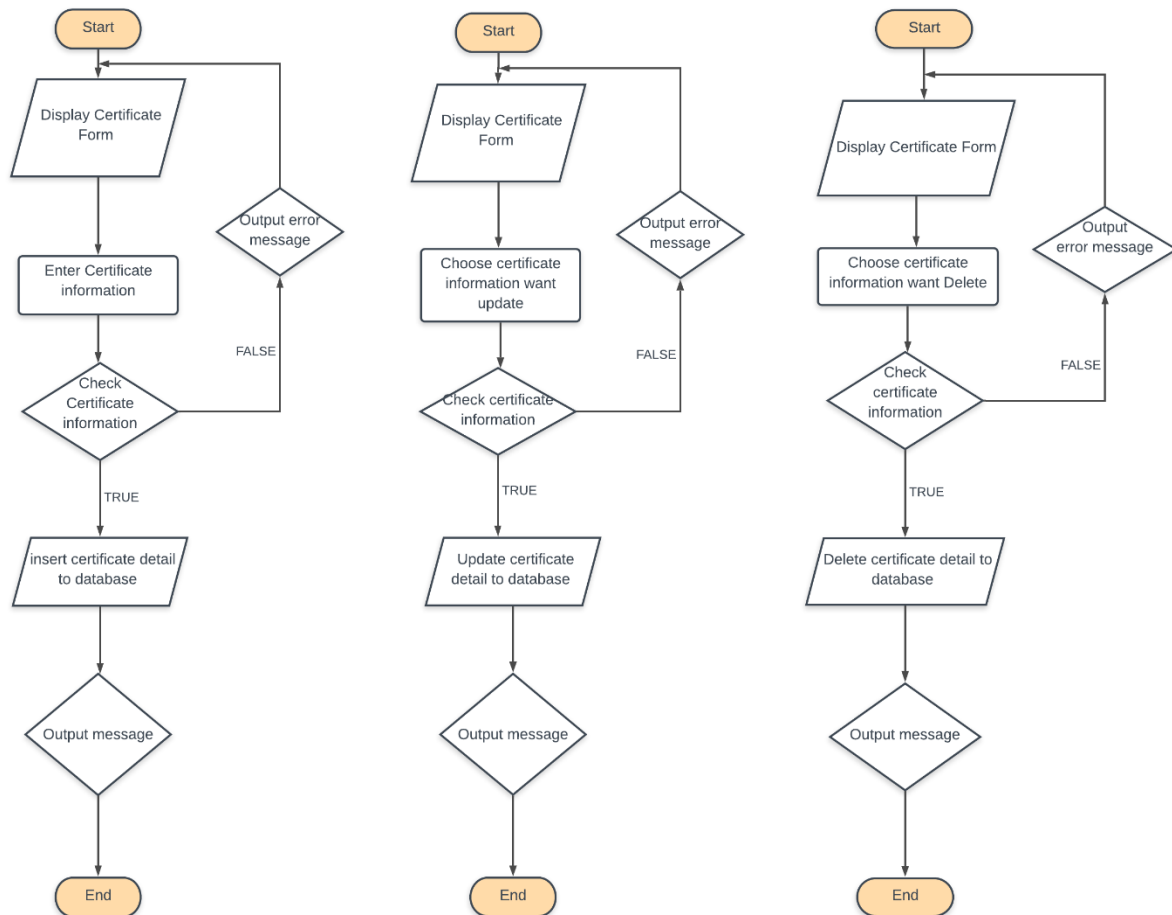
3.1.3 Permits management



	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
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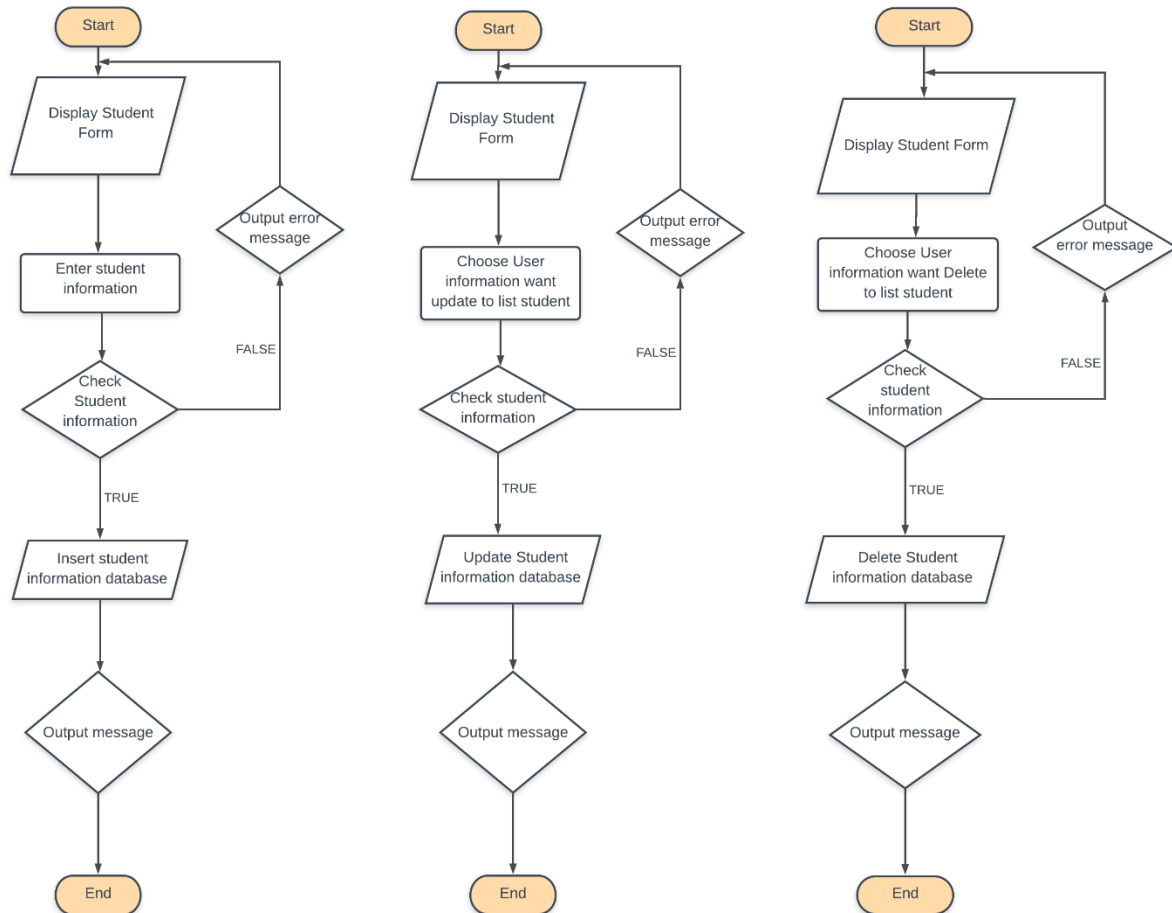
3.1.4 Management certificate



	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

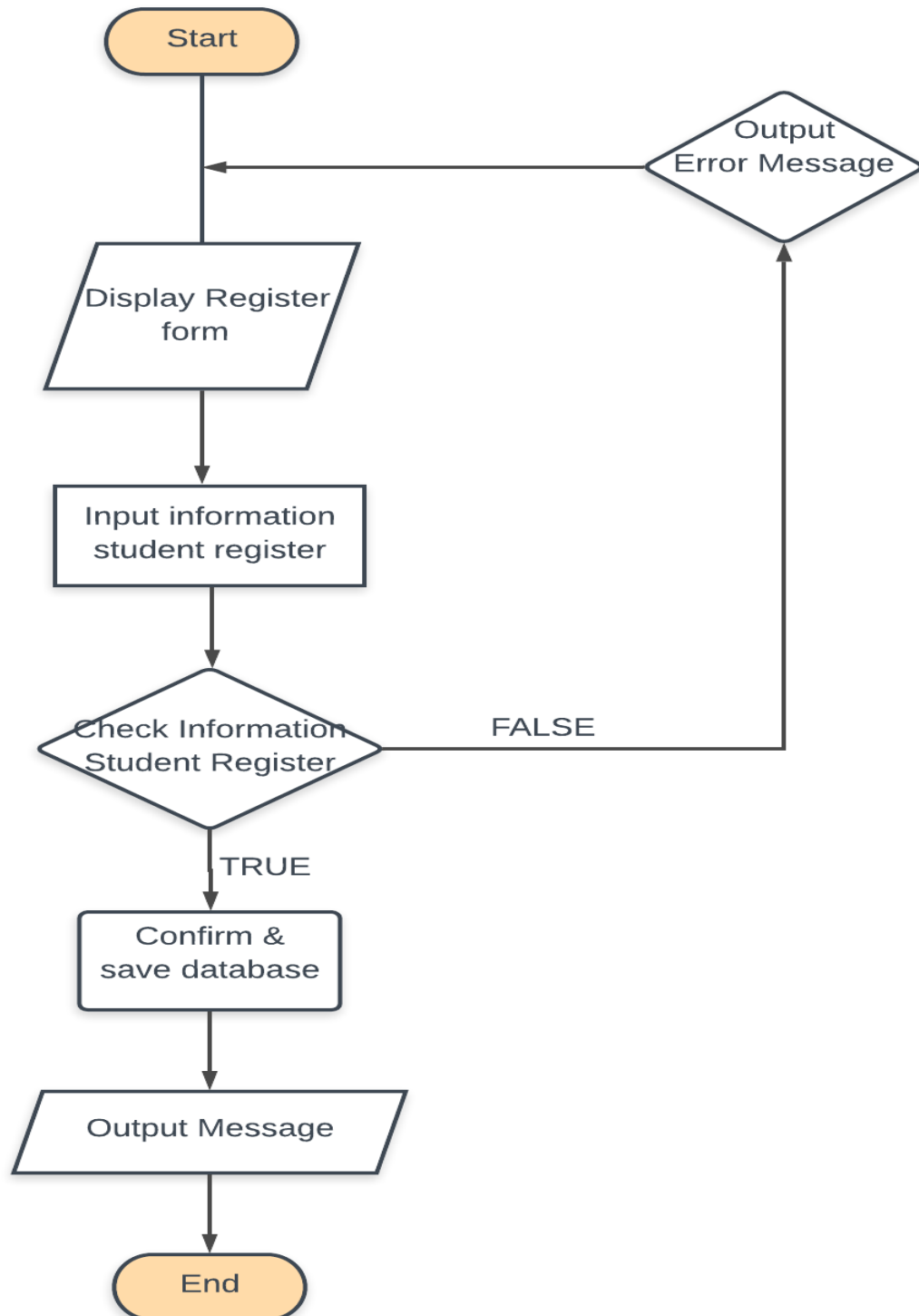
Design Plan: Certificate Management System	Document Name: Process Design Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page 13 of 16

3.1.5 Management Student



Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page 14 of 16

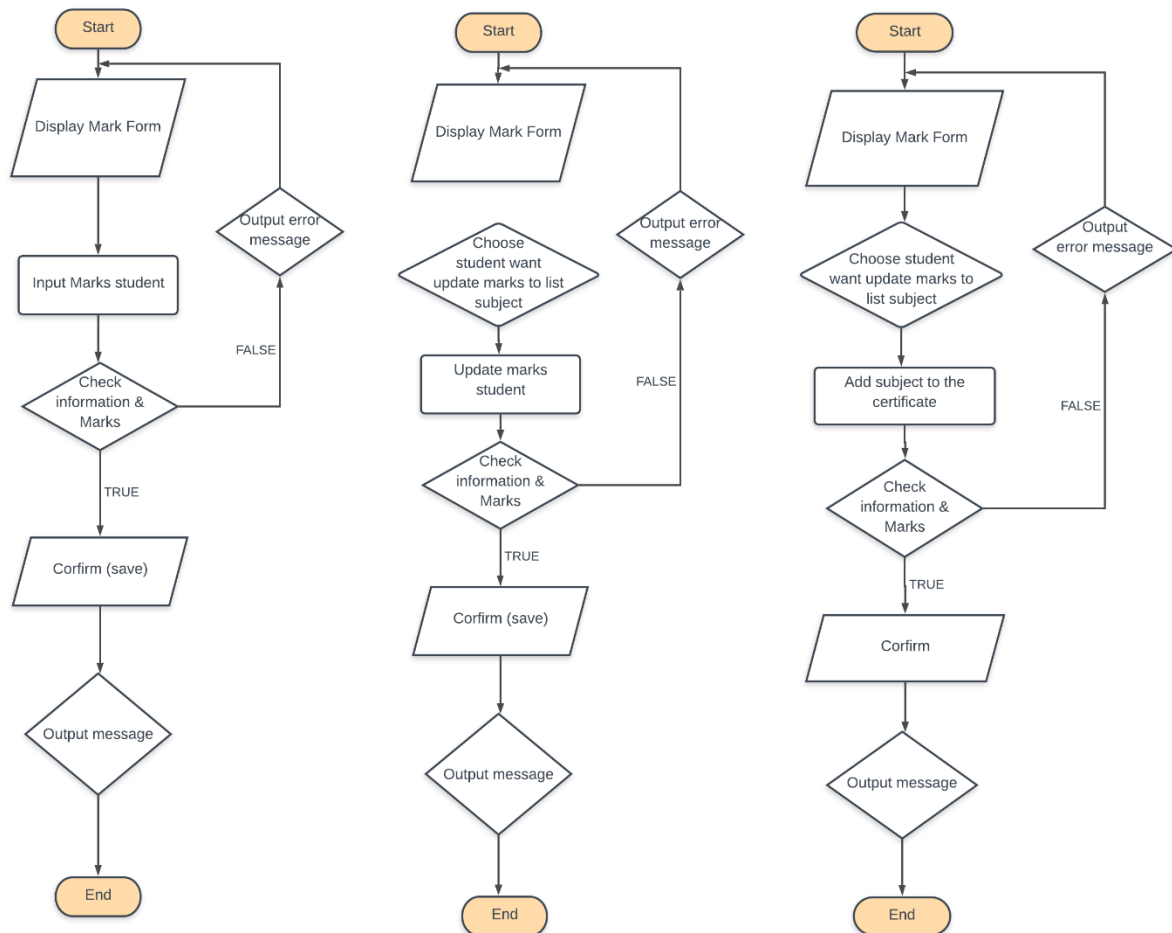
3.1.6 Management Registry



	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

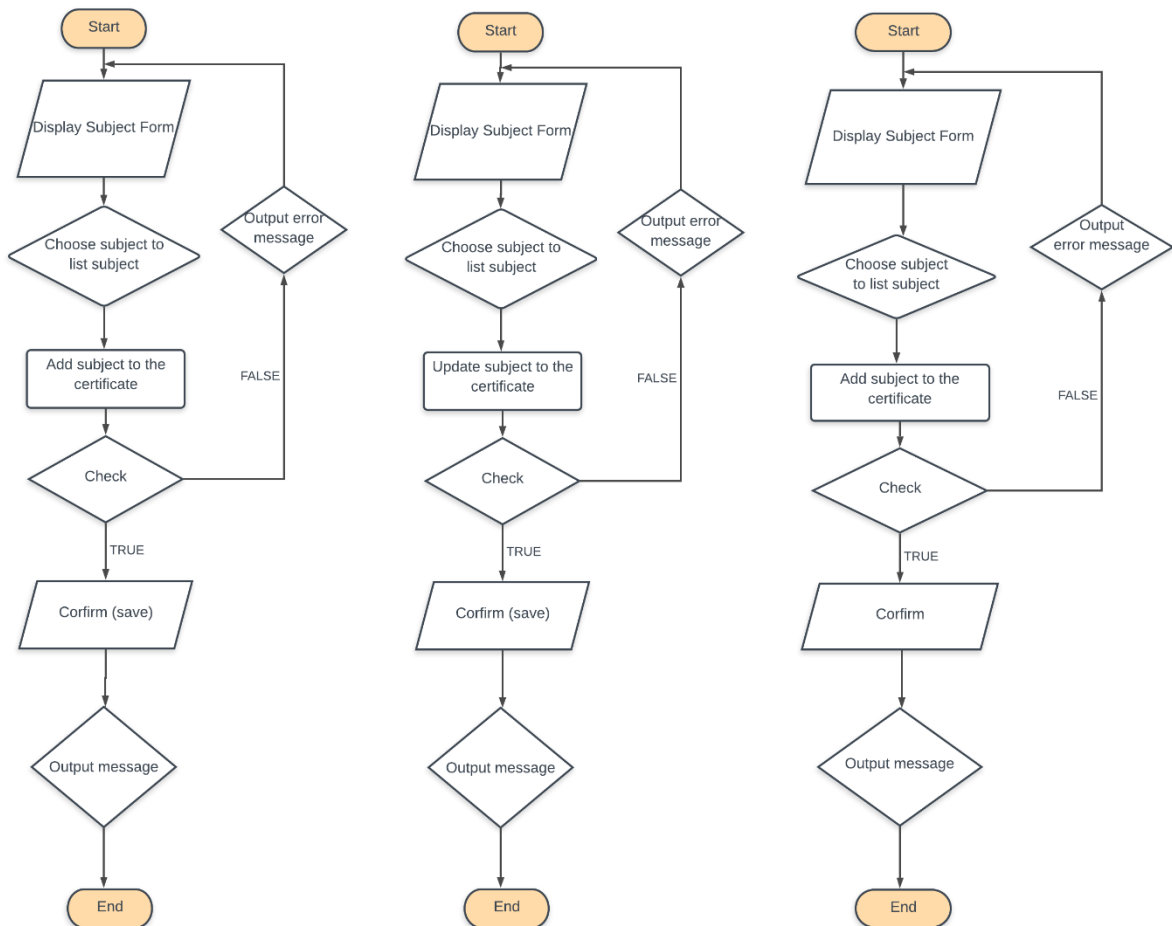
Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
Effective Date: Oct 15th, 2019	Version: 1	Page 15 of 16

3.1.7 Management Exam Mark



Design Plan: Certificate Management System	Document Name: Process Description Document	SWD/Form No. 7
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3.1.8 Management subject



	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Coding Standards Document	SWD/Form No. 8
Effective Date: Oct 15th, 2019	Version: 1	Page No. 1 of 2

CODING STANDARDS DOCUMENT

1. Programming Standards

- Every button and label should have an Icon for expressing. It must set before a text, image icons have to store in the folder img in source “[Project_Name]/src/img” and they are imported using “Image chooser, Image within Project, Image using for project have extension *.png.
- File, module guidelines and code layout: Code is in the Application folder including the folders (build, nbproject, src, test, build. xml, manifest.mf, config.properties, and USERGUIDE.pdf).
- In the src folder it contains (application, database, and interfaces):
 - In application package: Contains the object class *.java
 - In database package: Contains the class *.java connect the database (manipulating queries on the database, add edit delete DATABASE).
 - In interfaces package: Contains the words using the Java Swing
- Must have declaration part for classes, packages using for the project.

2. Standards for code writing style:

- Statement of each group must indent a Tab.
- Using “{ }” to block a group of statements or only one statement even and the “{” is right after the declaration. For example:
 - if (a == 0){
 - return 0;
 - }
- Each group of a work should have a line gap.
- Database guidelines: database name, table name and column name in the database are capitalize each word. If the two become separated by underscore. The SQL statements are all required to uppercase completely.
- Comment line descrying the variable declaration function mode and end command. For example:

```
// Comment here
/**
    @Author
    @Date writing
    @Author modify
    @Date modify
*/
```

3. Standards for declaring Variables:

Every Variable are meaningful, the first word is lowercase and each meaning word later have the first letter is uppercase. For example: String studentID

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Design Plan: Certificate Management System	Document Name: Coding Standards Document	SWD/Form No. 8
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Variables are using for loop can be “i” (Index) and loops inner can use “j” and then “k”, “m”, “n”. For example:

```
for (int i = 0; i < n; i++){
    for (int j = 0; ...    //Allowed
        for (int n = 0; ...    //Now allowed, next of “j” is “k”
    }
} // end for
```

In addition, in some cases, the variable name needs to clearly represent the data type of that variable. For example, a variable of type List should be named studentList, a variable of type Set should be named studentSet, a variable of type Map should be named studentMap, and a variable of type Array should be named studentArray.

4. Standards for Function Declarations:

Must have declaration for any functions and it declares return value, parameters if necessary. For example:

```
//function return age
public int getAge (int n) {
    return n;
} // end getAge
```

Any lines have to fix in 80 character, if not, detach it.

5. Other Standards:

The name of the constant must follow the general rule and must be capitalized. If the constant name has two words or more, there must be an underscore between words. For example: PI, NO_FIBONACCI.

The first letter of the first word in the method name must be lowercase and a verb, and the first letter of the next words must be capitalized (*like the variable naming rule*). For example: addStudent.

Package names must follow the general rule and must be in lowercase.

Class names should have words that have suffixes to make them more expressive, such as AddTwoNumber.

Rules for coding: Required comments (author, date of writing, note).

If explicit edit, write to comment (author edit, day edit).

If using the try – catch should use display error messages.

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

Design Plan: Certificate Management System	Document Name: Task Sheet	SWD/Form No. 9
Effective Date: Oct 15th, 2019	Version: 1	Page No. 1 of 2

TASK SHEET

Project Ref. No.:	Project Title:	Activity Plan Prepared By: Nghi Dang Quang		Date of Preparation of Activity Plan: Oct 9th, 2019		
Task Sub division	Description	Planned Start Date	Actual Start Date	Actual Days	Team Member Names	Status
Form No: 1	Problem Definition	Oct 9 th , 2019	Oct 10 th , 2019	2	All member	Done
Form No: 2A	CRS	Oct 11 th , 2019	Oct 13 th , 2019	3	All member	Done
Form No: 2B	Customer Acceptance Criteria	Oct 14 th , 2019	Oct 15 th , 2019	2	All member	Done
Form No: 9	Task Sheet	Oct 15 th , 2019	Oct 15 th , 2019	1	Nghi Dang Quang	Done
Form No: 3	Project Plan	Oct 16 th , 2019	Oct 16 th , 2019	1	Nghi Dang Quang, Khanh Nguyen Le	Done
Form No: 4	Process Design Document	Oct 17 th , 2019	Oct 18 th , 2019	2	Thang To Toan, Thanh Nguyen Phuoc	Done
Form No: 5	Process Description Document	Oct 19 th , 2019	Oct 19 th , 2019	1	Khanh Nguyen Le	Done
Form No: 6	Interface Design Document	Oct 20 th , 2019	Oct 25 th , 2019	6	All member	Done
Form No: 7	Table Design Document	Oct 26 th , 2019	Oct 29 th , 2019	4	All member	Done
Form No: 8	GUI Standards Document	Oct 30 th , 2019	Oct 30 th , 2019	1	Thang To Toan	Done

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 15th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

Design Plan: Certificate Management System	Document Name: Task Sheet	SWD/Form No. 9
Effective Date: Oct 15th, 2019	Version: 1	Page No. 2 of 2

Form No: 10	Coding Standards Document	Oct 31 st , 2019	Nov 12 th , 2019	13	Thanh Nguyen Phuoc	Done
Form No: 11	Integration Testing Report	Nov 13 th , 2019	Nov 17 th , 2019	5	All member	Done
Form No: 12	Review Report	Nov 18 th , 2019	Nov 18 th , 2019	1	Khanh Nguyen Le	Done
Form No: 13	Final Checklist	Nov 19 th , 2019	Nov 26 th , 2019	8	All member	Done

	Prepared By (Student)	Approved By (Teacher)
Date: Nov 26th, 2019	Nghi Dang Quang	Anh Luong The

Test Document: Certificate Management System	Document Name: Testing Document	SWD/Form No. 10
Effective Date: Oct 15th, 2019	Version: 1	Page No. 1 of 1

INTEGRATION TESTING REPORT

S. No.	Features Tested	Remarks
1	Design all form	Not good (maximize ...)
2	Design database	Not create trigger, view, identity and function.
3	Design and Coding form connect to database	Using Resource Bundle *.properties
4	Design and coding form users login	Not option each roles
5	Design and coding form home	Not responsive and note date coding modify, search for identity card
6	Design and coding form management student for add, delete, edit and report	Not create transaction for student impact of online system. Not responsive
7	Design and coding form management certificate for add, delete, edit and report	Verify that the graphical displays use color to the maximum extent possible.
8	Design and coding form management subject for add, delete, edit and report	Verify that the graphical displays use color to the maximum extent possible and trigger
9	Design and coding form management course of exam for add, delete, edit and report	Done, date must days 21 to 1 year.
10	Design and coding form management registry for add, delete, edit and report list of student.	Not login with student, must add student first.
11	Design and coding form management exam mark for add, delete, edit and report	Must registry first.
12	Design and coding form management certificate store for add, delete, edit and report	Cannot insert duplicate key in object (unique, primary key)
13	Report List student fail	Not title on file *.xlsx
14	Report List student pass	Not title on file *.xlsx
15	Print certificate by Roll No	Files Save as *.pdf
16	Verify that offline help is available for all features.	Display file *.pdf
17	Design user guide document	Include files *.docx, *.pdf
18	Setup and training for customer.	Include files *.exe, *.pptx

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Certificate Generation

Review Report: Certificate Management System	Document Name: Project Review	SWD/Form No. 11
Effective Date: Oct 15th, 2019	Version: 1	Page No. 1 of 1

REVIEW REPORT

Date:	Project Plan Activity/ Milestone	Work Specification	Status of the Activity	Remarks	Responsibility
Oct 9 th , 2019	Oct 15 th , 2019	Take Customer's information	Done		Thang To Toan
Oct 16 th , 2019	Oct 30 th , 2019	Design	Done		Thanh Nguyen Phuoc
Oct 31 th , 2019	Nov 12 th , 2019	Coding	Done		Nghi Dang Quang
Nov 13 th , 2019	Nov 24 th , 2019	Testing	Done		Nghi Dang Quang
Nov 25 th , 2019	Nov 26 th , 2019	Training	Done		Khanh Nguyen Le

	Prepared By (Student)	Approved By (Teacher)
Date: Nov 26th, 2019	Nghi Dang Quang	Anh Luong The

Test Document: Certificate Management System	Document Name: Final Check List	SWD/Form No. 12
Effective Date: Oct 15th, 2019	Version: 1	Page No. 1 of 1

FINAL CHECKLIST

(This document has to be filled by the teacher only. The teacher will do a complete functionality testing of the application and his/ her findings and suggestions to this form.)

S. No.	Aspect tested	Suggestion/ Remarks
1.	Have all the modules been properly integrated and are they completely functional?	
2.	Does each unit meet its objective and purpose? Are all the validations happening as specified in Process Design?	
3.	Have all Design and Coding standards been followed and implemented?	
4.	Is the GUI design consistent all over?	
5.	Are the codes working as per the specification?	
6.	Does the application's functionality resolve the client problem, and satisfy his needs completely?	
7.	Have the hardware and software been correctly chosen?	
8.	Additional features and utilities that give value addition to the entire project.	

	Prepared By (Student)	Approved By (Teacher)
Date: Oct 19th, 2019	Nghi Dang Quang	Anh Luong The

Review Report: Certificate Management System	Document Name: User guide	SWD/Form No. 13
Effective Date: Nov 26th, 2019	Version: 1	Page No. 1 of 1

USER GUIDE



	Prepared By (Student)	Approved By (Teacher)
Date: Nov 26th, 2019	Nghi Dang Quang	Anh Luong The