Software Requirements Specification & Analysis

For

“Exam Paper”

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Software Requirement Specification

1.Introduction

The introduction of the Software Requirements Specification (SRS) provides an overview of the entire SRS with purpose, scope, definitions, acronyms, abbreviations, references and overview of the SRS. The aim of this document is to gather and analyse and give an in-depth insight of the complete Online Exam system(Exam Paper) by defining the problem statement in detail. The detailed requirements of the Online Exam System (Exam Paper) are provided in this document.

1.1 Purpose

The main purpose of this online examination system is to effectively evaluate the student thoroughly through a totally automated system that not only reduce the required time but also obtain fast and accurate results.Students can see teacher's educational material so that they can cover up their problems with specific topic.

1.2 Project Scope

The project would be very useful for educational institutions where regular evaluation of students are required. Further it can also be useful for anyone who requires feedback based on objectives type responses .

1.3 Glossary

This subsection contains definitions of all the terms, acronyms, and abbreviations used in the document. Terms and concepts from the application domain are defined.

- SRS – Software Requirement Specifications
- UI – User Interface
- SDLC – Software Development Life Cycle
- GUI – Graphical User Interface
- API – Application Programming Interface

1.4. References

IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998

1.5. Overview

Today Online Examination System is considered a fast developing examination method because of its accuracy and speed. It is also needed less manpower to handle the examination. Almost all organizations today, are managing their exams by online examination system, since it reduces student's time in examinations. Organizations can also easily monitor the progress of the student that they give through an examination. As a result of this, the result is calculated in less time. It also helps diminishing the need for paper. Online examination project in PHP is very useful to learn it, According to today's requirement Online examination system is significantly important to the educational institution to prepare the exams, saving the time and effort that is required to check the exam papers and to prepare the results reports.

Online examination system helps the educational institutions to monitor their students and keep eyes on their progress. The best use of this system in Scholastic Institute and training centers because it helps in managing the exams and get the results in easy and an efficient manner. Until today the preparing for exams and preparing the results was performed manually, this required more time to complete.

"**Exam Paper**" is one type of online exam system . It takes Exam according to NCTB syllabus. In future we will do that it also take exam on IQ Test, General Knowledge, basic language learning(English).It also provide tutorial and class notes for all topic. This "Exam Paper" has two section: i) Quick Exam ii) Practice Test. It takes 20 minute in Quick exam and 50 minute for Practice exam. At first one need to sign up with name, email, mobile number, institution name and confirmation code. An existing user can log in with user name and password.

Students can choice any chapter, any question type that means they can choose practice test or quick exam. Then they can see question analysis and also see tutorial and class notes. Teachers can monitor student's marks and can provide information. They can manage questions and provide educational materials .Co-ordinate officer can manage teachers and students. He can also manage questions. With online exam system students can do the online exam with their own time and own device. Just need this apps and internet connection.

2. User Classes and Characteristics

There are three types of stakeholders in our "**Exam Paper**", such as:

Students : Students are primary actor in our application. Firstly they should sign up with their user name, email or contact number and other information and must submit confirmation code. They can participate practice exam or quick exam. Then they can see their result and question analysis. If they can not participate any exam they can also see teacher's tutorial and class notes. If a student want to contact with any teacher he can contact with teacher directly.

Teachers : Teachers are also a primary actor in our application. In our application he must be registered account. After sign up he can provide educational materials such as tutorial and class notes. He can manage questions and can monitor student's result.

Co-ordinate officer : He is secondary actor in our application. Student's and teacher's information captured by Co-ordinate officer. He can manage students and teachers. He can also manage questions for students. He can evaluate student's result.

3. Design and Implementation Constraints

Design and implementation constraints are those that we have used to implement this project make successful. It also describes tool that enables developers and testers to view and interact with the user interface (UI) elements of this application.

3.1 User Interface Technology

User interface (UI) is everything designed into a system view that which person's associates with this system may like the interface of this system.

3.1.1 Programming Language

For developing this system, we will use Java as a programming language. Java is a widely used open source general-purpose programming language that is especially suited for Android application development. Java is a programming language, and a powerful tool for making dynamic and interactive mobile applications based on Android operating system.

3.1.2 XML

XML stands for Extensive Mark-up Language. It is a mark-up language that describes the style of a mobile application based on Android operating system. XML describes how elements of the application should be displayed. Build responsive, mobile-first projects on with the world's most popular component library.

3.2 Implemented Tools and Platform

Every business plan, campaign, or project comes down to Tactics, Tools and Strategies. To conceive, develop, and implement a sound social media marketing strategic plan that will be successful needs to have those three critical components.

3.2.1 Web Server

A Web server is a program that uses HTTP (Hypertext Transfer Protocol) to serve the files that form Web pages to users, in response to their requests, which are forwarded by their computers' HTTP clients. Dedicated computers and appliances may be referred to as Web servers as well. We will use the Apache HTTP server to implement this project. We will use RESTful API to retrieve data from our server to mobile application. RESTful stands for Representational State Transfer. And API stands for Application Programming Interface.

3.2.2 Database Server

We will use MySQL database server to store all of the information of this system. The reason behind to choose the database server are given below:

- Data Security
- High performance
- Reporting and Data Mining
- Complete workflow control
- Reduce total cost of ownership

4. Requirement Specification

The complete requirement specification based on the elicitation process is described in this section.

4.1 Functional Requirements:

Functional requirements refer to the functions which are mandatory to the system. Functional requirements must be able to perform on the software system. Every system must have some functional requirements. Now, we are going to mention functional requirements associating with our project.

4.1.1 Student select the subject for an exam

FR1	**Student select the subject for an exam**
Description	After log in with his user id and password a student can participate an exam. Before login she/he should sign up for account registered. When he login account then he select subject for exam. In our application there are two exam types. One is Quick exam and another is practice exam.
Stakeholders	Students
Priority	High

4.1.2 Student select any chapter for an exam

FR2	**Student select any chapter for an exam**
Description	When a student sign up his account he/she can login this account. Then a student select any subject for exam. After selecting a chapter he/she can select any chapter for participate exam.
Stakeholders	Students
Priority	High

4.1.3 Students submit answer

FR3	Students submit answer
Description	When a students login this application ,then he select a subject for participate an exam. When he select a subject then he select a chapter. After selecting a chapter he can participate any exam. After selecting an exam he can submit answer.
Stakeholders	Students
Priority	High

4.1.4 Students view result

FR4	Student view his/her result
Description	When a student select any subject for participate an exam he can select any chapter. Then he submit answer .After submitting answer he/she can view his/her result. In result he can see question description, marks and accuracy
Stakeholders	Students
Priority	High

4.1.5 Students can contact with any teacher

FR5	Students can contact with any teacher
Description	Students can contact with any teacher. These teachers are registered in exam paper application. For educational help a student can contact with any teacher via contact number or email address. Teacher's contact number and email are given in this application
Stakeholders	Students, Teachers
Priority	Medium

4.1.6 Students can view others educational materials

FR6	Students can view others educational materials
Description	A student can see and can get help from others educational materials. In others educational materials there are class notes and tutorial. In these application these materials are given in serially. As a result a student can get anything quickly.
Stakeholders	Students
Priority	Medium

4.1.7 Teachers can manage an exam

FR5	Teachers can manage an exam
Description	A teacher can manage any examination. When a teacher sign up successfully then he can login this application. After login successfully he can manage any question paper for students. He can manage both quick exam and practice exam
Stakeholders	Teachers
Priority	High

4.1.8 Teachers provide others educational materials

FR8	Teachers provide others educational materials
Description	A teacher can provide many educational materials. In our application a teacher can provide class notes and tutorial. These are the others educational materials. A student can get help from these educational materials.
Stakeholders	Teachers, Students
Priority	High

4.1.9 Co-ordinate officer capture teacher's and student's information

FR9	Co-ordinate officer capture teacher's and student's information
Description	A coordinator officer act as an administrator. He should capture a student's and a teacher's information such as name address, contact number or email, password etc.
Stakeholders	Co-ordinate officer
Priority	High

4.1.10 Co-ordinate officer manage teachers

FR10	Co-ordinate officer manage teachers
Description	In exam paper application a co-ordinate officer manage a teacher. Teacher is primary actor in or application.so a co ordinate officer decide which teachers can registered in this application
Stakeholders	Co-ordinate officer
Priority	High

4.1.11 Co- ordinate officer manage students

FR11	Co- ordinate officer manage students
Description	Students are also a primary actor in our application. A co-ordinate manage students .He can decide which students can register in this application
Stakeholders	Co-ordinate officer
Priority	High

4.1.12 Co-ordinate officer manage question paper

FR12	Co-ordinate officer manage question paper
Description	A co –ordinate officer manage question paper that mean he can manage an exam. When a teacher cannot manage any exam a co-ordinate mange this exam.
Stakeholders	Co-ordinate officer
Priority	High

4.1.13 Co ordinate officer manage student's result

FR13	Co ordinate officer manage students' result
Description	When a student submit answer then co-ordinate officer calculate this answer and give question description. He manage student's result and display result.
Stakeholders	Co-ordinate officer
Priority	High

4.1.14 Co-ordinate officer update exam time

FR14	Co-ordinate officer update exam time
Description	Co-ordinate officer should always update exam time. A student can know exam time if co-ordinate update exam time.
Stakeholders	Co-ordinate officer
Priority	High

4.1.15 Co-ordinate officer display a notification of duration time in quick exam

FR15	**Co-ordinate officer display a notification of duration time in quick exam**
Description	Co-ordinate officer display a notification when a student participate in quick exam. This notification is about duration time of quick exam.
Stakeholders	Co-ordinate officer
Priority	High

4.2 Data Requirements

For defining data requirements, we need to build the model. For our application maximum data would be loaded from remote user. And for that purpose we need to focus on some major points.

Such as:

- Types of entity of the system
- Route data locations
- Capacity and resources of the data requirements
- Data source sequence
- Data availability schedules
- Quantity of data
- Availability of data

4.3 Performance Requirements

It is very important to maintain performance of any software system. To ensure performance, we need to maintain some steps. Now, I will explain some perspective by which we are going to enhance the performance of our project.

4.3.1 Speed & Latency Requirements

Speed and latency requirements must be ensured while retrieving data from the cloud server

SLR-1	**Submit answer must be faster**
Description	When a student participate in any exam , answer submission must be faster.
stakeholders	Students

SLR-2	**Display result must be faster**
Description	When a student want to view his result then display result must be faster
Stakeholders	Students

4.3.2 Precision & Accuracy Requirements

Results that is to be shown to the end user is need to be accurate. Because, wrong information might be ruined the whole business process.

PAR-1	**Submitting confirmation code must be accurate**
Description	When a student or teacher sign up account then he should submit confirmation code which is send his contact number or email address. This confirmation code must be accurate
Stakeholders	Students, Teachers

4.3.3 Capacity Requirements:

The developed system by us must be capable to handle user data, provide accurate information, handling database, manage http request etc.

CR-1	**The system will handle thousands of data**
Description	The system need to handle data thousands of data every moment.
Stakeholders	Co-ordinate officer

4.4 Dependability Requirements:

The term dependability is measured based on four dimensions. Such as:

- Availability
- Reliability
- Safety
- Security

If we want to say that our application system is dependable then it must fulfil the four dimensions. But there are other tasks. Like there is no way to make mistakes or our system should have the ability to detect and then remove errors. Besides that, it is also very important to limit the damage which might be caused by system failure.

4.4.1 Reliability & Availability Requirements:

Now, I will mention requirements which is related to reliability and availability

RAR-1	**The system must be available on 24 X 7**
Description	Our system must be available all day long, every day in a week • The system must be updated regularly • System must be malware free
Stakeholders	Co-ordinate officer, Students, Teachers

4.4.2 Robustness or Fault-Tolerance Requirements:

To ensure robustness and fault-tolerance facilities to the end users, it is urgent to ensure 0% crush. Moreover, it must show accurate results.

RFT-1	**The system handles all user access without system errors**
Description	Thousands of user might hit our application system at a time. All their requests must be handled without any fault
Stakeholders	N/A

4.4.3 Safety-Critical Requirements:

There are no safety-critical requirements in our project.

4.5 Maintainability & Supportability Requirements:

It is very important to provide after service or support to the end users.

MR-1	**System helps to update user profile**
Description	It is very important to update user profile.
Stakeholders	Co-ordinate officer

4.5.2 Supportability Requirements:

Supportability requirements may have related to some extends. Like:

- Testability
- Extensibility
- Adaptability
- Maintainability
- Compatibility
- Configurability
- Serviceability
- Install ability

Our application meets all of the above requirements related to supportability.

4.5.3 Adaptability Requirements:

There are no adaptability requirements in our system software.

4.6 Security Requirements:

Making software security as a requirement is very important. Software security requirements should be its functional requirement. Software security enforces security of an application system.

Functionality related to software security can either be directly tested or observed. Some security related requirements is given below:

- Signing in a student and teacher
- Get access according to logged in user
- Submitting confirmation code Signing out as a student and a teacher
- Handling encrypted passwords

While accessing to the system, each and every module must provide a central authentication mechanism. There is also a process to prevent entering into the system by ensuring hashed password for the unauthenticated users.

4.6.1 Access Requirements:

For accessing to our application system, there remains some authentication and authorization techniques. And every module of our system will provide it. Now I will provide an explanation below.

AR-1	**Application provides security mechanism**
Description	Every module is designed in such a way that it only give access to the authorized and authenticated users.
Stakeholders	Students, Teachers

4.6.2 Integrity Requirements:

Integrity requirements refers to a security system which ensures an expectation of data quality. It also ensures that all data of the system would never be exposed to the malicious modification or accidental destruction. For that reason, we will store our user passwords as encrypted format which is impossible to decrypt. It is also called hashed password.

4.6.3 Privacy Requirements:

It is very important to ensure privacy of the system users. Privacy requirements enhances to protect stakeholder's privacy. In this way, all data or a partial part of data are going to be disclosed according to system's privacy policy. To ensure privacy, the central database should be protected by the anonymous. Users are permitted to get access to those data which are being associated by them which can be ensured by the user log in system.

4.7 Usability and Human-Interaction Requirements:

The main target of developing any system is to make the system user friendly and easy to usable for the end users.

4.7.1 Ease of Use Requirements:

Our application is easy to use and also easily understandable.

EUR-1	**Application must be usable for the end user**
Description	This app is enough usable to the co-ordinator officer by which they can operate this system easily.
Stakeholders	Students, Teachers, Co-ordinate officer

4.7.2 Personalization and Internationalization Requirements:

There are not any personalization and internationalization requirements to our system. This maiden version of our application is only be operated by Bangladesh.

4.7.3 Understand ability and Politeness Requirements:

It is already said that the application which we are going to develop, is understandable enough. The system provides hints to users whether any error occurred or wrong. By reading those errors users can be able to operate the system easily.

4.7.4 Accessibility Requirements:

There are no specific accessibility requirements associated to our system yet.

4.7.5 User Documentation Requirements:

Documentation are mainly two types. One is internal documentation which is generally written by the application engineers. It is prepared to make development life cycle easier for the system engineers or system analysts.

UDR-1	**The system engineer documentation**
Description	To develop our application named smart citizen, safe journey, firstly we have make a system analysis team as well as documentation team.
Stakeholders	System analysts or software developer

4.7.6 Training Requirements:

Training requirements involved in after service of any application. It is very necessary to properly train up end users to the system so that they would be capable to operate easily. After launching the full package to the market, firstly we provide training to the different end users like teachers, co-ordinate officer, students.

4.8 Look and Feel Requirements:

Look and feel requirements mainly refers how the system will look like and how the user interface or graphical user interface of our system will display to the user.

4.8.1 Appearance Requirements:

Co- ordinate officer and all other user must know which input fields are required and which are not. For that reason, we will use labels for all input fields. Input fields might be text type, radio, checkbox, spinner etc.

AR-1	**Labels of mandatory fields must be bold**
Description	The mandatory field's label must be bold and all input fields must have placeholder to make it easier for the users.
Stakeholders	Co-ordinate officer and Any other end user

4.8.2 Style Requirements:

After keeping all contents, it is very essential to load stylesheet to the application. For mobile application like android system, extensive mark-up language or xml is used. It is to be said that we are going to develop our system at android platform. Style makes the system lucrative.

SR-1	**The appearance must be controllable using stylesheet file**
Description	For android application stylesheet files are xml. So, all stylesheet must be controllable by the xml file.
Stakeholders	Software developer

4.9 Operational and Environmental Requirements:

Operational and environmental requirement refers to the capabilities, performance measurements, process, measurements of effectiveness, measurements of performance, measures of sustainability, measurements of technical performances etc.

4.9.1 Expected Physical Requirements:

There are no expected physical requirements in our system.

4.9.2 Requirements for Interfacing with Adjacent Systems:

There are no requirements for interfacing with adjacent system for our project.

4.9.3 Release Requirements:

There are no specific release requirements in our system.

4.10 Legal Requirements:

Legal requirements normally refer to the terms and conditions or privacy policy of any organizations. The terms and condition of our application is that, no third party software or person are allowed to engage to use our data for their business purpose.

4.10.1 Compliance Requirements:

There are no specific compliance requirements for our system.

4.10.2 Standards Requirements:

There are no specific standards requirements for our system.

5. Requirement Engineering Process

Requirements engineering refers to the process of defining, documenting and maintaining requirements in the engineering design process. It is a common role in systems engineering and software engineering.

5.1 Requirement Elicitation Techniques

Requirement elicitation is the process of collecting and refining stakeholder's requirements. Projects are garbage-in-garbage-out meaning that poor quality requirements typically lead to project issues and failure.

5.1.1 Hold Elicitation Interviews

We hold interviews that can be performed one-on-one or with a small group of stakeholders. They are an effective way to elicit requirements without taking too much stakeholder time because we meet with people to discuss only the specific requirements that are important to this system. Interviews are helpful to separately elicit requirements from members in preparation for workshops where those members of this system come together to resolve any conflicts.

5.1.2 Perform Document Analysis

Existing documentation can help reveal how systems currently work or what they are supposed to do. Documentation includes any written information about current systems, business processes, requirements specifications, competitor research. Reviewing and analyzing the documents can help identify functionality that needs to remain, functionality that isn't used.

5.1.3 Distribute Questionnaires

We conduct a survey to collect requirements for this system. Questionnaires are a way to survey large groups of users to determine what they need. Questionnaires are useful with any large user population but are particularly helpful with distributed groups.

Appendix

We've prioritized the functional requirements by following **Three-level Scale technique**.

Three-level Scale: When a BA categorizes the requirements in any of the ordering or ranking scale, it is subject to the analyst's understanding of the business. Many analysts suggest that this method has some drawbacks and advocate methods that have more than one scale.

Covey, Rebecca and Merrill would have never in their wildest dreams have thought that their **"The four-quadrant 'Eisenhower Decision Matrix'** for importance and urgency", from their self-help book First things First, would become one of the most widely used prioritization techniques in the IT space.

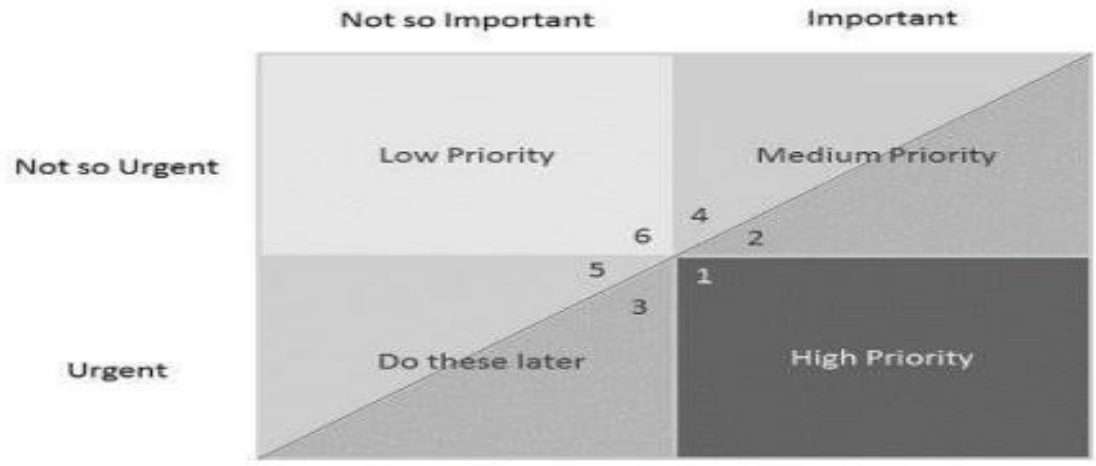


Figure 2: Eisenhower Decision Matrix – Lower the number, higher the priority of the section

With the numbering on the different sections of the diagram, the priority of the sections is implicit. Important items have the highest preference, while urgent items have lower preference.

1. High Priority – These requirements are urgent and important. These are requirements that are generally with respect to compliance or contract that cannot be left out. These requirements need to be implemented in the current release and not implementing the same will have some adverse effect on the business.

2. Medium Priority – These requirements are important but not as urgent. Implement these after you implement the high priority items. If you see closely there is a line that splits this quadrant into 2 parts. Implement the items that are on the right side of the line first as they are relatively of higher medium priority.

3. Do these later – These items are urgent but do not have a lot of effect on the business. Hence do it after completing the more important medium priority items. Similar to the medium priority items, this quadrant has also been split into two; the items on the right side have a higher priority relatively to the items on the left.

4. Low Priority – These items are neither important nor are they urgent. Complete the items at your leisure after completing the items in sections 4 and 5 respectively.

The items on the right-hand side of the diagonal have higher priority. Start with the bottom-right corner of the high-priority quadrant and work your way up and left.

Prioritization of the functional requirements of Exam Paper:

FR1 : For participate an exam a student must select subject. Without selecting any subject he/she can not participate an exam. So this functional requirement is very important and urgent.

FR2 : For participate any exam when a student select any subject the he/she must select any chapter. So this requirement is important and urgent.

FR3 : When a student participate an exam then he/she must submit answer .So this requirement is important and urgent.

FR4 : A student view his/her result after submitting result. As a result he/she an evaluate his /her position. So this requirement is important and urgent.

FR5 : A student can contact with any teacher if necessary. When he/she contact any teacher for educational help he/she can get help and as a result he can solve many educational problems like as knowing questions patterns. So this requirement is so important but not urgent.

FR6 : If a student can want to see others educational materials he/she can get help with class notes and tutorial. But it is not so urgent. So this requirement is important.

FR7 : A teacher can manage an exam. But when he/she can't manage question then co-ordinate officer manage an exam. So this requirement is important not urgent.

FR8 : Teachers provide educational materials in this application. If they can't provide this for students, they can not solve question problem. So this requirement is important and urgent.

FR9 : When teacher and student provide their information in this application co-ordinate officer must capture information. So this requirement is important and urgent.

FR10 :A co-ordinate officer must manage a teacher. He/she must mange which teacher is include or can registered in this application. So this requirement is so important and urgent.

FR11 : Co-ordinate officer must manage student. He/she must decide which type of student can registered in this application. So this requirement is urgent and important.

FR12 : Co-ordinate officer must manage an exam or question bank. So it is urgent and important.

FR13 : Co-ordinate officer must mange students result. When a student submit result, co-ordinate officer must calculate result and display this. Otherwise a student can not evaluate his/her position or knowledge.

FR14 : Co-ordinate officer must update exam time. Otherwise a student can not know when he/she do attend an exam. So this requirement is urgent and important.

FR15 : Co-ordinate officer must display a time duration notification in quick exam. As a result a student can answer carefully within duration time

Conclusion

Exam Paper is a user friendly system, which is very easy and convenient to use. The system is complete in the sense that it is operational and it is tested by entering data and getting the reports in proper order. But there is always a scope for improvement and enhancement. During the development of this ,coding standards are followed for easy maintainability and extensibility.

THE END

Software Requirement Analysis

Requirement Analysis, also known as Requirement Engineering, is the process of defining user expectations for a new software being built or modified. In software engineering, it is sometimes referred to loosely by names such as requirements gathering or requirements capturing. Requirements analysis encompasses those tasks that go into determining the needs or conditions to meet for a new or altered product or project, taking account of the possibly conflicting requirements of the various stakeholders, analyzing, documenting, validating and managing software or system requirements.

Here we add some analysis such as :

- Use case diagram
- Use case description
- Activity diagram
- Requirements Traceability Matrix

USE CASE DIAGRAM

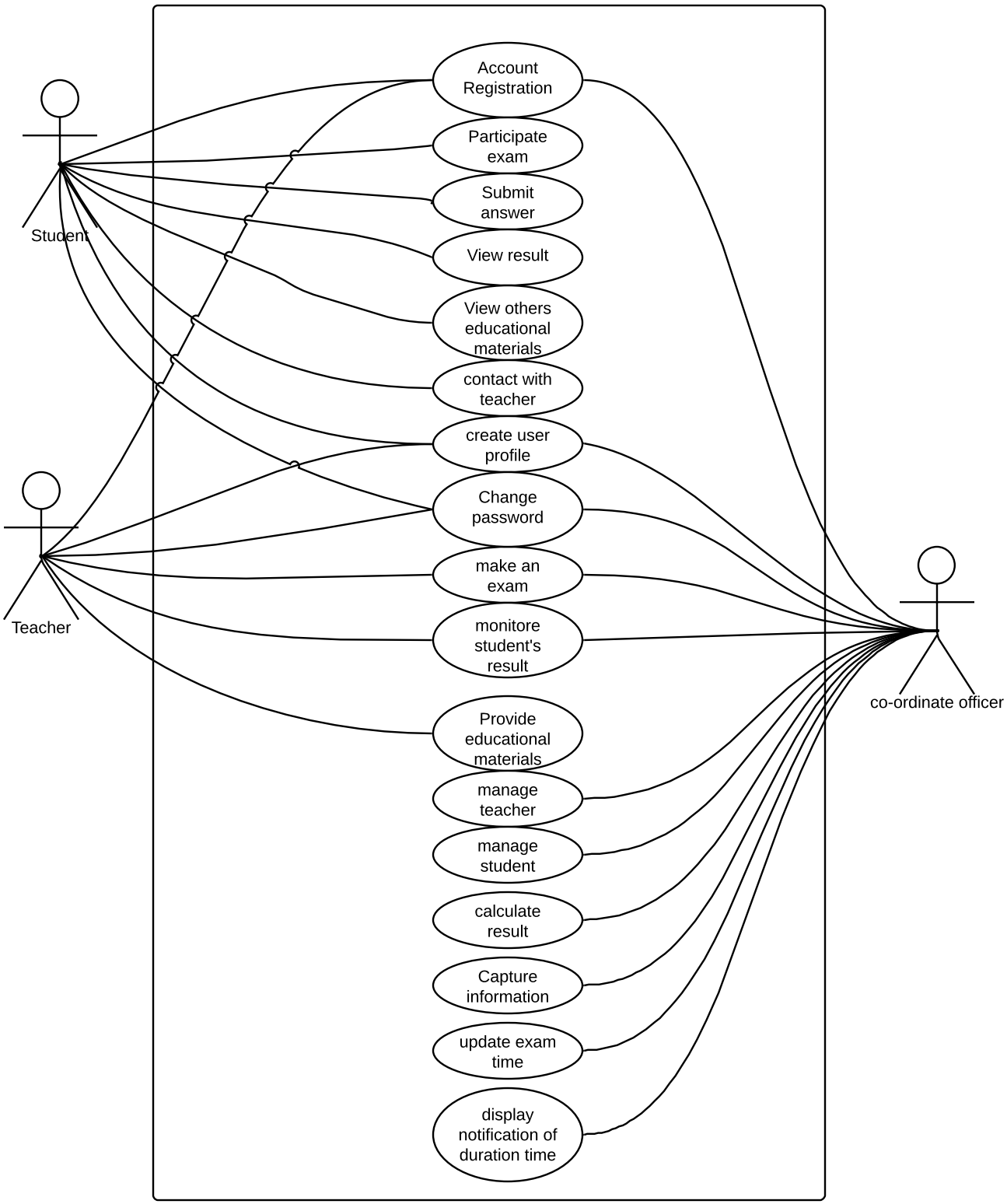


Figure:Use Case Diagram of "Exam Paper"

Use Case Description 01

Use case	Account Registration	
Goal	Students provide name, email or contact number, password and others information. Teachers also provide name, contact number or email and others information.	
Precondition	Not applicable	
Success End Condition	Student and teacher provide his information and submit confirmation code.	
Failed End Condition	Student or Teacher provide invalid contact number or email and do no submit confirmation code	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Press submit	
Main Success Flow	**Step**	**Action**
	1	Students or Teachers sign up for create an account
	1.1 1.2	Sign up via contact number Sign up via email address
	2	System captures teacher's and student's information
	3	Students or teachers submit their confirmation code
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Action**
	3	Students and Teachers should their confirmation code within 10 seconds

Use Case Description 02

Use case	Participate an exam	
Goal	Students participate an examination successfully.	
Precondition	Students should have a registered Account	
Success End Condition	Students log in successfully and can participate an examination successfully	
Failed End Condition	Students do not registered yet and can not participate exam	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Press login button	
Main Success Flow	**Step**	**Action**
	1	Students login with their user name and password
	2	Student select his class
	3	Student select subject and chapter
	4	Student select exam type(practice exam or quick exam)
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Action**
	4	For quick exam student should answer every question within 30 seconds

Use case Description 03

Use case	Submit answer	
Goal	Students select question type and then submit answer all questions	
Precondition	Students should select subject and chapter and then participate an exam	
Success end conditions	Students participate an exam and answered all questions successfully	
Failed end conditions	Students can not answer all question in during time or internet connection has lost	
Primary actor	Students	
Secondary actor	Co-ordinator	
Trigger	Press login button	
Main Success flow	**Step**	**action**
	1	Students login their user name and password
	2	Students select class and subject and chapter
	3	Students select question type(quick exam or practice exam)
	4	Students answered all question in during time
Alternative Flow	**Step**	**Action**
		Not applicable
Quality requirements	**Step**	**requirements**
	4	For quick exam students must answer all questions in 30 minutes

Use Case Description 04

Use case	View result	
Goal	Students select any subject and chapter then he/she submit answer.After submitting answer he/she can view his/her result.	
Precondition	Before view result he/she must submit answer	
Success End Condition	Student submit answer and view his/her result.	
Failed End Condition	Student do not participate any exam.	
Primary Actor	Students,Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Click submit	
Main Success Flow	**Step**	**Action**
	1	Student select exam type(quick exam or practice exam)
	2	Student select any subject
	3	Student select any chapter
	4	Student submit his/her answer
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Action**
		Not applicable

Use Case Description 05

Use case	Make an exam	
Goal	A teacher can make an exam and student can participate this exam.	
Precondition	When a teacher registered his account he can make an exam.	
Success End Condition	A teacher manage an exam and any registered student can participate this exam	
Failed End Condition	A teacher manage an exam and but student can not participate this exam.	
Primary Actor	Students,Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger		
Main Success flow	**Step**	**Action**
	1	A teacher registered his account
	2	He login this system
	3	He go to control panel
	4	He Select any type of exam(quick or practice)
	5	He upload a question paper successfully
Alternative flow	**Step**	**Action**
	3(a)	If a teacher can not make exam,co-ordinator manage an exam
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 06

Use case	Monitor student's result	
Goal	Students submit their answer and a teacher monitor their's result	
Precondition	For monitoring a student's result a teacher must registered his account	
Success end conditions	Students participate an exam and answered all questions successfully and a teacher can monitor their teacher	
Failed end conditions	Students can not participate any exam as a result teacher can not monitor result	
Primary actor	Students, Teachers	
Secondary actor	Co-ordinator officer	
Trigger	Not applicable	
Main Success flow	**Step**	**Action**
	1	A teacher registered his account
	2	Students submit answer in any exam
	3	Teacher go to control panel
	4	Teacher select student's performance
	5	Teacher monitor a student's result
Alternative Flow	**Step**	**Action**
	5	A co-ordinator can monitor a student's result
Quality requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 07

Use case	Provide educational materials	
Goal	Teacher provide educational material and student can get help from this.	
Precondition	Teacher should registered his account	
Success End Condition	Teacher provide many educational materials like notes or tutorial and student view this.	
Failed End Condition	Teacher do not provide educational materials	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Not applicable	
Main Success Flow	**Step**	**Action**
	1	Teachers sign up for create an account
	2	He create his profile with his information
	3	He provide class notes or tuitorial
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 08

Use case	Create user profile	
Goal	Teacher,Student & co-ordinator create a profile with their valid information	
Precondition	Teacher,student & co-ordinator should registered their account	
Success End Condition	Teacher,student & co-ordinator create user profile with valid information and any registered user can view their profile	
Failed End Condition	Teacher,Student & co-ordinator do not provide valid information in their profile	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Not applicable	
Main Success Flow	**Step**	**Action**
	1	Teacher,student & co-ordinator sign up for create an account
	2	They provide their valid information in their profile
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 09

Use case	Contact with any teacher	
Goal	Student contact with any teacher for educational help.	
Precondition	Teacher&student should registered their account	
Success End Condition	Teacher provide his valid contact number or email in his profile and any student can contact with teacher	
Failed End Condition	Teacher do not provide valid contact number or email and student can not contact with him	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Not applicable	
Main Success Flow	**Step**	**Action**
	1	Teacher,student sign up for create an account
	2	Teacher provide valid contact number or email in his account
	3	Student can get this and contact with teacher
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 10

Use case	View others educational materials	
Goal	Teacher provide others educational materials and students view this.	
Precondition	Teacher&student should registered their account and teacher provide educational materials	
Success End Condition	Teacher provide many educational materials and any registered student can view this.	
Failed End Condition	Teacher do not provide any educational materials and student can not view this.	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Not applicable	
Main Success Flow	**Step**	**Action**
	1	Teacher,student sign up for create an account
	2	Teacher provide many educational materials like notes or tuitorial
	3	Student can view this materials
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 11

Use case	Capture teacher's & student's information	
Goal	Co-ordinator officer capture teacher's & student's valid information	
Precondition	Teacher&student should registered their account with valid information	
Success End Condition	Teacher& students provide valid information and co-ordinator capture these information.	
Failed End Condition	Teacher & student do not provide valid information and co-ordinator show error.	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Not applicable	
Main Success Flow	**Step**	**Action**
	1	Teacher,student sign up for create an account
	2	Teacher,student provide Valid information in their profile
	3	Co-ordinator capture all information
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 12

Use case	Manage teacher	
Goal	Co-ordinator officer manage teacher	
Precondition	Not applicable	
Success End Condition	Co-ordinator officer manage teacher who is need for this system.	
Failed End Condition	Co-ordinator officer do not manage teacher	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Not applicable	
Main Success Flow	**Step**	**Action**
	1	Co-ordinator select many teacher for this system
	2	He contact with these teacher
	3	He should know that these teachers are actually need for this system
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 13

Use case	Manage Students	
Goal	Co-ordinator officer manage students	
Precondition	Not applicable	
Success End Condition	Co-ordinator officer manage students who use this system.	
Failed End Condition	Co-ordinator do not manage students	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Not applicable	
Main Success Flow	**Step**	**Action**
	1	Co-ordinator select many students for this system
	2	He contact with these students
	3	He should know that these students are actually use this system
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 14

Use case	Update Exam time	
Goal	Co-ordinator officer update exam time in this system	
Precondition	Not applicable	
Success End Condition	Co-ordinator officer update all type of exam and show this.	
Failed End Condition	Co-ordinator do not update exam time	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger		
Main Success Flow	**Step**	**Action**
	1	Co-ordinator sign up his account
	2	He should know and mange exam time
	3	He go to control panel
	4	He update all exam time
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 15

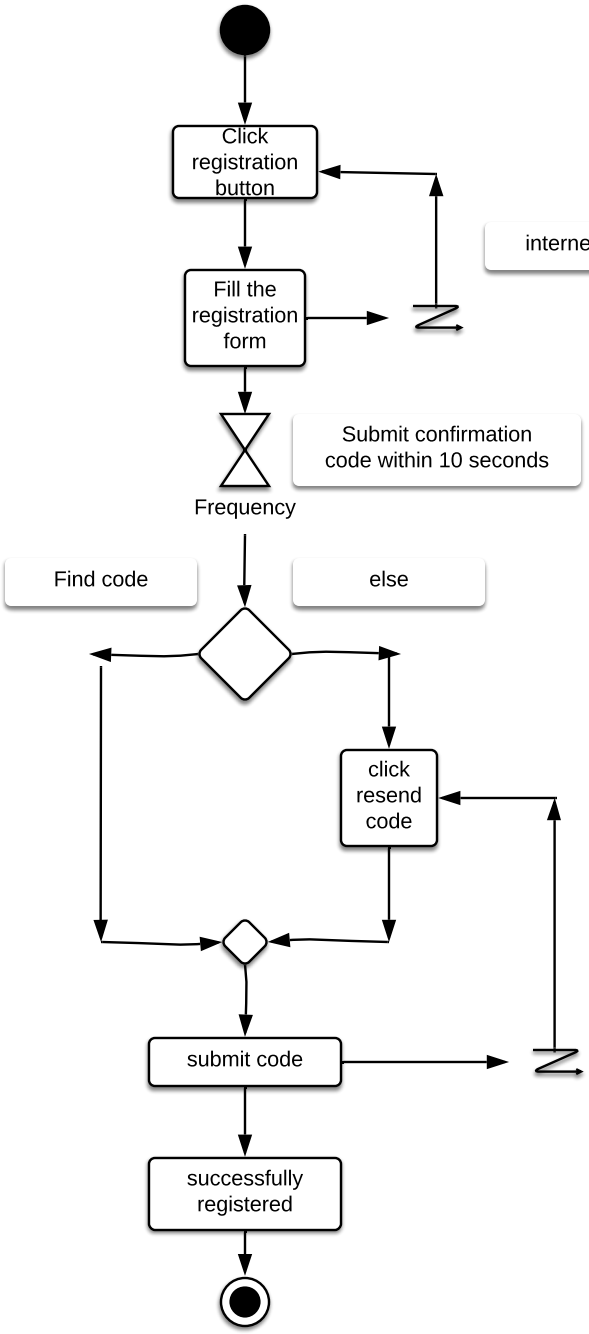
Use case	Display notification	
Goal	Co-ordinator officer display a notification of duration time in quick exam	
Precondition	Not applicable	
Success End Condition	Co-ordinator officer display a notification about duration time and always update this.	
Failed End Condition	Co-ordinator do not display a notification	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Not applicable	
Main Success Flow	**Step**	**Action**
	1	Co-ordinator sign up his account
	2	He should know and mange exam time
	3	He display a notification for quick and always update this
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Requirements**
		Not applicable

Use Case Description 16

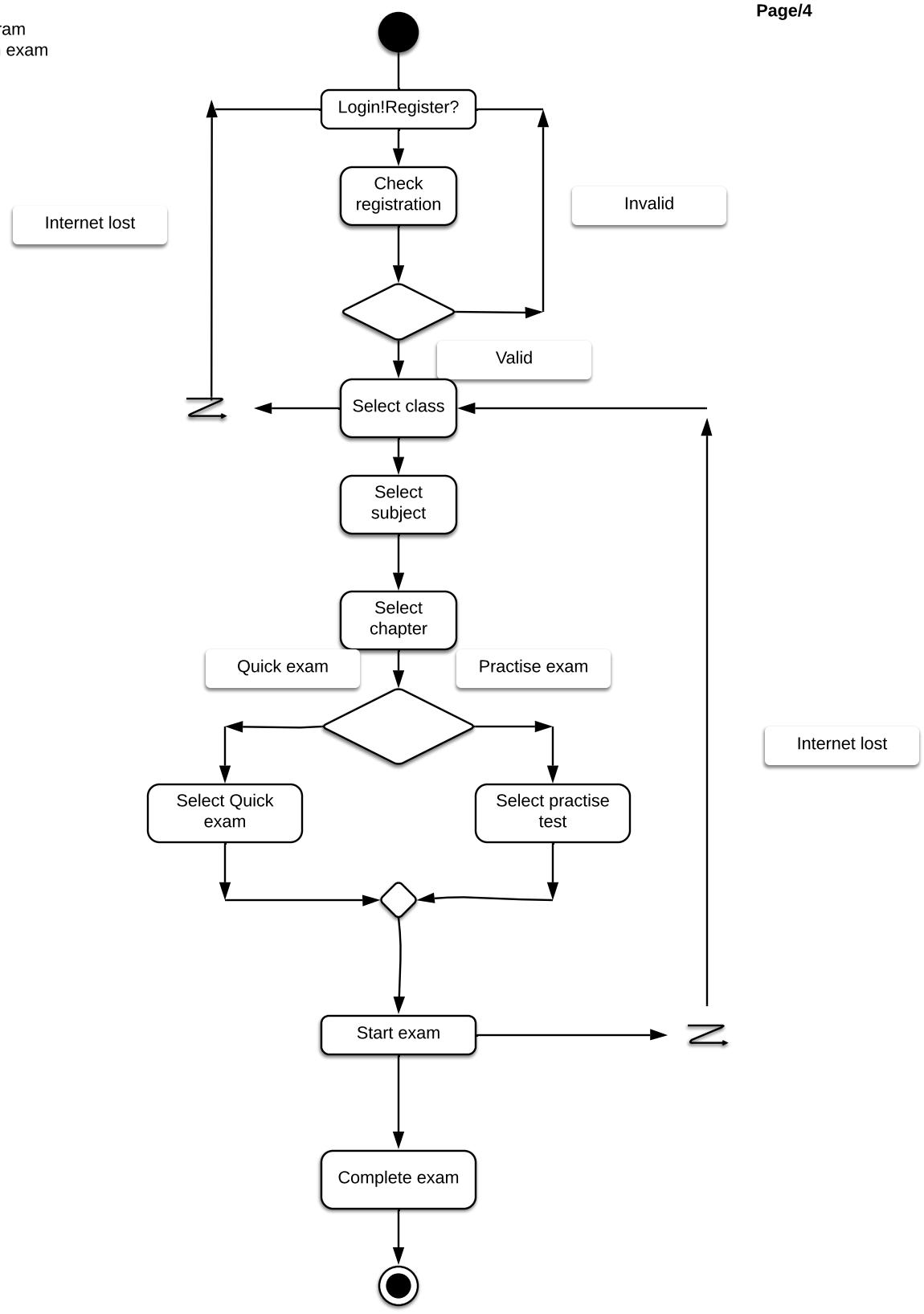
Use case	Change password	
Goal	Students,teachers & change their password.	
Precondition	Students & teachers registered account	
Success End Condition	Student and teacher change their password with their valid contact number or email	
Failed End Condition	Student and teacher cannot change password for invalid contact number or email	
Primary Actor	Students and Teachers	
Secondary Actor	Co-ordinator Officer	
Trigger	Press update password	
Main Success Flow	**Step**	**Action**
	1	Students or Teachers sign up for create an account
	2	They change password with contact number or email
	3	System capture teacher's and student's password
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Action**
		Not applicable

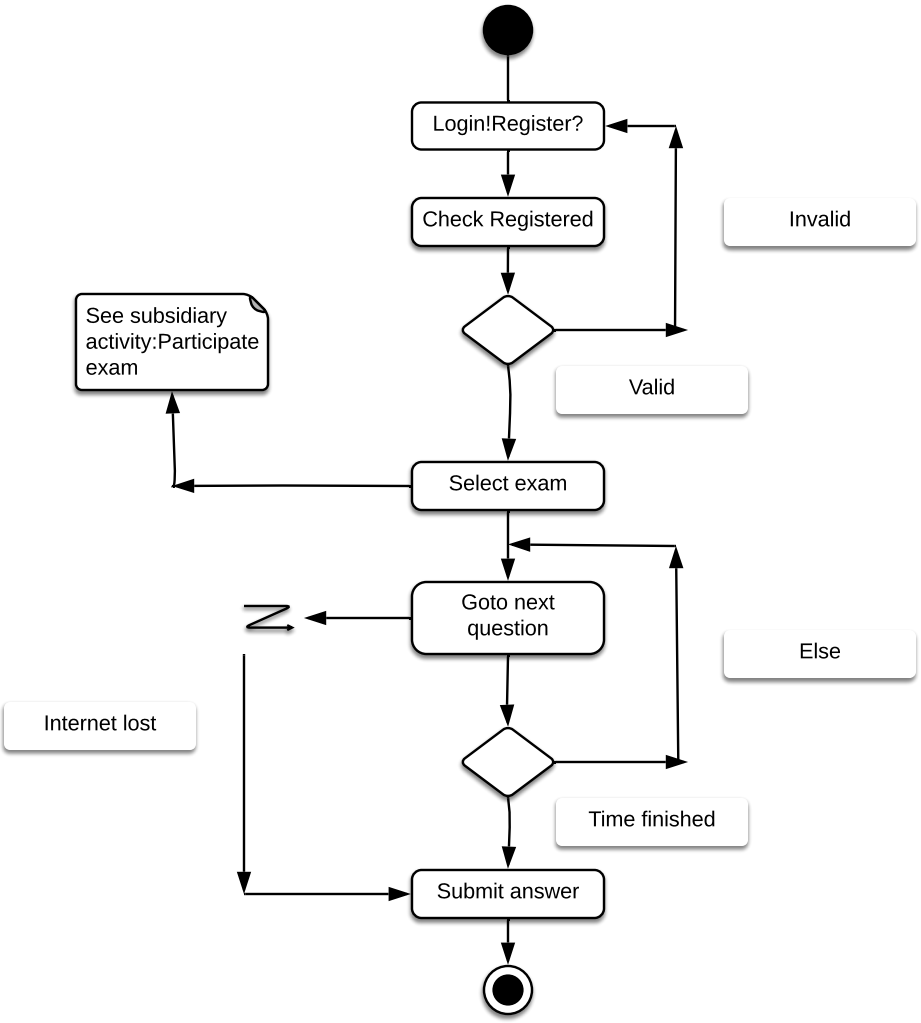
Use Case Description 17

Use case	Calculate Result	
Goal	Co-ordinator officer calculate result	
Precondition	Students participate exam	
Success End Condition	Student Participate an exam and co-ordinator officer calculate result	
Failed End Condition	Student do not participate any exam	
Primary Actor	Students	
Secondary Actor	Co-ordinator Officer	
Trigger	Not applicable	
Main Success Flow	**Step**	**Action**
	1	Student log in with user name and password
	2	He/she participate any exam
	3	Co-ordinator officer calculate student's result
Alternative Flow	**Step**	**Action**
		Not applicable
Quality Requirements	**Step**	**Action**
		Not applicable

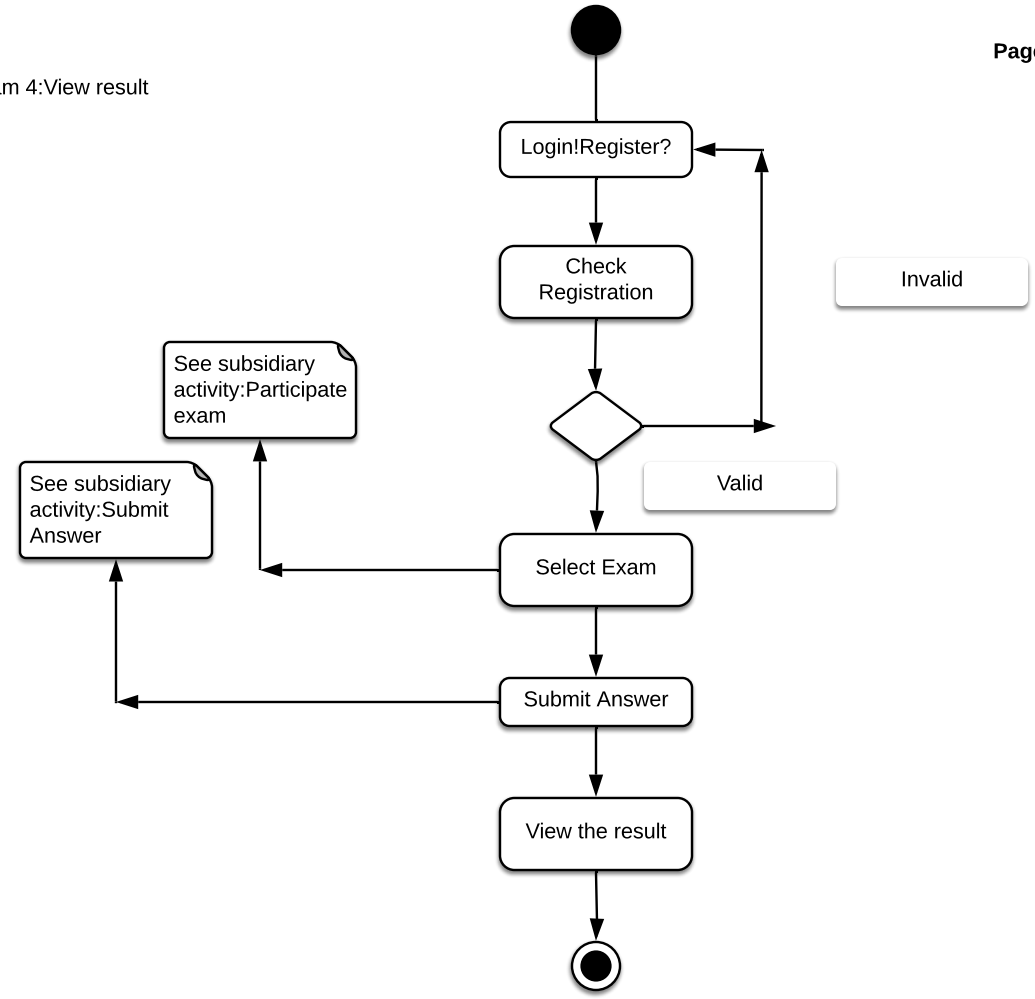

Click registration button
internet lost
Fill the registration form
Submit confirmation code within 10 seconds
Frequency
Find code
else
click resend code
submit code
successfully registered

Activity diagram
2:Participate an exam

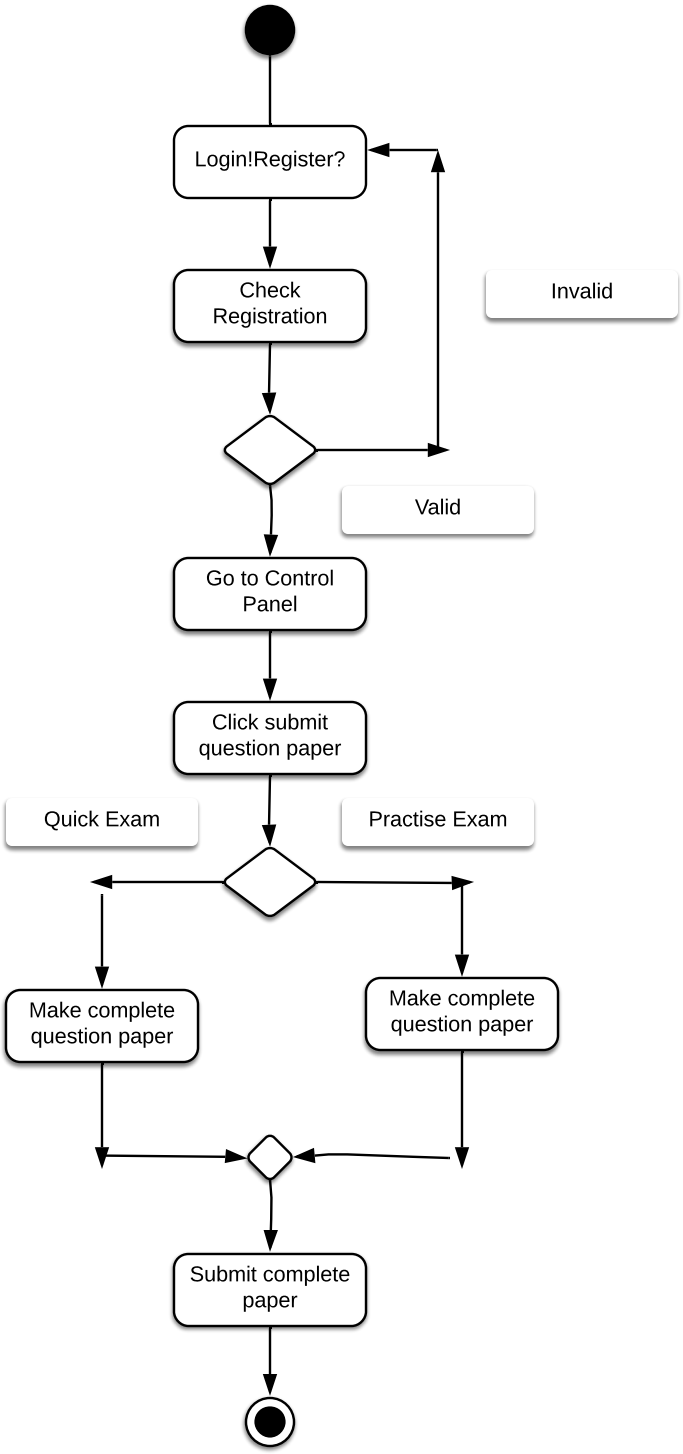



Login!Register?
Check Registered
Invalid
See subsidiary activity:Participate exam
Valid
Select exam
Goto next question
N
Else
Internet lost
Time finished
Submit answer

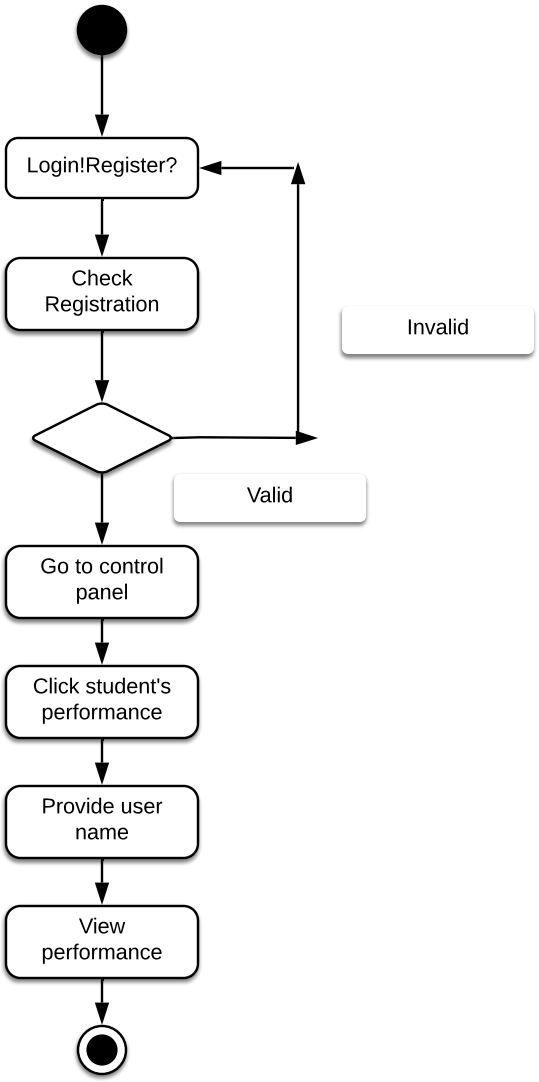
Activity diagram 4:View result



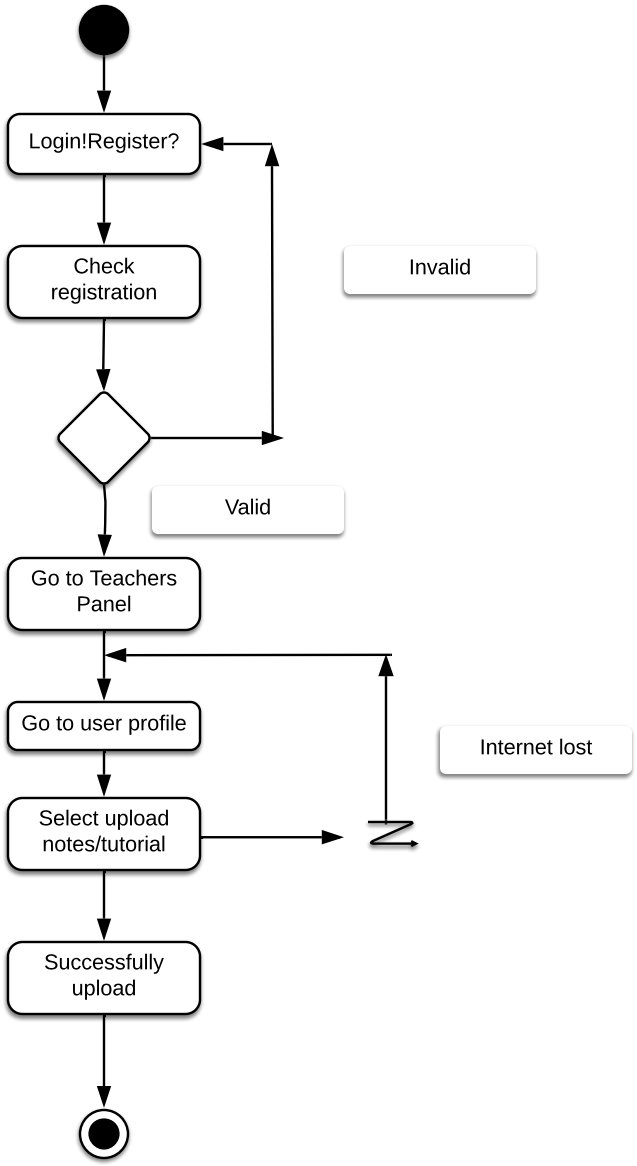
Activity diagram 5:Make an exam



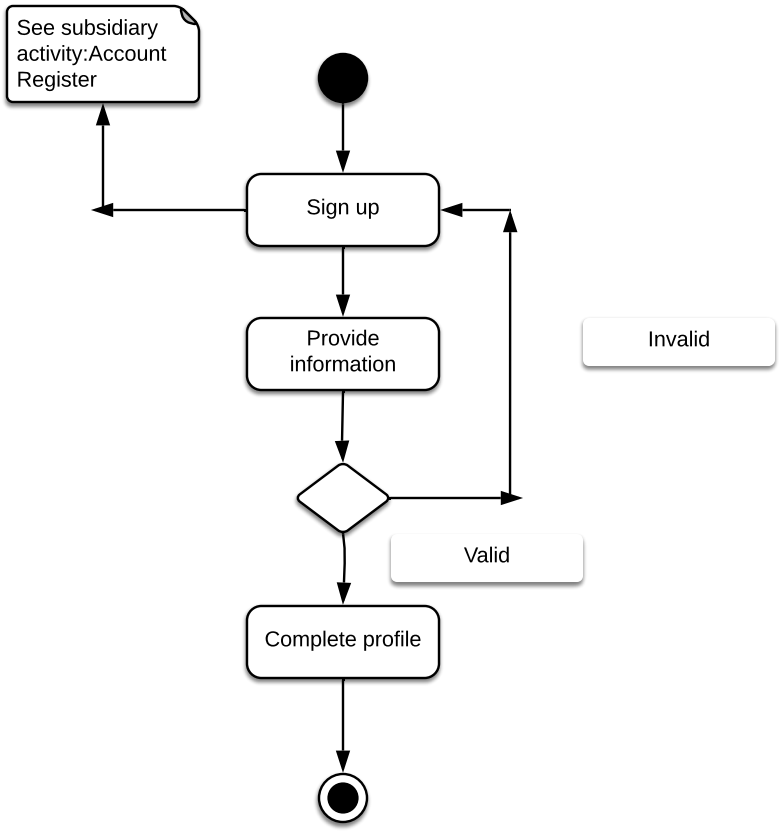
Activity diagram 6:
Monitor student's result



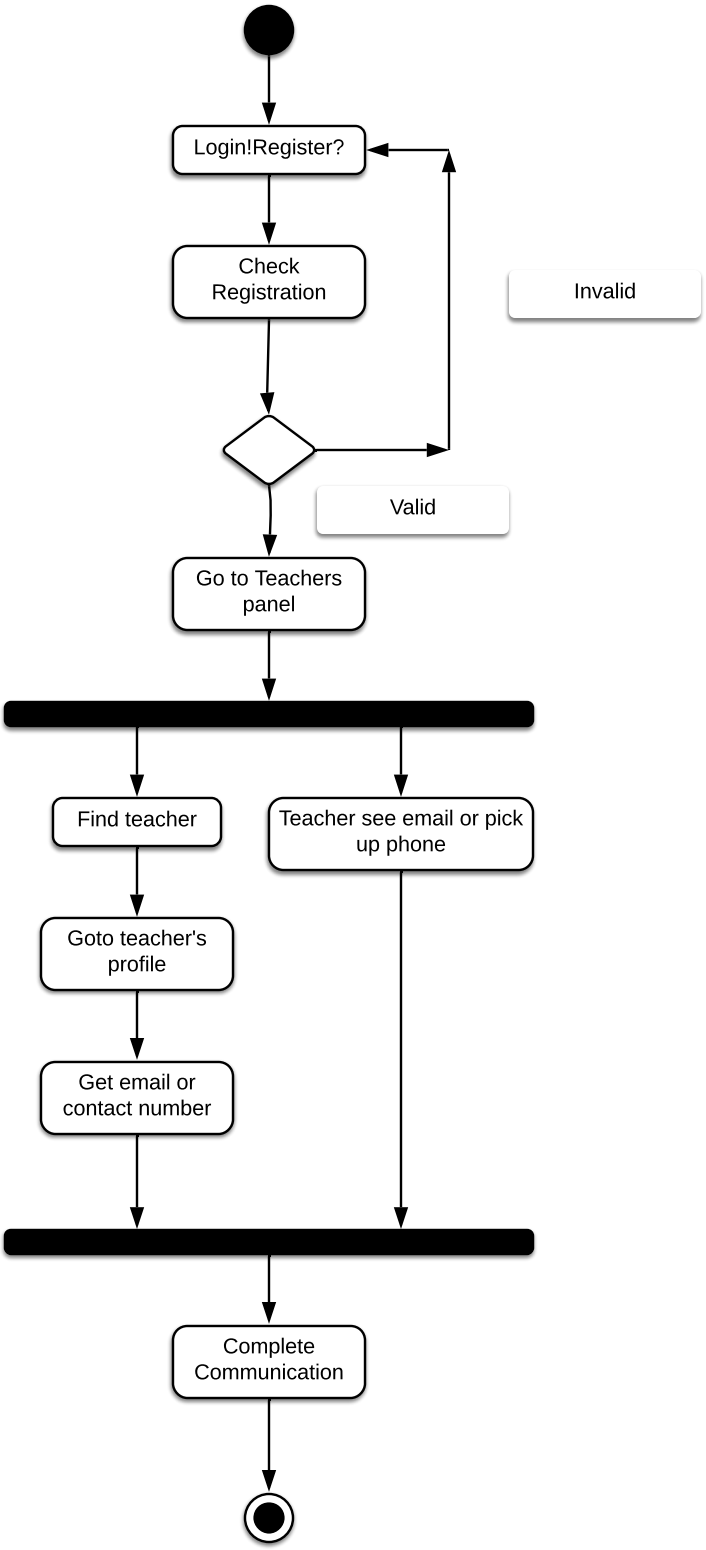
Activity diagram 7 :Provide educational materials



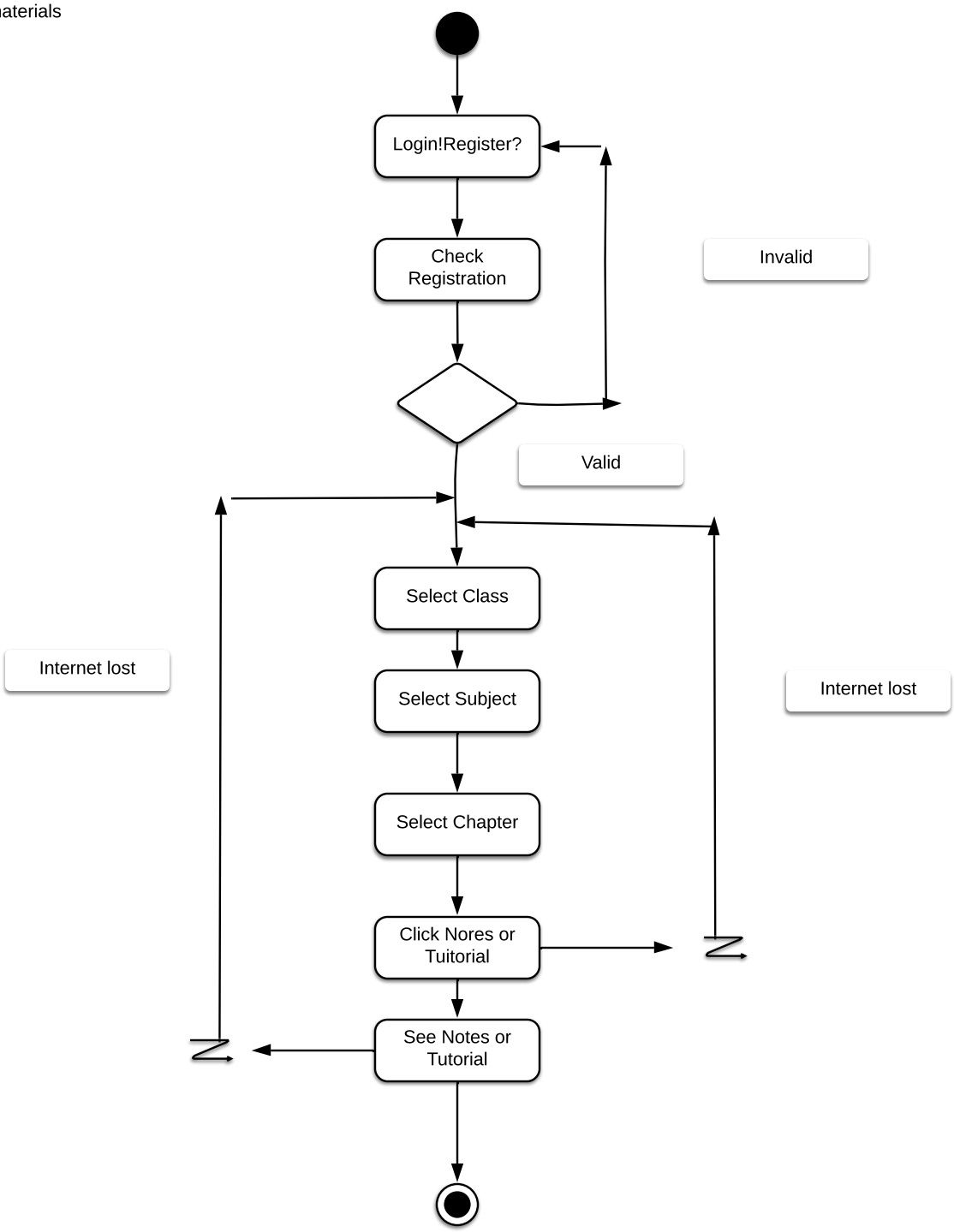
Activity diagram 8
:Create user profile



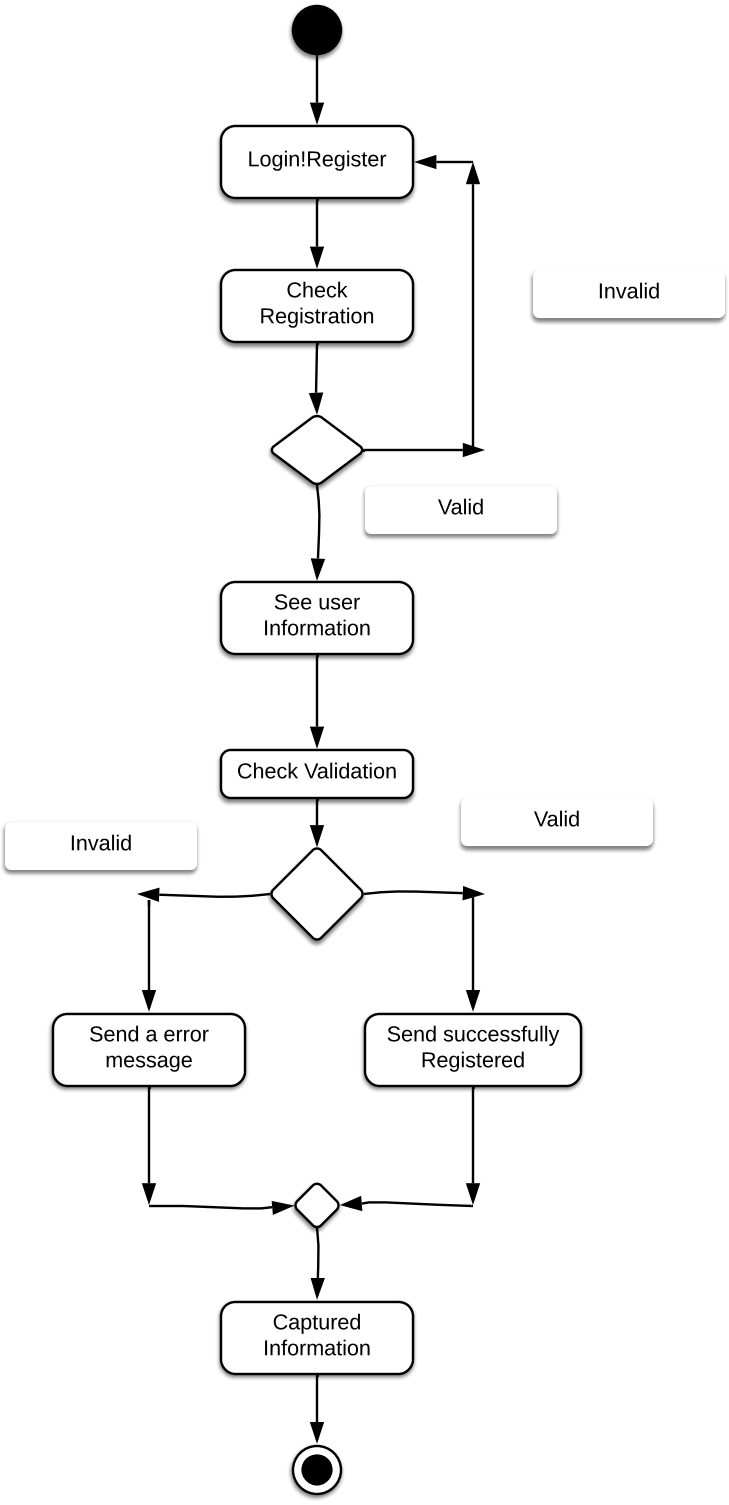
Activity diagram 9 : Contact with any teacher

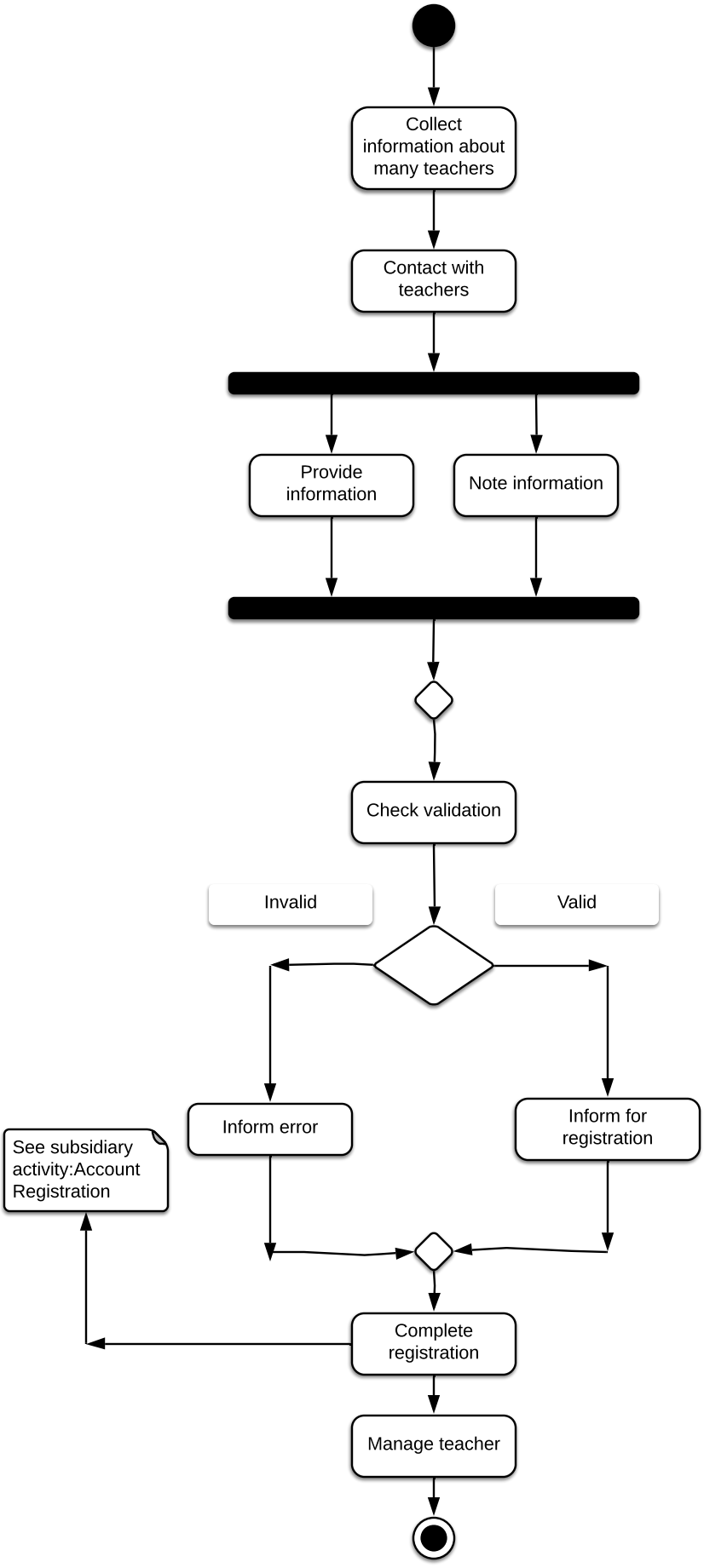


Activity diagram 10 : View educational materials

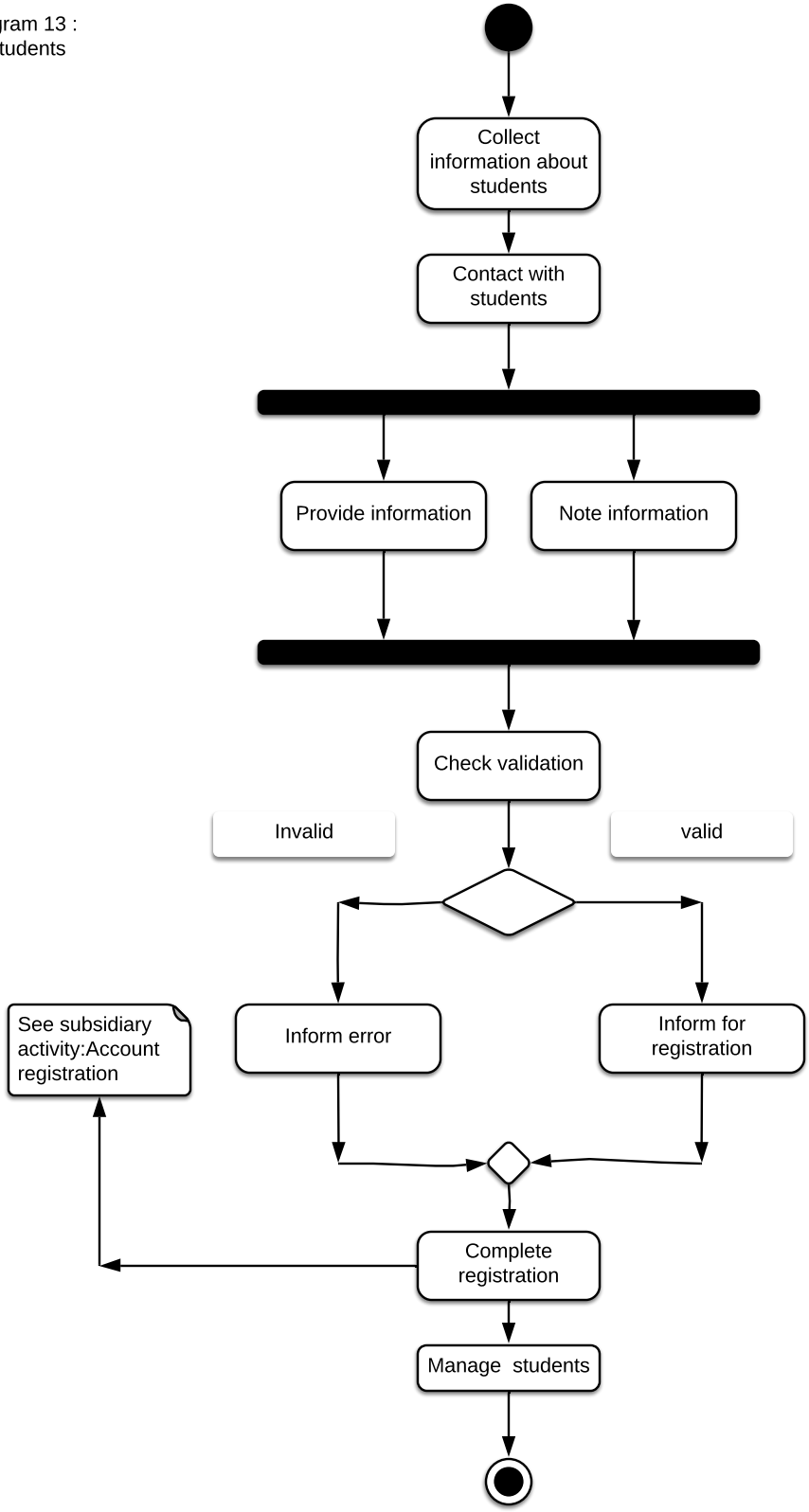


Activity diagram 11 :Capture information

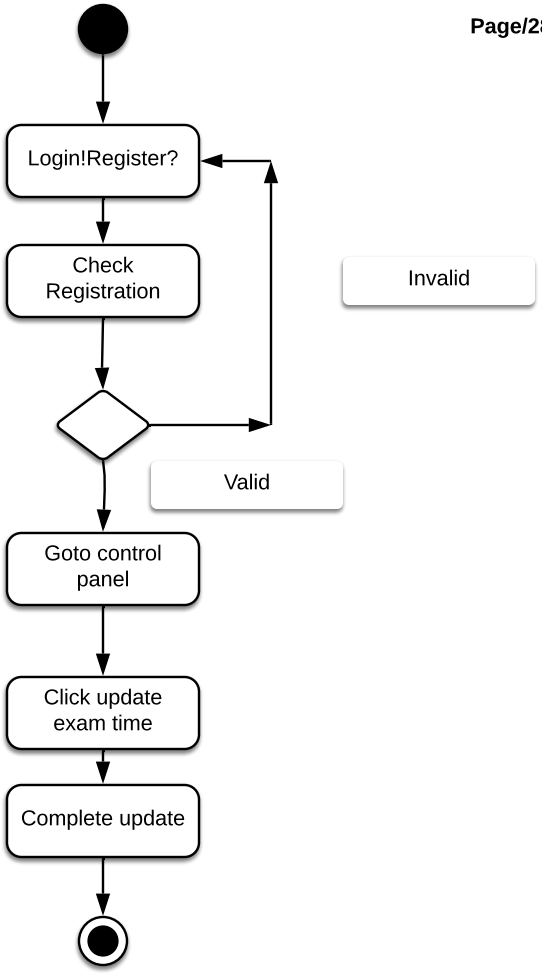



Collect information about many teachers
Contact with teachers
Provide information
Note information
Check validation
Invalid
Valid
Inform error
Inform for registration
See subsidiary activity:Account Registration
Complete registration
Manage teacher

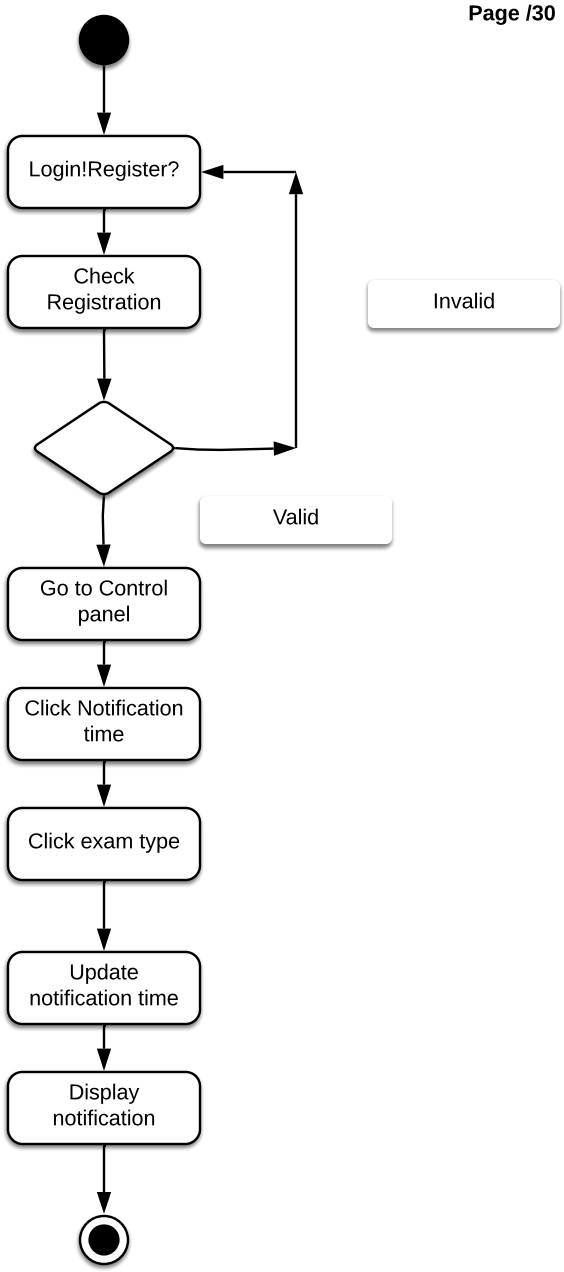
Activity diagram 13 :
Manage Students



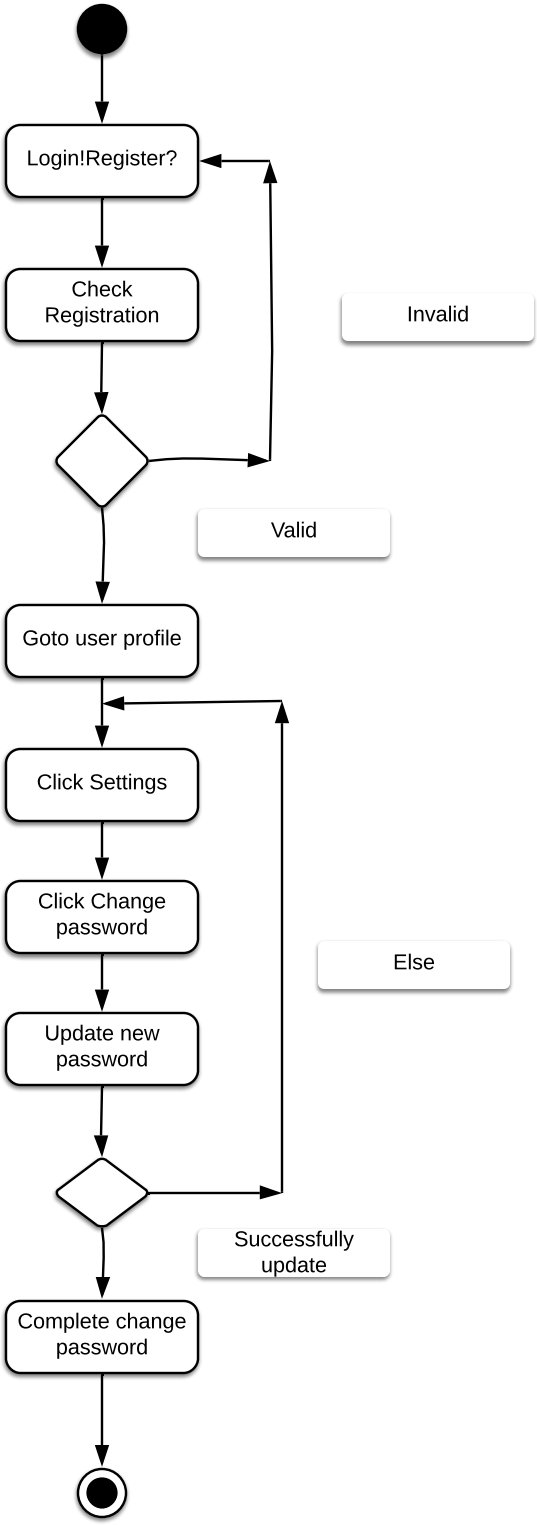
Activity Diagram 14:Update Exam Time



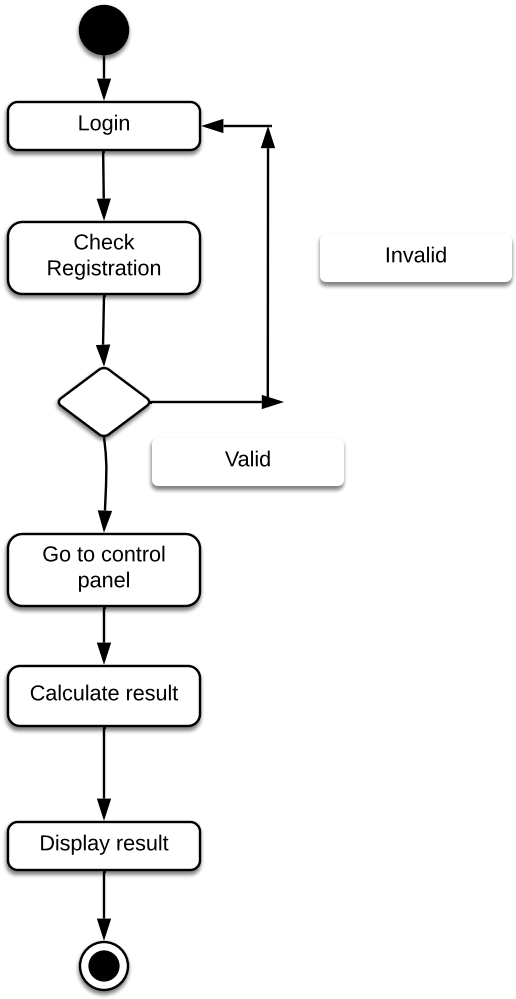
Activity diagram 15:Display notification



Activity diagram
16:Change Password



Activity diagram 17 :
Calculate result



Requirement Traceability Matrix

Business Requirements:

BR#	Business requirements
BR1	Participate an exam.
BR2	Student answer all question and submit answer and view this.
BR3	Teacher and co-ordinator make an exam.
BR4	Teacher and co-ordinator view student's performance.
BR5	Teacher provide educational materials.
BR6	Teacher,Student and co-ordinator provide valid information for registration and create profile.
BR7	Student contact with any teacher.
BR8	Student view educational materials.
BR9	Co-ordinator officer capture valid information
BR10	Co-ordinator officer manage student and teacher.
BR11	Co-ordinator update exam time and display notification.
BR12	Co-ordinator calculate student's result.

Test Case:

Test case No	Test case
TC1	Login with valid user id & password.
TC2	Select class(class 9),subject(Physics) & chapter(Vector).
TC3	Select Exam type(quick exam or practice test).
TC4	Click answer from question's option in duration time.
TC5	Submit answer in question.
TC6	Go to control panel.
TC7	Upload question paper successfully.
TC8	Click Student's performance.
TC9	Click teachers panel.
TC10	Go to user profile.

TC11	Upload educational materials successfully.
TC12	Provide valid information.
TC13	Find teacher’s contact number or email.
TC14	Teacher pick up phone or view email.
TC15	Click notes or tutorial.
TC16	Capture information
TC17	Contact with teacher
TC18	Inform teacher to register
TC19	Contact with student
TC20	Inform student to register.
TC21	Update exam time.
TC22	Display notification
TC23	Calculate result
TC24	Display result.

Requirements Traceability Matrix

Project Name		Online Exam System,Exam Paper	Business Area		Educational Field			
Project Manager		Nowal,Anwar,Faisal,Azad,Akash	Business Analyst Lead		Nowal Benta Basher			
QA Lead		Anwar Kabir	Target Implementation Date		4/11/2019			
BR#	**Category/Functional Activity**	**Requirement Description**	**Use Case Reference**	**Design Document Reference**	**Code Module/ Reference**	**Test Case Reference**	**User Acceptance Validation**	**Comments**
BR-01	Mandatory	Student registered his account.Then he login with his user name & password.After login he select class,subject and chapter.Then he select exam type(quick exam or practise test).After selecting exam he can participate an exam	UC2				Verified	
BR-02	Mandatory	Student login with his user name & password.After login he select class,subject and chapter.Then he select exam type.After selecting the exam is started.Then he answer all question in during time.	UC3				Verified	
BR-03	Mandatory	Student select class,subject and chapter.Then he select an exam.After selecting he can participate an exam and answered all questions in during time .Then he click submit button to submit answer.	UC4				Verified	
BR-04	Should have	Teacher registered his account and then login this system.He goto control panel and then select exam type.After selecting exam type he can upload a question paper successfully	UC5				Verified	
BR-05	Should have	A student participate in any exam and submit answer.Then a registered teacher goto control panel and see student's performance	UC6				Verified	
BR-06	Should have	A registered student participate in any exam and submit answer.Then co-ordinator officer goto control panel and see student's performance	UC6				Verified	
BR-07	Mandatory	A registered co-ordinate officer go to control panel and select exam type.Then he upload a question paper successfully	UC5				Verified	
BR-08	Mandatory	A registered teacher goto his profile.Then he upload educational materials like notes or tutorial.Again he can goto teachers panel and find his profile and then upload these successfully.	UC7				Verified	
BR-09	Mandatory	Teacher,Student and Co-ordinate officer provide valid information to register account and create profile	UC1 & UC8				Verified	
BR-10	Should have	A registered student can contact with any teacher.In teacher panel teacher give his contact number or email.A student can communicate a teacher via contact number or email	UC9				Verified	
BR-11	Should have	A registerd student view others educational materials like notes or tutorial.	UC10				Verified	
BR-12	Mandatory	A co-ordinator officer capture registered teacher and student's information.He also check validation of these information	UC11				Verified	
BR-13	Mandatory	A co-ordinator officer contact with many teacher and inform them to register.That means co-ordinator officer mange teacher	UC12				Verified	
BR-14	Mandatory	A co-ordinator officer collect information about students and inform them to register this system.That means co-ordinator manage student	UC13				Verified	
BR-15	Mandatory	A co-ordinator officer goto control panel and then he update all exam time and show this.	UC14				Verified	
BR-16	Mandatory	A co-ordinator officer go to control panel and set notification for quick exam to display duration time.In exam time a notification will display for quick exam.	UC15				Verified	
BR-17	Mandatory	A registered student perticipate an exam.Then a co-ordinate officer calculate his result and display this.	UC17				Verified	