Software Design and Architecture Report of Exam Paper

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Contents

1. Project name: Exam paper

1.1Introduction:

"Exam Paper" is one type of online exam system. It takes an Exam according to the NCTB syllabus, also provide tutorial and class notes for all topic. This "Exam Paper" has two sections: i) Quick Exam ii) Practice Test. It takes 20 minutes in Quick exam and 50 minutes for the Practice exam. At first one need to sign up with the name, email, mobile number, institution name, and confirmation code. An existing user can log in with a user name and password.

This online examination system which is to effectively evaluate the student thoroughly through a totally automated system that not only reduces the required time but also obtains fast and accurate results. Students can see the teacher's educational material so that they can cover up their problems with a specific topic.

1.2 Project Scope

The project would be very useful for educational institutions where the 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.

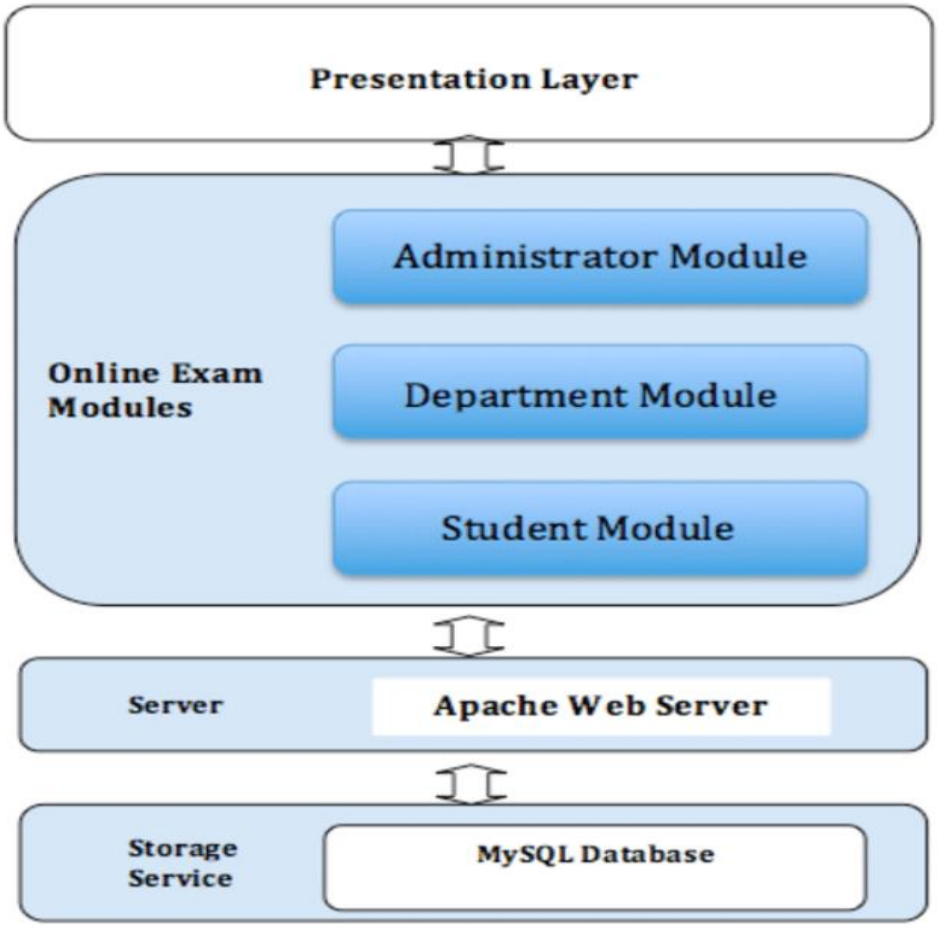
- SRS – Software Requirement Specifications
- UI – User Interface
- SDLC – Software Development Life Cycle
- GUI – Graphical User Interface
- API – Application Programming Interface

2. Architectural Representation

This document presents the architecture as a series of views. the use case view, logical view, process view, and deployment view. There is no separate implementation view described in this document. These are views on an underlying Unified Modeling Language (UML) model. This Exam paper contains many key objectives like

- Admin make an exam
- Student can participate an exam
- Students attend online exam
- Provide study materials by the teacher
- Update exam time
- Monitors student results etc.

2.1 Architecture of Exam paper



2.1.1 Data design of Exam Paper

Client: Client was Web Browser, which executed the framework's showcase rational. The capacity was to send demand to the web server through the web programs by the clients (instructors or understudies). While the Web Server return the asked for HTML pages or HTML pages powerfully created by JSP page to the customer, which were appeared in the Web program.

Business Logic Tier: Business rationale level was accomplished primarily by JSP and JavaBeans running the JSP Engine. It reacted to customer demands and accomplished the business rationale with the Web Server. Furthermore, control information, for example, client information. MS ACCESS was utilized to accomplish the information level. The JSP Tomcat, an open source programming, was utilized as the JSP Engine and Web Server

Information Tier: Data level was acknowledged with database framework, used to store the business information, for example, inquiries and papers improvement model in view of Model 1 is extremely suitable for snappy and little scale application advancement

2.2 Architectural Use case Diagram

Fig:01 Architectural use case

Some Architectural use case descriptions are given below

2.2.1 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

2.2.2 Student 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

2.2.3 Student can 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

2.2.4 Student and teacher both can see the 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

2.2.5 A teacher can 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

2.2.6 The teacher can monitor student 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

2.3 Architectural Requirements

Stakeholders have any type of requirements like

- Functional requirements
- Non-functional requirements
- Data requirements

All the use case is one kind of Functional requirement, describe these.

- Students select the subject for an exam
- Students select any chapter for an exam
- Students can submit the answer
- Students view result
- Students can contact any teacher
- Students can view other educational materials
- Teachers can manage an exam
- Teachers provide other educational materials
- Co-ordinate officer captures teacher's and student information
- Co-ordinate officer manages teachers
- Co- ordinate officer to manage students
- Co-ordinate officer manages question paper
- Co ordinate officer to manage student's result
- Co-ordinate officer update exam time
- Co-ordinate officer display a notification of duration time in the quick exam

This paper also contains some non-functional requirements and data requirements also.

- Types of entities 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

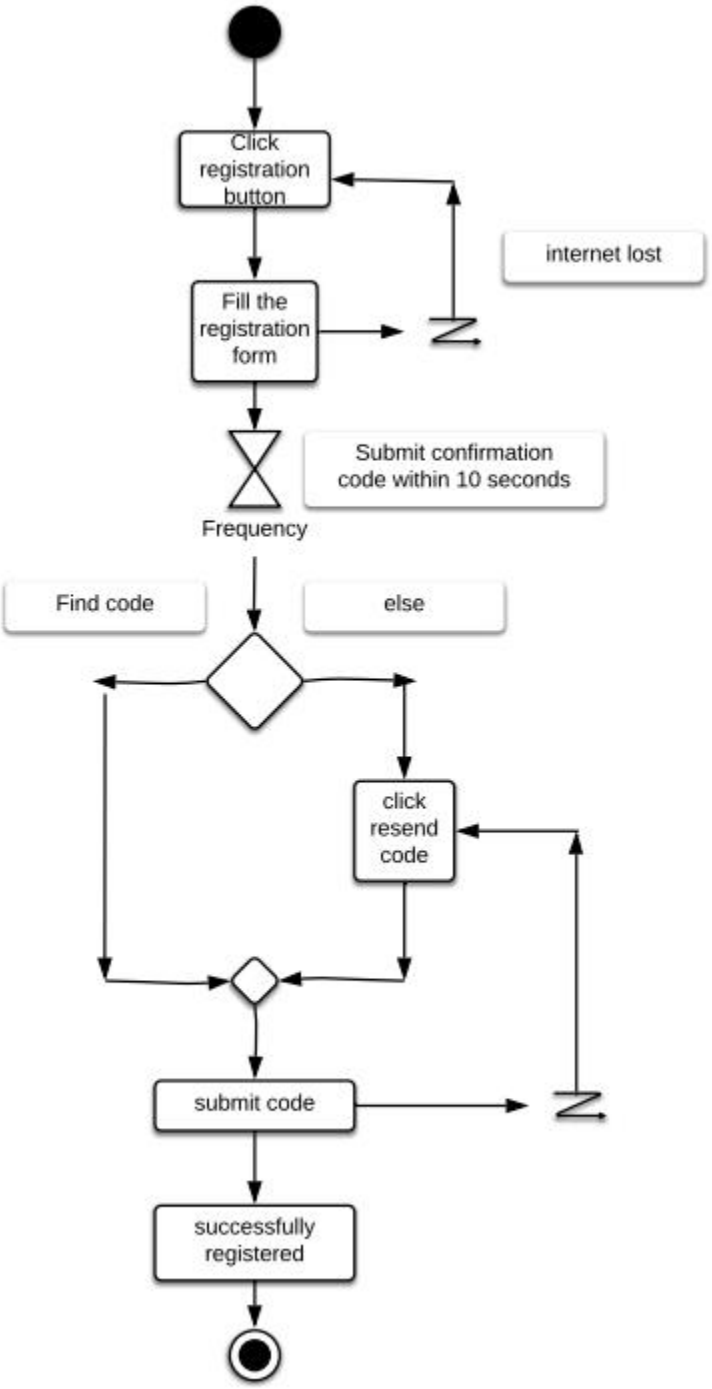
3 Architectural Design Patterns for Exam Paper

- Client-server: Exam Paper follows the client-server architectural pattern. The client sends the request method to the server and based on this request server will be the response.
- Three-tier: Exam paper also follows three-tier patterns because there are client, application, and database.
- Event-Driven Pattern: Event-Driven Architecture is an agile approach in which services of the software are triggered by events. Exam Paper also

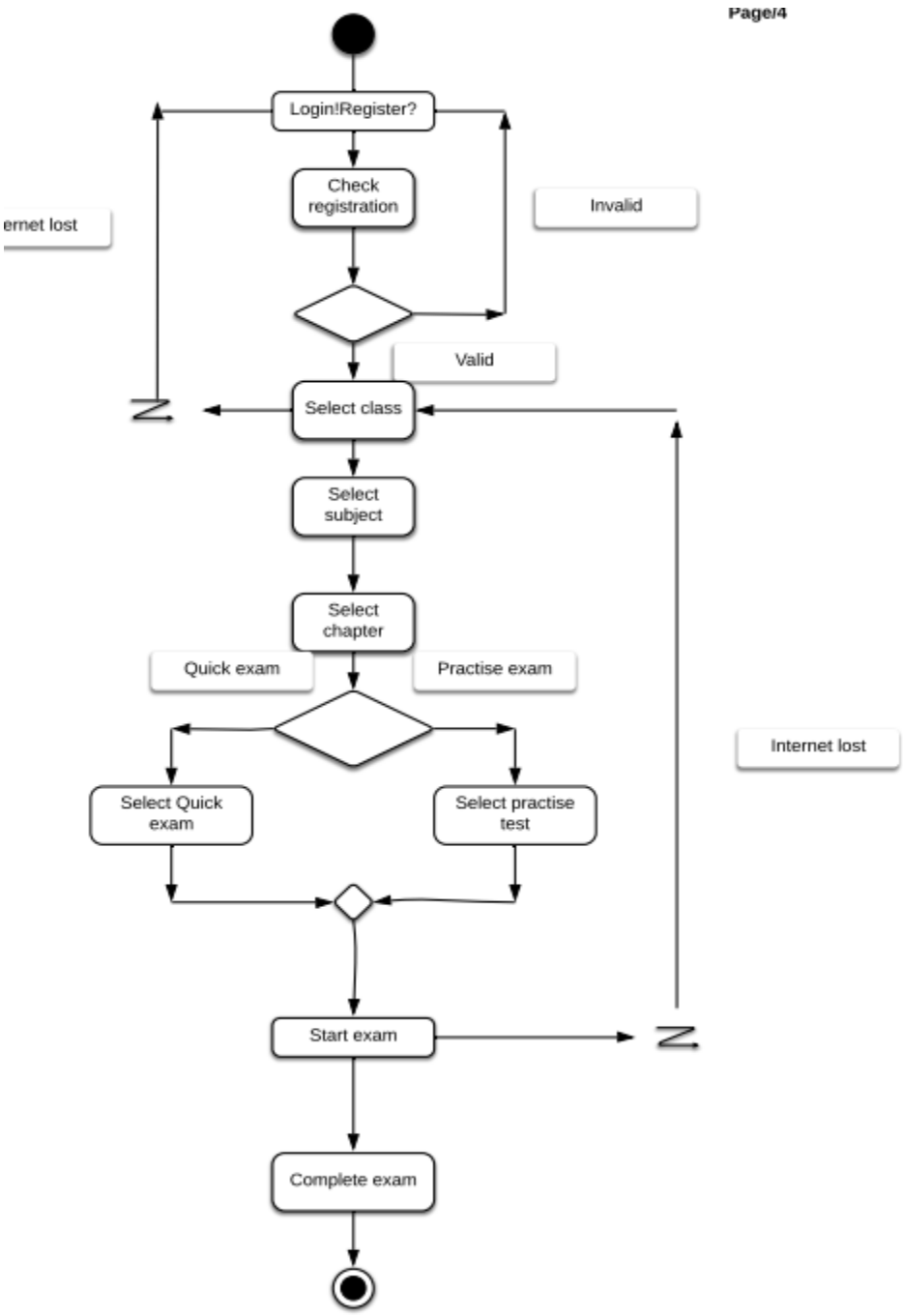
3.1 Architecture Overview

An architecture overview are referring to an activity diagram. An activity diagram is a graphical representation of an executed set of procedural system activities and is considered a statechart diagram variation. Activity diagrams describe parallel and conditional activities, use cases and system functions at a detailed level

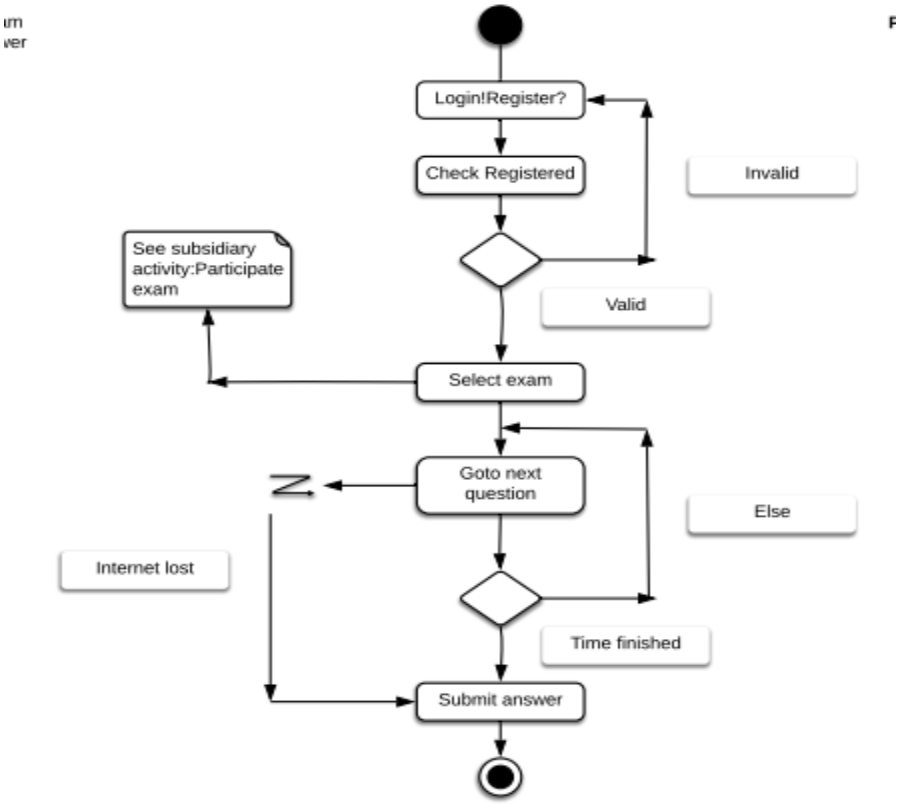
3.1.1 Account Registration



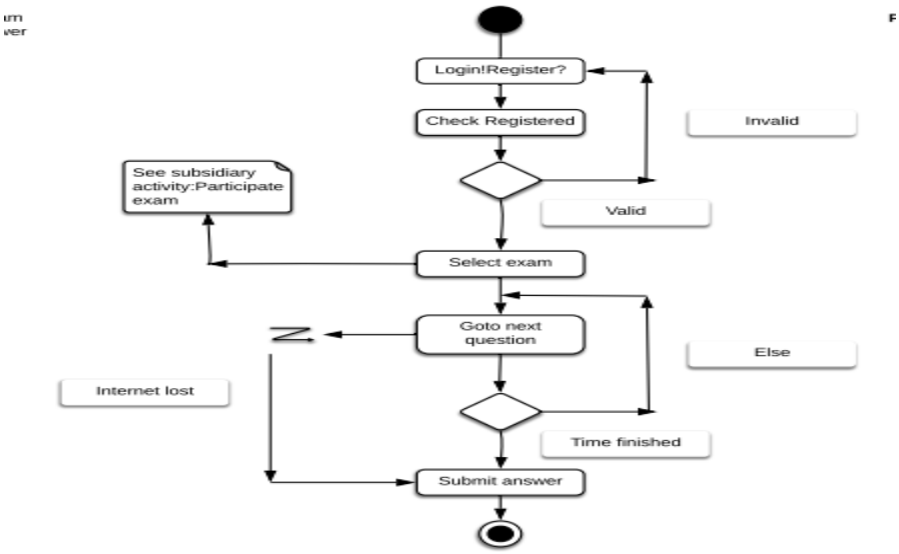
3.1.2 Perticipate an exam



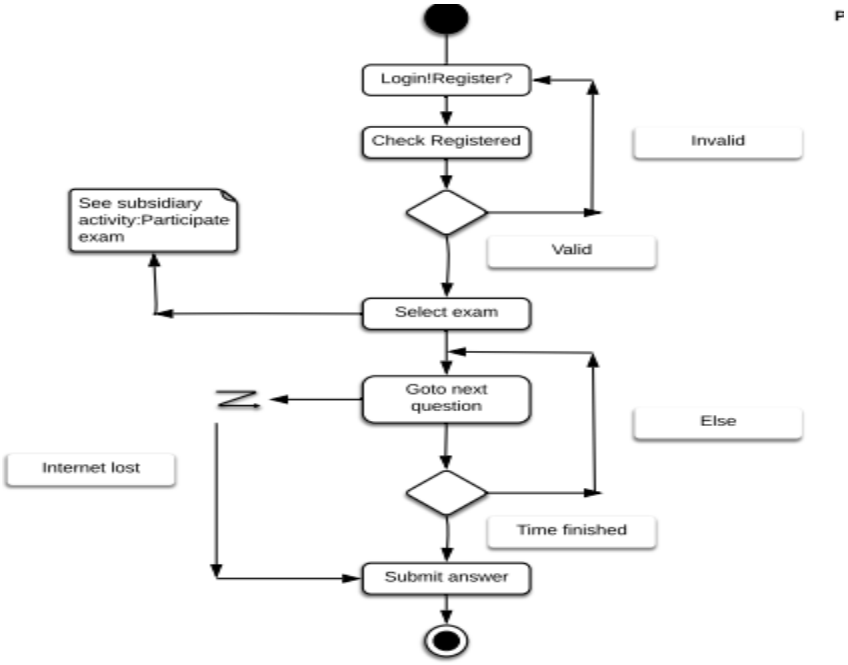
3.1.3 Submit Answer



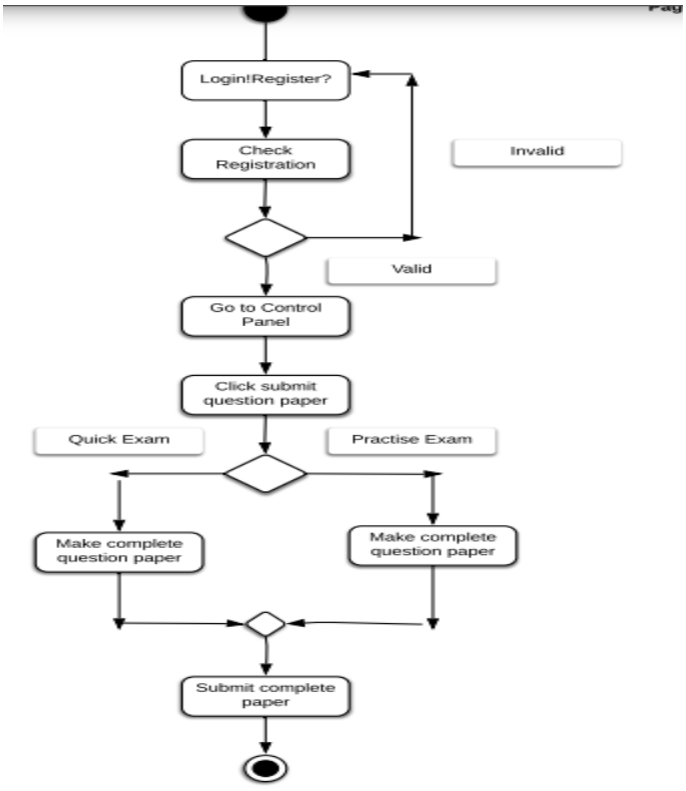
3.1.4 View result



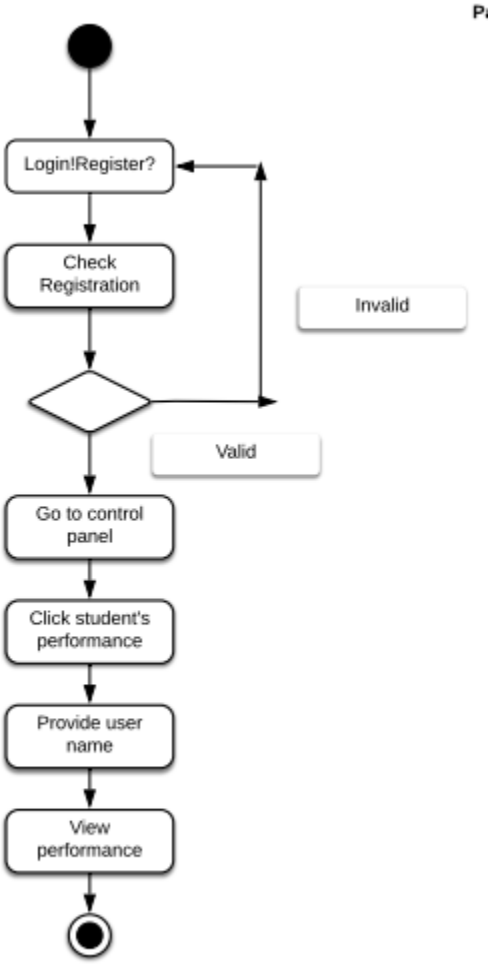
3.1.5 Submit Answer



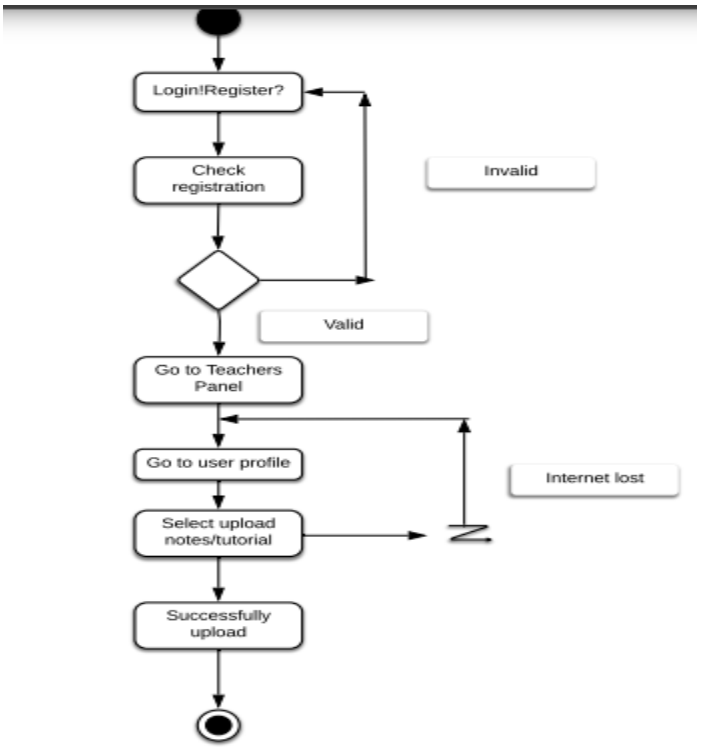
3.1.6 Make an Exam



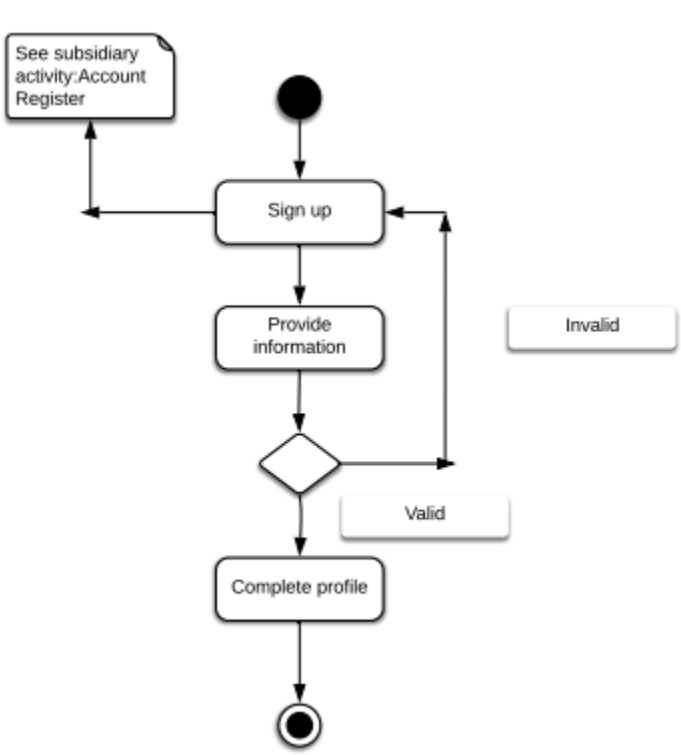
3.1.7 Monitor Student Result



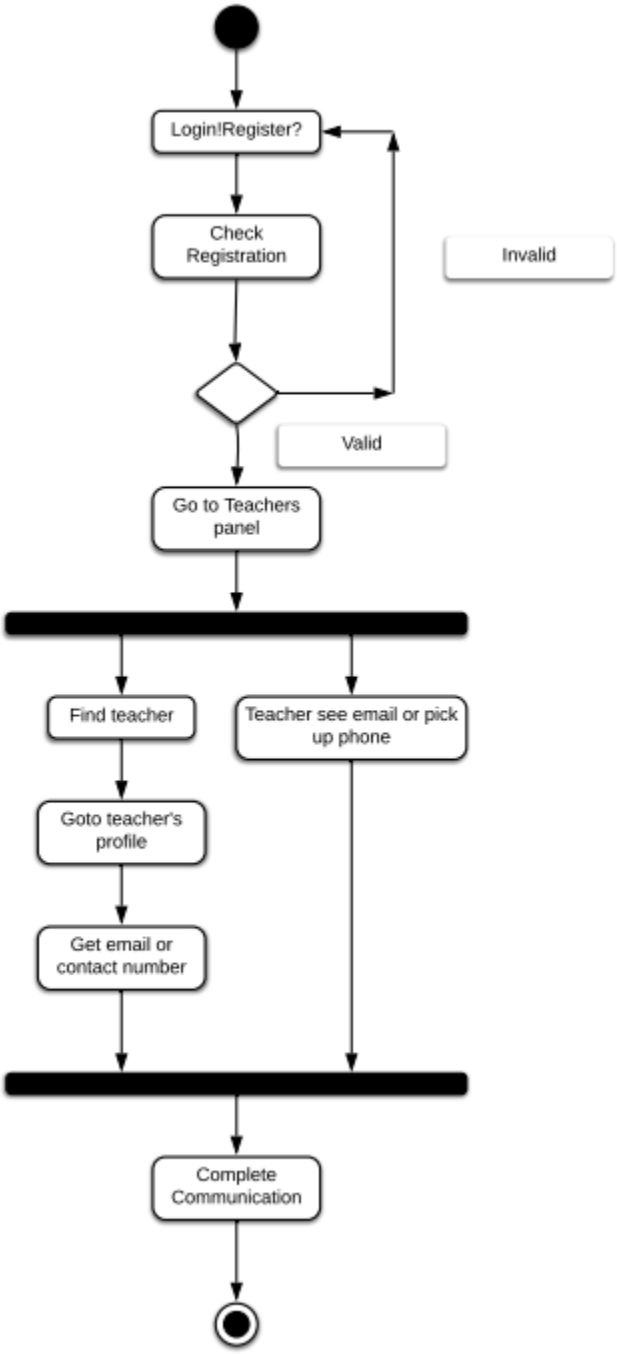
3.1.8 Provide educational materials



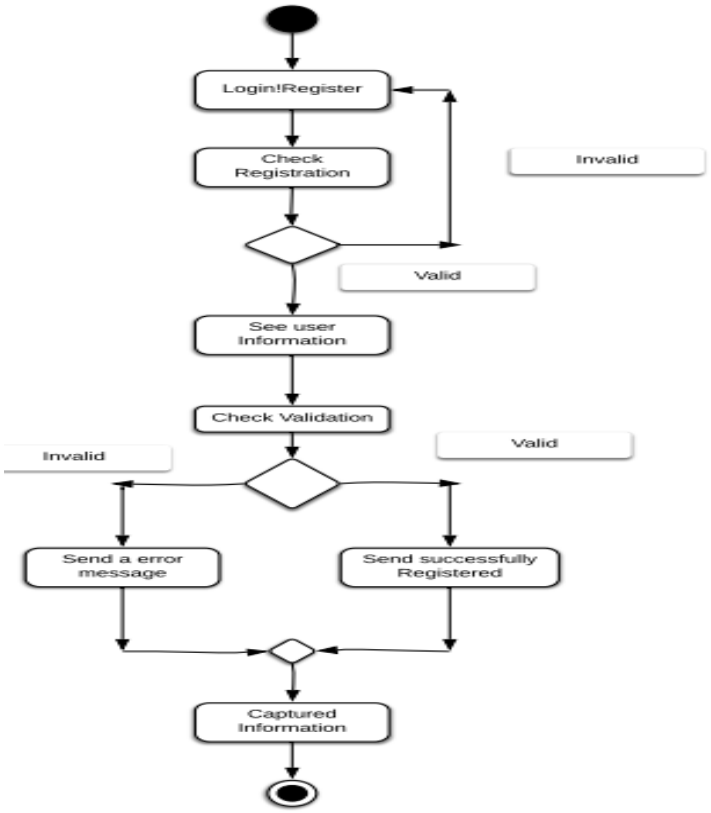
3.1.9 Create User profile



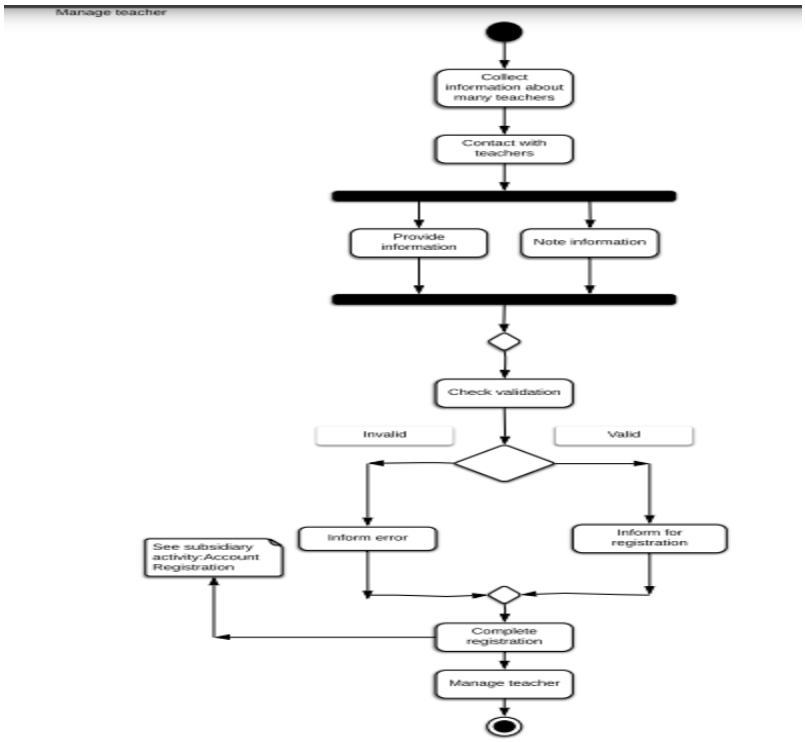
3.1.10 Contract with any teacher



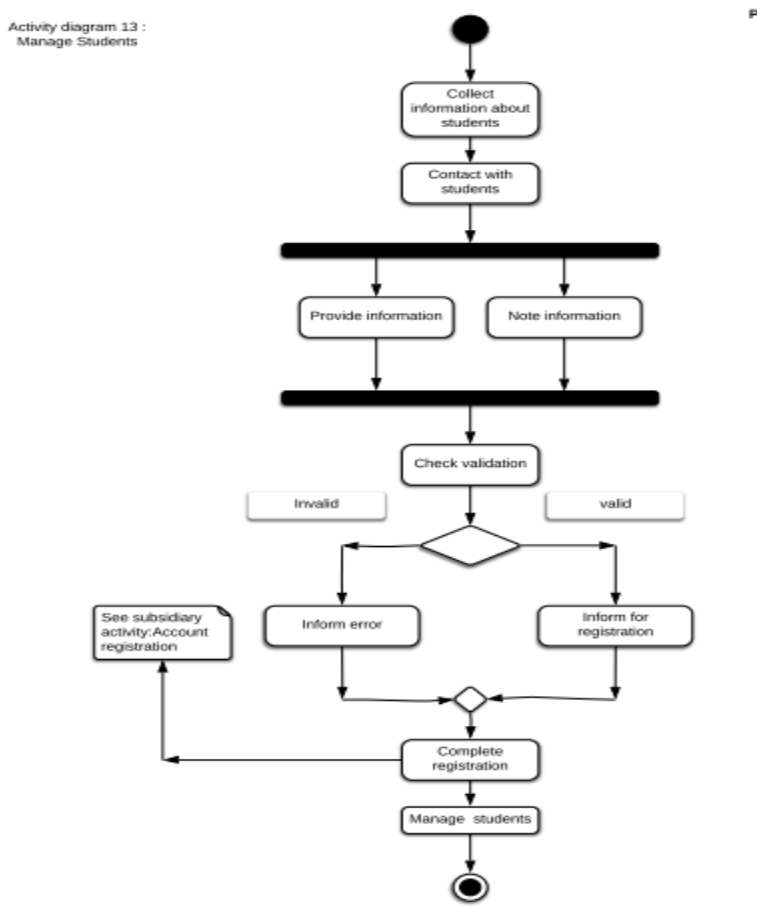
3.1.11 Capture information



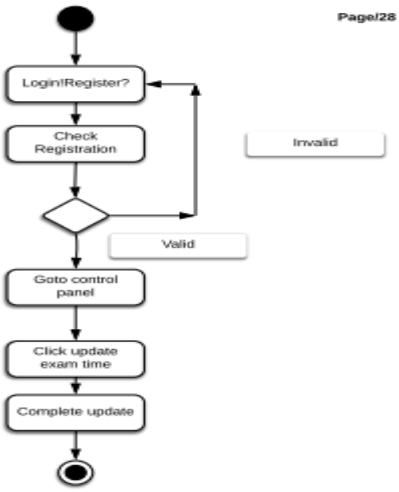
3.1.12 Manage Teacher



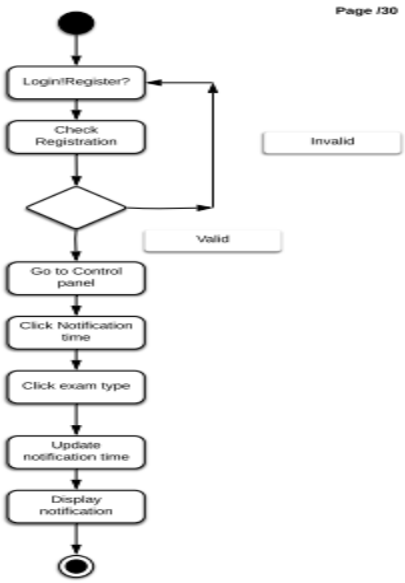
3.1.7 Manage Students



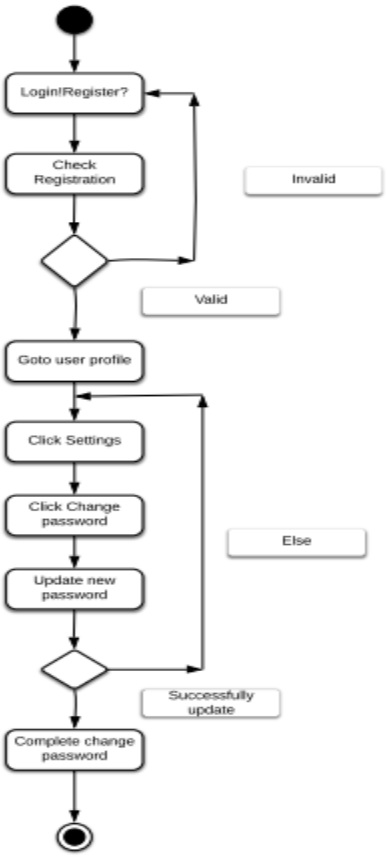
3.1.8 Update exam time



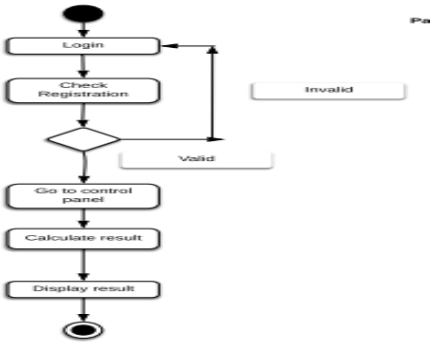
3.1.9 Display Notification



3.1.10 Change Password



3.1.11 Calculate Result



4. Quality Attributes

Availability: Exam paper System will be available to registered students,

faculty 99.9% of the time unless otherwise noted.

Correctness: The system will operate correctly from the user log in and should reach the checkout

page when ready to register.

Maintainability: The system admin shall maintain and correct student catalog information to ensure

teachers, schedules, and classes are current and up to date.

Usability: The system shall satisfy all users and meet their needs.

Reliability: is an attribute of the system responsible for the ability to continue to operate under predefined conditions. After a long time use, our system cannot down their service.

Maintainability is the ability of the system to support changes.)

Modifiability determines how many common changes need to be made to the system to make changes to each individual item.

Testability shows how well the system allows performing tests, according to predefined criteria.

Scalability is the ability of the system to handle load increases without decreasing performance, or the possibility to rapidly increasing the load.

Reusability is a chance of using a component or system in other components/systems with small or no change. Supportability is the ability of the system to provide useful information for identifying and solving problems.