





Testing Hub

Minia university
Faulty of computers and information

A graduation project presented to departments of computer science
and information system as a partial fulfillment of the Requirements for
the Degree of bachelor in Computer and Information system

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TestingHub

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Contents

WORK PLAN	8
ACKNOWLEDGMENT	9
ABSTRACT.....	9
1) INTRODUCTION.....	11
(1.1) RELATED WORK	12
1.2) DOCUMENT PURPOSE: -	13
1.3) PRODUCT SCOPE: -	13
1.4) DEFINITIONS, ACRONYMS, AND ABBREVIATIONS: -.....	14
1.5) REFERENCES TO SUPPORTING DOCUMENT: -.....	14
1.5) OVERVIEW OF THE REST OF SRS: -.....	15
2) GENERAL DESCRIPTION	16
2.1) PRODUCT PERSPECTIVE: -	17
2.2) SYSTEM REQUEST	18
2.3) FEASIBILITY STUDY	19
2.3.1) <i>Technical feasibility</i>	19
2.3.2) <i>Economics feasibility</i>	20
2.3.3) <i>Organizational Feasibility</i>	22
2.4) BUSINESS MODEL.....	23
2.5) PRODUCT FUNCTIONALITY: -.....	24
2.6) USER CHARACTERISTICS: -	24
2.7) OPERATING ENVIRONMENT: -.....	25
2.8) USER DOCUMENTATION: -	25
2.9) ASSUMPTIONS AND DEPENDENCIES: -	25
2.9.1) <i>Risk management</i>	26
3) SPECIFIC REQUIREMENTS	27
3.1) EXTERNAL INTERFACE REQUIREMENTS	28
3.1.1) <i>user Interfaces</i> : -.....	28
3.1.2) <i>Hardware Interfaces</i> : -	29
3.1.3) <i>Software Interfaces</i> : -	30
3.1.4) <i>Communication interfaces</i>	31
3.2) FUNCTIONAL REQUIREMENTS	32
<i>Use cases levels</i>	32
3.2.1) <i>TestingHub Admin Usecases</i>	35
3.2.2) <i>Examiner Usecases</i>	41
3.2.3) <i>Student Usecases</i>	47
3.3) OTHER NON-FUNCTIONAL REQUIREMENTS:.....	51
3.3.1) <i>Performance requirements</i>	51
3.3.2) <i>Safety and Security Requirements</i>	51
3.3.3) <i>Software Quality Attributes</i>	51
3.3.4) <i>Reliability</i>	51
3.3.5) <i>Availability</i>	51
3.3.6) <i>usability</i>	52
3.3.7) <i>Maintenance</i>	52
4) ANALYSIS MODEL.....	53

4.1) USE CASE DIAGRAM	54
4.2) SYSTEM SEQUENCE DIAGRAM.....	55
4.3)CONCEPTUAL CLASSES	57
4.4) DOMAIN MODEL	58
4.5) OPERATION CONTRACTS	59
4.6) DATA FLOW DIAGRAM	61
4.7) ER DIAGRAM	62
4.8) OBJECT DIAGRAM.....	63
4.9) STATE MACHINE DIAGRAM.....	64
4.10) COMPONENT DIAGRAM	65
4.11) ACTIVITY DIAGRAM	66
4.12) COMMUNICATION DIAGRAM	67
4.13) PACKAGE DIAGRAM	68
4.14) DEPLOYMENT DIAGRAM	68
5) SYSTEM IMPLEMENTATION	70
5.1) SOLVING EXAM FLOWCHART.....	71
5.2) USERS FLOWCHART	72
5.3) GUI.....	74
5.4) DATABASE TABLE	88
6) BENEFITS AND LIMITATIONS:.....	90
6.1) CONCLUSION.....	91
6.2) FUTURE WORKS	91
BIBLIOGRAPHY.....	92

List of Figures

Figure 1. Contact Page	31
Figure 2. use case level 1	32
Figure 3. use case level 2	32
Figure 4. use case level 3	33
Figure 5. use case level 4	33
Figure 6.Use case Diagram.....	54
Figure 7. Sequence Diagram.....	55
Figure 9. Sequence Diagram: set exam.....	56
Figure 8. Sequence Diagram: solve exam.....	56
Figure 10.Sequence Diagram: add question in question bank	56
Figure 11. nouns and noun phrases.....	57
Figure 12. classes and attributes	57
Figure 13. conceptual classes.....	58
Figure 14. Domain Model Diagram.....	58
Figure 15.Data Flow Diagram	61
Figure 16.Entity Relationship Diagram	62
Figure 17. Object Diagram	63
Figure 18. State Machine Diagram	64
Figure 19. Component Diagram	65

Figure 20. Activity Diagram	66
Figure 21. Communication Diagram	67
Figure 22. Package Diagram	68
Figure 23. Deployment Diagram	68
Figure 24. schema diagram	69
Figure 25. Solving Exam Flowchart	71
Figure 26. Admin Flowchart	72
Figure 27. Examiner Flowchart	72
Figure 28. Student Flowchart	73
Figure 29. Visitor Flowchart	73
Figure 30. Add Exam	74
Figure 31. Search Exam	75
Figure 32. Register Screen	75
Figure 33. Login Screen	76
Figure 34. Home Page	77
Figure 35. Examiner profile	78
Figure 36. Insert Exam General Info	79
Figure 37. Select Exam Question	80
Figure 38. recorrect page	81
Figure 39. Add Question in Question Bank	82
Figure 40. Select Questions from Question Bank	83
Figure 41. allowed exams	84
Figure 42. not allowed page	84
Figure 43. not approve page	85
Figure 44. exam page	85
Figure 45. recorrect page	86
Figure 46. pending page	86
Figure 47. search page	87
Figure 48. Create User Table	88
Figure 49. Create Exam Table	89
Figure 50. Create Contact Table	89

List of Tables

Table 1. Work Plan	8
Table 2. Development Costs	20
Table 3. Operation Costs	21
Table 4. Software License	21
Table 5. Calculation of PV	21
Table 6. Business Model	23
Table 7. Risk Management	26
Table 8. Actor Goal List	34
Table 9. Login Use case	35
Table 10. manage account use case	35
Table 11. Add Account Use case	36
Table 12. Update Account Use case	36
Table 13. Delete Account Use case	37

Table 14.. Delete Exam Use case.....	37
Table 15. Add Subject Use case	38
Table 16. Update Subject Use case.....	39
Table 17.Delete Subject Use case.....	39
Table 18. Approve Testimonial Use case	39
Table 19. Delete Testimonial Use case.....	40
Table 20. Contact with Student Use case.....	40
Table 21. Contact with Examiner Use case	41
Table 22. Register Use case	42
Table 23. Insert question in QB Use case	42
Table 24. Delete question from QB Use case	43
Table 25.Update question in QB Use case.....	43
Table 26.Set Exam Use case	44
Table 27. Update Exam Use case	45
Table 28. Delete Exam Use case.....	45
Table 29. View Grades Use case	46
Table 30. Contact with Admin Use case.....	46
Table 31.Contact with Student Use case.....	47
Table 32.Approve request Use case.....	47
Table 33. Contact with Examiner Use case	47
Table 34. Show Degree Use case.....	48
Table 35.Solve exam Use case.....	49
Table 36. Send Join Request Use case.....	49
Table 37. Add Testimonial Use case	50
Table 38.Send Recorrect Request Use case	50
Table 39. View Grades Contact	59
Table 40. Add Question essay Contact	59
Table 41. add question choose contract	60
Table 42.Add Exam Contact.....	60

Work plan

Task ID	Task name	Assigned to	Start date	Finish date	status
1	abstract	Mahmoud	1/11/2020	2/11/2020	Done
2	Introduction	Amir	1/11/2020	3/11/2020	Done
3	System request	Mahmoud	13/11/2020	15/11/2020	Done
4	Feasibility study	Amir	13/11/2020	23/11/2020	Done
5	Business model	Mahmoud	5/12/2020	8/12/2020	Done
6	Functional requirement	Amir	10/12/2020	20/12/2020	Done
7	Admin usecases	Moatasem	17/12/2020	27/12/2020	Done
8	Examiner usecases	Mahmoud	18/12/2020	26/12/2020	Done
9	Student usecases	Mahmoud	20/12/2020	24/12/2020	Done
10	Non-functional requirement	Marwa	4/1/2021	5/1/2021	Done
11	Usecase diagram	Amir	20/1/2021	22/1/2021	Done
12	System sequence diagram	Marwa	5/1/2021	10/1/2021	Done
13	Concepual classes	Nagwa	15/1/2021	16/1/2021	Done
14	Domain model	Nagwa	17/1/2021	20/1/2021	Done
15	Operation contracts	Moatasem	20/1/2021	22/1/2021	Done
16	Data flow diagram	Marwa	10/1/2021	12/1/2021	Done
17	ERD diagram	Nagwa	20/1/2021	21/1/2021	Done
18	Schema diagram	Nagwa	22/1/2021	24/1/2021	Done
19	State machine diagram	Moatasem	1/2/2021	3/2/2021	Done
20	Activity diagram	Moatasem	3/2/2021	6/2/2021	Done
21	Communication diagram	Marwa	5/2/2021	6/2/2021	Done
22	System implementation	Amir, nagwa, marwa, moatasem, mahmoud	1/1/2021	20/2/2021	Done

Table 1. Work Plan

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A great opportunity to gain lots of experience in real-time projects and the knowledge of how to actually design and analyze real projects. For that we want to thank the Faculty of Computers and Information for the efforts they did to provide us with all useful information and making the path clear for the students. Special thanks to all the people who made it possible for students like us to implement the real-time project design and analysis. Furthermore, we like to express our deepest gratitude to our graduation project supervisor Dr. Eman Younis for his patience and guidance along the semester.

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Abstract

In the last years education forward to online education, and the government need to develop the education.

The COVID-19 pandemic has caused the largest disruption of education in history, having already had a near universal impact on learners and teachers around the world, universities, adult learning, and skills development establishments.

Offline exam problem

- Offline exam required large administrative and operational setup
- Arrangement of question papers and answer sheet takes heavy cost
- Chances of cheating or use of unfair means
- Takes much time in checking the answer copy and result preparation
- Chances of question paper leak

Benefits of Online Examination

- The operational, administrative and logistic costs in less in online exams in comparison to offline exams
- Safety and security of the question paper is not compromised. It is next to impossible to leak online question papers
- Feasibility for students in attempting the exam
- Takes less time in checking the answer sheets and preparation of result
- Question and students' answers can be saved and stored for a long time in online exam

Examination System was an important means of evaluating the teaching effect. Therefore, the Examination System could improve the teaching level by providing better technical support.

The Online Examination System is an electronic application. The college/Institution can direct the online examination and report the result at same time.

The examination system is responsible of the creating the exam paper and it would be totally secure. Online Examination framework give remotely access to student. It helps the Organizations interested in education with reducing the cost of inspecting work, checking answer sheets and producing the result. All this work is finished by the machine. All the information is put on the server. Within the Online Examination System we developed, the examiner could set and select the score and number of different types of question from the question bank according to their need. And then, the Examination System generated an exam page by collecting the selected questions. Finally, the exam page in standard format and its answer could be outputted.

1) Introduction

This chapter gives a scope description and overview of everything included in this SRS document. Also, the purpose for this document is described and a list of abbreviations and definitions is provided.

1.1) related work

1. R/exams^[4]:

The open-source package exams for the R system for statistical computing provides a one-for-all approach to automatic exams generation. Based on (potentially) dynamic exercise templates large numbers of personalized exams/quizzes/tests can be created for various systems: PDFs for classical written exams (with automatic evaluation), import formats for learning management systems (like Moodle, Blackboard, OLAT, or Ilias), live voting (via ARSnova), and the possibility to create custom output (in PDF, HTML, Docx, etc.).

2. Testpress^[6]:

Testpress Online Exam Software is designed to ease out the process of conducting and evaluating a paper-based test. Effortlessly add questions in bulk using Microsoft Word™, conduct online exams for your students and automate the job of evaluating their responses. This would be an Ideal Online Exam Software for Joint Entrance Examination – Advanced, National Eligibility cum Entrance Test (Undergraduate), Banking Entrance Exams like IBPS, SBI, Public Service Commission.

The disadvantages are:

- High Cost to create exam
- There is no question bank for each subject
- Not support Correct essay question or correct with low quality
- Not support permissions page to manage allowed users
- Not support difficulty level of questions
- Not support groups for users
- Not support chat between examiner and student
- Not support recorrect request for student

1.2) Document Purpose: -

The software is for managing online exam and Correcting the tests.

It maintains four levels of users:

1. Examiner
2. Admin
3. Student
4. Visitor

The software includes: Visitor can view the main page contains the information about the things that the site offers and contact with admin, Admin can add or delete users and manage the entire system, Examiner sets, update or delete the exam from Prepared templates of questions from question bank, inserts details about exam, accept the requests from students and can print report for all users with details, Student makes request to enter the exam, solves the exam, recorrect the exam and shows the result.

1.3) Product scope: -

Online Examination system is a framework with Multiple Choice true or false, Explain briefly and essays Questions. Online Examination System is a web application that sets up a system between the examiners and students. examiners enter on the site the questions they need in the exam page through the question bank and if he needs to add a question that doesn't exist in question bank, firstly add the question in question bank then add it in exam page. These questions are shown as a test to the qualified students. The answers students enter are then evaluated, and their scores are calculated and memorized.

The site has a manager who inspects the general working of the framework. The system can be applied to all faculties, self-study and open education learning to test yourself and Evaluate your students in an easy and accurate way.

1.4) Definitions, Acronyms, and Abbreviations: -

Term	Definition
Examiner	someone who sets and manages the exam
Student	Someone who interacts with and solve the exam
Visitor	Someone who view the main page contains all information and contact with admin
Admin/Administrator	System administrator who is given specific permission for managing and controlling the system
Database	Collection of all the information monitored by this system.
TestingHub	A web application deals with question bank that provides facilities for the examiner to put exams online for the examinees

1.5) References to Supporting Document: -

This web application has been prepared on the basis of discussion with Team members and also taken information from following website:

<https://www.tcyonline.com/>

<https://www.researchgate.net/publication/327075106 DESIGN AND IMPLEMENTATION OF ONLINE EXAMINATION ADMINISTRATION SYSTEM FOR UNIVERSITIES>

<http://rogo-oss.nottingham.ac.uk/>

1.5) Overview of The Rest of SRS: -

The remainder of this document includes five chapters and appendixes. The second one provides an overview of the system functionality and system interaction with other systems. The third chapter provides the requirements specification in detailed terms and a description of the different system interfaces. The fourth chapter deals with the prioritization of the requirements. The fifth chapter provide other non-functional requirements. The Sixth chapter define other requirements not cover on SRS.

2) General Description

This chapter provides an overview of the system functionality and system interaction with other systems. Also, introduces different types of stakeholders and their interaction with the system.

2.1) Product perspective: -

TestingHub is an online examination system. It can be accessed online, 24 hours a day, 7 days a week. The goal of this app is to reach the examiner and students in remote communities, connect them and take exams in an online virtual environment. This application will only allow registered users to access the test module. The different stages in the application are as follows: -

1. Login: login/register page offers the user three choices for logging into the system according to the preset privileges -examiner login, student login and Administrator login. The examiner login or student login will take the user to the user profile. The Administrator Login will take the user to the administrator profile.
2. Test: exam page contains the exam that the examiner can give. Examinations are organized by adding questions from the question bank to each subject.
3. Result: result page displays the result of exams that the examiner has. This data will be saved and displayed in the student profile.
4. System Overview: page can only be accessed by the administrator. It allows the administrator to full control for all users and exams, control AboutUS, HowToUse, Testimonial and ContactUS.

2.2) System request

∂ Project Sponsor:

universities, schools, Institutes, academies.

∂ Business Need:

In order for it to be easy to test ourselves or take college or school examinations and obtain the exam score immediately after passing the exam.

∂ Business requirement:

by Using this system user (examiner, admin, student) will be able to: -

- Make questions for each subject (examiner).
- Modify or retrieve student data or student grades immediately.
- Generate reports for each student about its status.
- Managing student entering and exit status from the exam.
- Manage users and permission.

∂ Business Value:

Our system will speed up the process of managing the exams reduce overtime pay and increase the rate of success.

The value will have categorized into: -

- Tangible
 - Reduce paper cost.
- Intangible
 - Reducing time and effort.
 - Comfortableness of student and staff and examiner.
 - Facilitating management.
 - Security of student data.

∂ Special Issues or Constraint:

the issues faced us are as following: -

There is category of user didn't have the knowledge to use the computer (provide training for them)

The system should be delivered within seven months.

2.3) Feasibility study

The feasibility study is mainly intended to study and analyze the proposed system and to decide whether the system will be viable or not after implementation. It determines the usability of the project after deployment. It is the measure and the study of how beneficial of the proposed system would be to the organization. Feasibility measure success and failure of system. Generally, Feasibility is the analysis of risks, costs and benefits relating to:

- Technical feasibility.
- Economics feasibility.
- Organizational feasibility.

2.3.1) Technical feasibility

In technical feasibility, we study all technical issues regarding the proposed system. It is mainly concerned with the hardware and the software. Organization requires to hire one employee that maintain the system if the problem occurred in systems. The technical needs of the system may vary according to:

Familiarity with Application: familiarity with the application field is high, as we have gathered enough information about every operation that our application performs.

We do not have enough experience in the exams, so we allow the examiner to put his questions in the question bank

Familiarity with Technology: Familiarity with technology is medium We have moderate knowledge in programming and web development which makes us able to start and develop over time.

Project size

- Project size is a moderate.
- The project team will have less than 5 people.
- We found that the project needs about 7 months to implement.

2.3.2) Economics feasibility

Economic analysis is evaluating the effectiveness or success of proposed system. It determines benefits and savings which are expected from proposed system and organization and compare them with cost. If the benefits are more than the cost, then decision is made to design and implement the system. This will save the cost of the paper in the old system.

Intangible

- Will save effort of examiners and students
- High the performance of the exam management
- Save and secure data

Tangible

We take faculty of computers and information as a sample space to calculate the cost of exams

- Average number of students for each level is 150.
- Average number of subjects is 7.
- Average cost of paper is 5.
- Number of levels in faculty is 4.
- Number of exams in term is 4 (mid-term, Oral, practical and final).
- Number of terms is two.

Benefits ($150 * 7 * 5 * 4 * 4 * 2 = 168,000$ L. E per year) the costs of paper system.

Development Team ^[2]	98 L.E/hour // (5(hours/day) * 26(days in month) * 7(months)) $(5 * 98 * 910 \text{ h}) = 445,900 \text{ L. E}$
Server	Price = 30,000 L. E
System analysis ^[5]	57,750 /month

Table 2. Development Costs

- **Development Costs (533,650 L.E)**

Hardware	5,000 L. E
Maintenance	(1,000 L.E / developer)

Table 3. Operation Costs

- **Operation costs (5,000 L.E)**

Software license	Sublime text ^[1] = 80.00 per year 80.00* 15= 1,200 L.E Windows 10 pro ^[3] = 3,146 L. E 3,146 *5= 15,730 L.E Total Cost = 1,200 + 15,730 = 16,930 L. E
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Table 4. Software License

	0	1	2	3	4	Total
<u>Benefits:</u> Reduce Paper cost		168,000	336,000	672,000	1,344,000	2,520,000
<u>Development cost:</u>	533,650					533,650
<u>Operation Cost</u> Hardware-Maintenance	5,000	5,000	5,000	5,000	5,000	25,000
Software license	16,930	16,930	16,930	16,930	16,930	84,650
<u>Total operation cost</u>	<u>21,930</u>	<u>21,930</u>	<u>21,930</u>	<u>21,930</u>	<u>21,930</u>	<u>109,650</u>
<u>Total cost (FV)</u>	555,580	<u>21,930</u>	<u>21,930</u>	<u>21,930</u>	<u>21,930</u>	643,300
<u>Present value total cost</u> I = 8%	555,580	20,305.6	18,801.4	17,408.7	16,119.2	628,214.9
	$PV = \frac{FV}{(1+i)^n}$					

Table 5. Calculation of PV

Total = Total Benefits – Total Costs

$$672,000 - 643,300 = 28,700 \text{ L.E}$$

$$\text{ROI} = (\text{Total Benefits} - \text{Total Costs}) / \text{Total Cost} = 0.0446$$

type\Year	0	1	2	3	4	<u>total</u>
Total benefits		168,000	336,000	672,000	1,344,000	2,520,000
Total costs	555,580	21,930	21,930	21,930	21,930	643,300
Net benefits	-555,580	146,070	314,070	650,070	1,322,070	1,876,700
Cumulative net	-555,580	-409,510	-95,440	554,630	1,876,700	

Break Even Point (BEP):

$$3 + \frac{650,070 - 554,630}{650,070} = 3.1 \text{ year}$$

(In the year in which Cumulative Cash Flow turns positive):

$$\text{BEP} = \frac{\text{Number of years of negative cash flow}}{\text{That year's Net Cash Flow} - \text{That year's Cumulative Cash Flow}} + \frac{\text{That year's Net Cash Flow}}{\text{That year's Net Cash Flow}}$$

2.3.3) Organizational Feasibility

From an organizational perspective, this project has low risk. The objective of the system, which is to help students and examiners. The users of the web site are expected to appreciate the benefits of online exams in this Coronavirus crisis.

2.4) Business model

Key partners:	Key Resources:	Value	Key activities:
1. Ministry of Education: It's the key partner as the web site tests are depending on tests provided in student's book	1- Physical - proposition: Laptops are required as a key resource.	to be easy to test ourselves or take college or school examinations and will have obtain the exam developers to complete the web site.	1- Production Making questionnaires about idea. Design a good web site interface.
2. any educational body offers tests depending on tests provided in question bank.	2- Human - We ensure that questions and answers provided in the web site are corrected.	will have obtain the exam score immediately after passing the exam.	2- Problem Solving, giving a test by examiner, giving an answer by the student and ensure answers correctness by our web site.
	3- Testers who ensure that questions and answers provided in the web site are corrected.	→ Delivery: using a well-designed website with additional helpful contents.	3- Platform/Network - Uploading web site in a free-hosting server to test its functionalities.
	4- Financial - There is a need for servers for web site hosting and database hosting.	Automatically via e-mails. Customer relationship: There is a need for servers for web site hosting and database hosting.	Revenue Structure: Advertisement
Cost Structure:		Customer segment: universities, schools, Institutes, academies.	

Table 6. Business Model

2.5) Product Functionality: -

The functions are divided according to the user types such as: -

1. Examiner: personalized system access (logging), update his profile, approve requests from students, exams managing (adding, editing, removing), questions managing (adding, editing, removing), viewing test results (all students together or individual students) and managing degrees.
2. Student: personalized system access (logging), send request to examiner, update his profile, running tests and view personal results, after end of exam.
3. Admin: The function of the administrator is to modify the site, add, edit or delete examiners and students records and manage the entire system.
4. Visitor: The function of the visitor is to show the main page and contact with admin.

2.6) User characteristics: -

The various users of this app are classified into four types: -

- Admin
- Examiner
- Student
- Visitor

This system requires the user to have characteristics such as the user should be able to communicate and write in English and should have previous experience of giving an online exam. If not, the student should be instructed about the basic's usage of the system by authorized personnel.

2.7) Operating Environment: -

This app is internet based so it will run in any operating system with internet access through a web browser

In this system we will use many technologies and advanced tools. We will use html5, css3, js, SCSS, typescript, es6, angular framework. backend: php (Laravel) MySQL.

2.8) User documentation: -

We are working on creating a user guide that will include a product overview to help them communicate with the system., complete configuration of required software and hardware, technical details and contact information which will include the email address.

2.9) Assumptions and Dependencies: -

Proper working of this app is dependent on the internet connectivity of the users' computer.

-It is assumed that the student has basic knowledge of the system (i.e., he/she is not a first-time user) as any action by the user is considered valid during an examination.

-It is assumed that the data entered by the student while registering is true.

-It is assumed that the student does not cheat during the exam as there are no supervisors around to monitor.

- It is assumed that always should have internet access to exam.

2.9.1) Risk management

#	risk	solution
1	The time which we can't finish this high project. How to avoid	We try to the best of our ability to act the requirement within the time available to us and to implement it.
2	the student may input fake information in database How to avoid	Examiner will send confirmation message to student via email.
3	High cost of hardware. How to avoid	We will try to work with the minimum hardware which serve the whole process but minimize the cost in the beginning.
4	Difficulty with understanding the existing system paper. How to avoid	The existing System (Paper of online examination system) is difficult and large so for avoiding misunderstanding the system we make a video for a quick review of how to use the system.
5	Our technical skill needs to learn more and more. How to avoid	Our skills are not enough for this system as it is large so we work on ourselves a lot and a lot to deliver the system in the desired Time with Professional Product.
6	Save and retrieve various data is difficult will make more time and effort. How to avoid	the Data will be very large so we will use the best algorithms to make the process for saving and retrieving data more quickly to increase from the Performance of the system.

Table 7. Risk Management

3) Specific Requirements

This chapter provides an overview of the system user interface functionality in more details. Also, explains Non-functional requirements for the overall system and users.

3.1) External Interface Requirements

3.1.1) user Interfaces: -

→ Login page

This page for authentication the user with email and password to login the website.

→ Register page

For create a new account in our website with all personal information.

There are four views in our website:

1- Examiner

2- Student

3- visitor

4- admin

- **Examiner**

→ Home page

This page contains all examiner's exams and its operation [Edit, Delete, Manage Permissions].

→ Create exam

This process consists of two parts:

1. The first part (exam general information)

- Exam name
- subject
- start time
- end time
- start date
- max score
- min score
- Registration Automatically

2. The second part

select questions from question bank

Add questions

- This page to add questions for specific subject in question bank

Question bank

- To manage questions in question bank for specific subject

- **Student view**

- Home page

This page contains all allowed and not allowed exams

- Send request page

Send request to examiner to join exam

- Show exam

Show exam for students and save their answers

- Result page

To show the result of student

- **Visitor view**

Contain general information about website, how to use it and contact us form

- **Admin view**

Manage users, exams and question bank

Contain statistical information

3.1.2) Hardware Interfaces: -

Since the web has not any designated hardware, it does not have any direct hardware interfaces. The physical is any building if we need any communication for any reasons; hardware connection to the database server is managed by the underlying operating system on the web server.

3.1.3) Software Interfaces: -

We will use MySQL database and websites technology via PHP languages- Laravel framework- and we will use some technologies used in web design (such as: html5, css3, js, SCSS, typescript, es6, angular framework. backend: php (Laravel) MySQL) and we will use windows operating system.

The web communicates with users that have relation with system and have account on database

- Visitor view

User have not account in database cannot access any exam and cannot create exam.

User can see visitor view it contain all information about the system

- How to work with it
- How to create and show exams
- Contact with admin

- Examiner view

User have account as examiner he can update his profile, create exam for group of students, manage exam, manage results, manage join requests and manage request for reccorrect exams

- Creating exam
- Enter all general information
- Select subject for exam
- Select all question of exam
- Publish exam for all student

After exam finish

Examiner can show report of students results

- Student view

Student have account to join exams

- Send request to join exam
- Solve exam

- Show result after finish exam
- Send request to recorrect exam
- Admin view

Admin account have full control to manage entire system

- Manage users
- Manage exams
- Manage question bank for all users
- Manage contact us page
- Manage testimonial information

3.1.4) Communication interfaces

The communication between admin, student, examiner, and visitor of the system is important since they depend on each other. Communication between user and system achieved by:

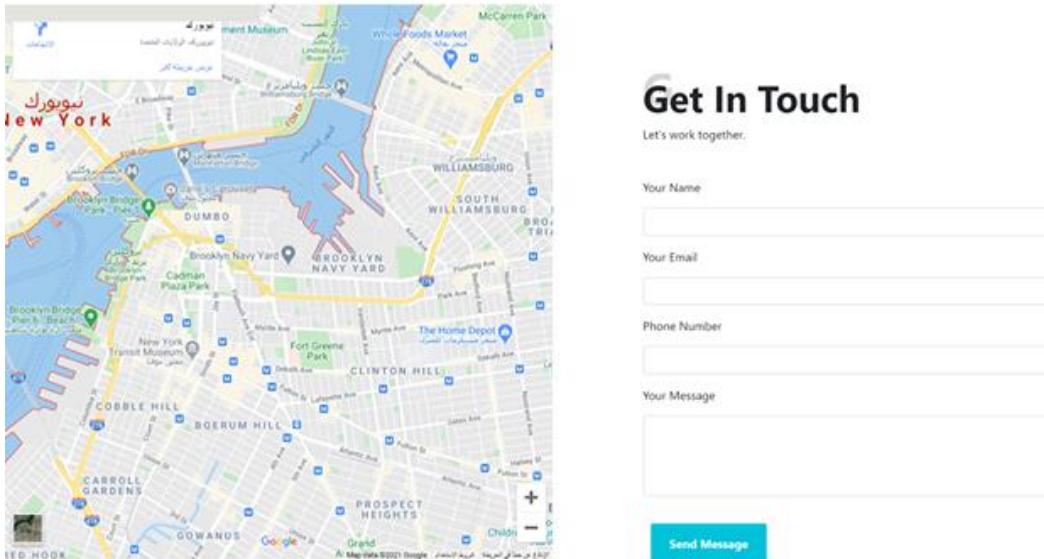


Figure 1. Contact Page

3.2) Functional Requirements

At beginning any user in the system must be registered -have an account-
The system provides many functions based on type of users.

Use cases levels

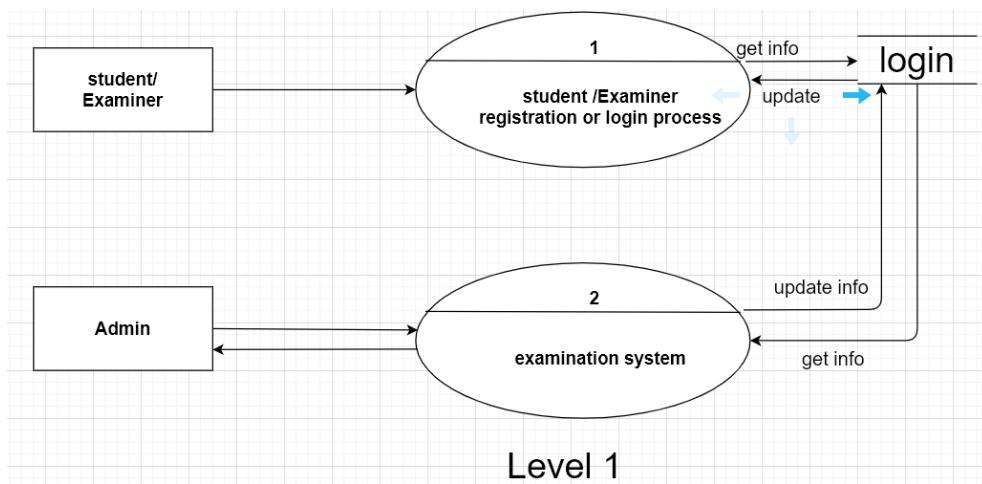


Figure 2. use case level 1

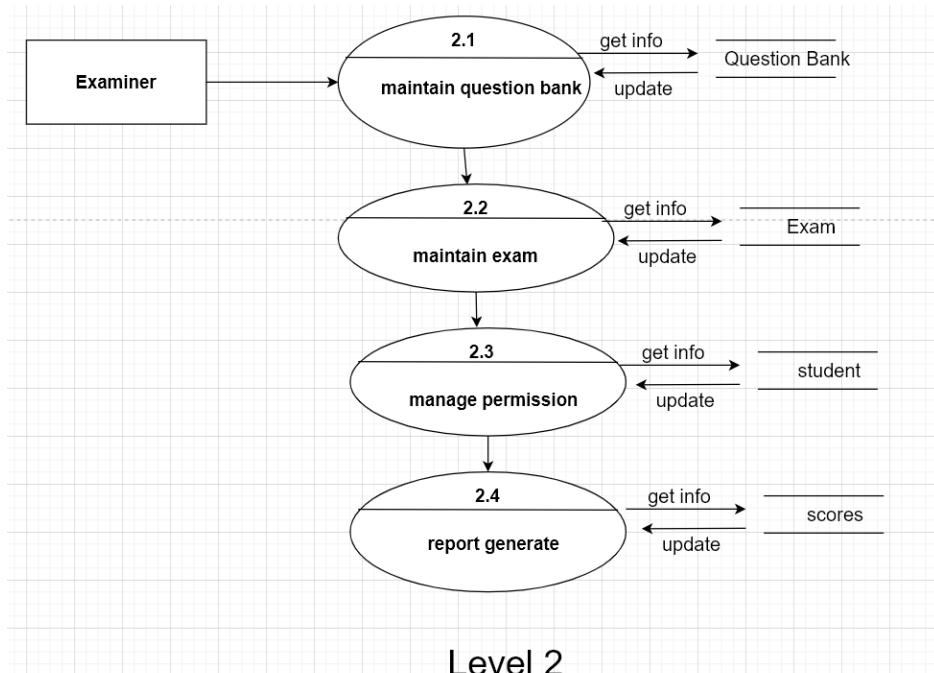


Figure 3. use case level 2

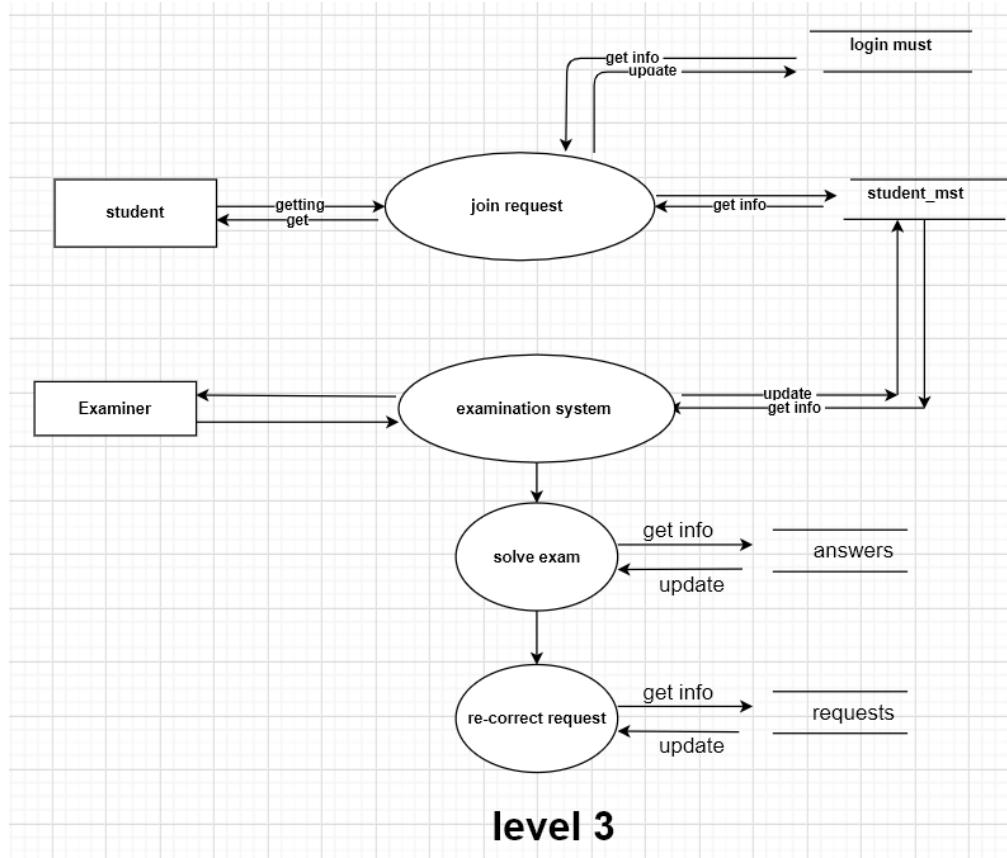


Figure 4. use case level 3

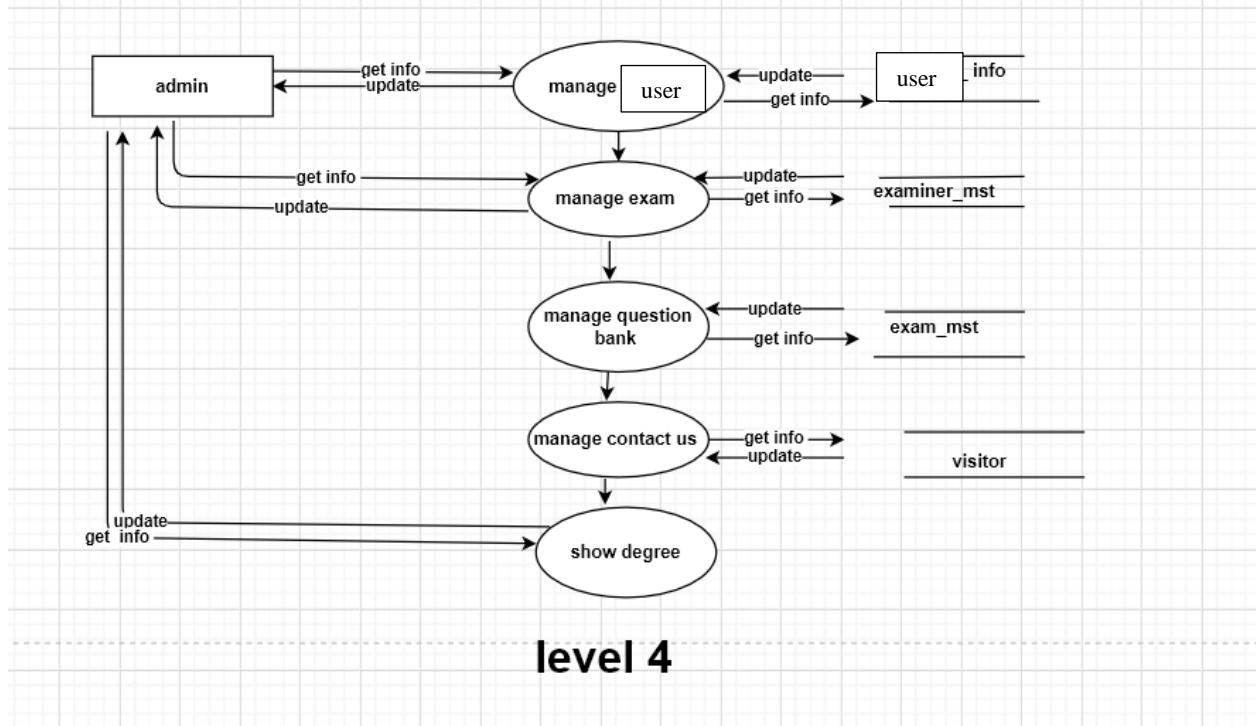


Figure 5. use case level 4

Actor Goal List

Actors	Goal(s)
TestingHub Admin	<ol style="list-style-type: none"> 1. Log in 2. Add account 3. Update account 4. Delete account 5. Add subject 6. Update subject 7. Delete subject 8. Approve testimonial 9. Delete exam 10. Contact with examiner 11. Contact with student
Examiner	<ol style="list-style-type: none"> 1. Register 2. login 3. Insert ques in QB 4. Update ques in QB 5. Delete ques in QB 6. Set exams 7. Update exams 8. Delete exams 9. Approve request 10. View grades 11. contact with admin 12. contact with student
Student	<ol style="list-style-type: none"> 1. Register 2. login 3. Send join request 4. Send recorrect request 5. Solve exams 6. show degree 7. contact with examiner 8. contact with admin
Visitor	<ol style="list-style-type: none"> 1. Contact with admin
Web developer	Maintain system

Table 8. Actor Goal List

3.2.1) TestingHub Admin Usecases

ID:	UC-1
Use Case Name	login
Actor	Admin, Examiner, Student.
Level	3
Frequency of execution	Frequently used
Trigger	Login to system
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. The User opens the system. 2. Entering his E-mail and Password to login. 3. The system verifies their validity. Then opens his main page. 4. Then opens his profile.
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) The internet is disconnected: <ol style="list-style-type: none"> a) check your internet connection
Post condition	System open main page depends on type
Technical requirements	User must enter valid email Verify user email and password in database

Table 9. Login Use case

ID:	UC-2
Use Case Name	Add Account
Actor	TestingHub Admin
Level	1
Frequency of execution	Frequency used
Trigger	Used to add Examiner or Student account
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. Login as TestingHub admin 2. Select Add user 3. Admin fill user data 4. Create account

Alternative Paths	1) If the login information incorrect b. System displays message "incorrect information". 2) If there is incorrect account information (duplicate user email) a. The system displays message "incorrect information". 3) The internet is disconnected: check your internet connection
Post condition	System displays message ("Account Added").
Technical requirements	Email must be valid. Password: <ul style="list-style-type: none"> • should contain at least one digit • should contain at least one lower case • should contain at least one upper case • should contain at least 8 from the mentioned characters valid phone number.

Table 10. Add Account Use case

ID:	UC-3
Use Case Name	Update Account
Actor	TestingHub Admin
Trigger	Used to Update accounts
Precondition	Have account on our system
Basic Path	1. Login as TestingHub admin 2. Select Update user 3. Select user 4. update account
Alternative Paths	1) If the login information incorrect a. System displays message "incorrect information". 2) if the user ID you want to update is not exist a. System display message "user is not existing" 3) The internet is disconnected: check your internet connection
Post condition	System displays message ("Account Updated").

Table 11. Update Account Use case

ID:	UC-4
Use Case Name	Delete Account
Actor	TestingHub Admin
Trigger	Used to delete accounts
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. Login as TestingHub admin 2. Select Delete user 3. Select user 4. Admin deletes user account
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) if the user ID you want to delete is not exist <ol style="list-style-type: none"> a. System display message "user is not existing" 3) The internet is disconnected: check your internet connection
Post condition	System displays message ("Account Deleted").

Table 12. . Delete Account Use case

ID:	UC-5
Use Case Name	Delete Exam
Actor	TestingHub Admin
Trigger	Used to delete exams
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. Login as TestingHub admin 2. Select Delete exam 3. Select exam 4. Admin deletes exam
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) if the exam ID you want to delete is not exist <ol style="list-style-type: none"> a) System display message "user ID is not existing" 3) The internet is disconnected: check your internet connection
Post condition	System displays message ("Exam Deleted").

Table 13.. Delete Exam Use case

ID:	UC-6
Use Case Name	Add Subject
Actor	TestingHub Admin
Level	4
Frequency of use	Used by 10%
Trigger	Used to add subject
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. Login as TestingHub admin 2. Select Add subject 3. Admin fill subject data 4. Save subject
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> b. System displays message "incorrect information". 2) If there is incorrect subject information (duplicate subject name) <ol style="list-style-type: none"> a. The system displays message "incorrect information". 3) The internet is disconnected: check your internet connection
Post condition	System display message ("subject Added").
Technical requirements	Enter unique subject name

Table 14. Add Subject Use case

ID:	UC-7
Use Case Name	Update Subject
Actor	TestingHub Admin
Trigger	Used to update subject
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. Login as TestingHub admin 2. Select subject 3. Update subject
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) The internet is disconnected: check your internet connection
Post condition	System displays message ("subject Updated").

Table 15. Update Subject Use case

ID:	UC-8
Use Case Name	Delete Subject
Actor	TestingHub Admin
Trigger	Used to delete subject
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. Login as TestingHub admin 2. Select subject 3. delete subject
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) The internet is disconnected: check your internet connection
Post condition	System displays message ("subject deleted").

Table 16.Delete Subject Use case

ID:	UC-9
Use Case Name	Approve testimonial
Actor	TestingHub Admin
Level	4
Frequency of execution	Frequent used
Trigger	Used to approve testimonial
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. Login as TestingHub admin 2. Select testimonial 3. approve testimonial 4. Save changes
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) The internet is disconnected: check your internet connection
Post condition	System displays message ("Testimonial Approved").

Table 17. Approve Testimonial Use case

ID:	UC-10
Use Case Name	Delete testimonial
Actor	TestingHub Admin
Trigger	Used to delete testimonial
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. Login as TestingHub admin 2. Select testimonial 3. Delete testimonial
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) The internet is disconnected: check your internet connection
Post condition	System displays message ("Testimonial deleted").

Table 18. Delete Testimonial Use case

ID:	UC-11
Use Case Name	Contact with Student
Actor	TestingHub admin
Trigger	Used To contact with student
Precondition	Have account in our system
Basic Path	<ol style="list-style-type: none"> 1) TestingHub admin login 2) Enter student ID or email 3) Write the message 4) Send the message
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) The internet is disconnected: check your internet connection 3) if the student ID or email is not existing System display message "Student not exist"
Post condition	System display message ("The massage has been sent").

Table 19. Contact with Student Use case

ID:	UC-12
Use Case Name	Contact with Examiner
Actor	TestingHub admin
Trigger	Used To contact with student
Precondition	Have account in our system
Basic Path	<ol style="list-style-type: none"> 1) TestingHub admin login 2) Enter examiner ID or email 3) Write the message 4) Send the message
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) The internet is disconnected: <ol style="list-style-type: none"> check your internet connection 3) if the examiner ID or email is not existing <ol style="list-style-type: none"> System display message "Examiner not exist"
Post condition	System display message ("The massage has been sent").

Table 20. Contact with Examiner Use case

3.2.2) Examiner Usecases

ID:	UC-13
Use Case Name	Register
Actor	Examiner, Student
Trigger	Used to create account And login at the first time
Precondition	Actor has knowledge of all applicable information that needs to be entered
Basic Path	<ol style="list-style-type: none"> 1) The User opens the system 2) Filling his information 3) The system verifies their validity. 4) Create account 5) Then opens his main page.

Alternative Paths	<p>1) The internet is disconnected: Check your internet connection</p> <p>2) if the validation fails: System show message "please enter correct information"</p>
Post condition	System open main page depends on type

Table 21. Register Use case

ID:	UC-14
Use Case Name	Insert question in QB
Actor	Examiner
Level	2
Frequency of execution	Used by 75 %
Trigger	Used To insert the questions in question bank
Precondition	Have account on our system as examiner
Basic Path	<ol style="list-style-type: none"> 1. Login as Examiner 2. Open QB 3. Select subject 4. Select question type 5. Fill the information about the question 6. Save question
Alternative Paths	<p>1) If the login information incorrect a. System displays message "incorrect information".</p> <p>2) The internet is disconnected: check your internet connection</p> <p>3) if the validation fails System display message "please enter valid information"</p>
Post condition	System displays message ("The question was added").
Technical requirements	<p>Flexibility in interface to manage:</p> <ul style="list-style-type: none"> • Question text. • Number of chooses if it is chosen question. • Question score must be number.

Table 22. Insert question in QB Use case

ID:	UC-15
Use Case Name	Delete question from QB
Actor	Examiner
Trigger	Used To delete the questions in question bank
Precondition	Have account on our system as examiner
Basic Path	<ol style="list-style-type: none"> 1) Login as Examiner 2) Open QB 3) Select question 4) Delete question
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) The internet is disconnected: check your internet connection
Post condition	System display message ("The question was deleted").

Table 23. Delete question from QB Use case

ID:	UC-16
Use Case Name	Update question in QB
Actor	Examiner
Trigger	Used To update the questions in question bank
Precondition	Have account on our system as examiner
Basic Path	<ol style="list-style-type: none"> 1. Login as Examiner 2. Open QB 3. Select question 4. Update question 5. Save question
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> b. System displays message "incorrect information". 2) The internet is disconnected: check your internet connection 3) if the validation fails System display message "please enter valid information"
Post condition	System display message ("The question was updated").

Table 24. Update question in QB Use case

ID:	UC-17
Use Case Name	Set Exam
Actor	Examiner
Trigger	Used To create exam
Precondition	Have account on our system as examiner
Basic Path	<ol style="list-style-type: none"> 1. Login as Examiner 2. Select Add exam 3. Filling general information about exam 4. Select and Add questions from QB 5. Create template of questions 6. Save exam
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System displays message "incorrect information". 2) If there is incompatible or confused information: <ol style="list-style-type: none"> a) The system displays message "incorrect information". 3) The internet is disconnected: check your internet connection 4) if the examiner didn't fill all information System display message "please enter all information"
Post condition	System display message ("The exam was set").

Table 25. Set Exam Use case

ID:	UC-18
Use Case Name	Update Exam
Actor	Examiner
Trigger	Used To update the exam
Precondition	Have account on our system as examiner
Basic Path	<ol style="list-style-type: none"> 1. Login as Examiner 2. Select update exam 3. Update general information 4. Update selected question from QB 5. Save exam

Alternative Paths	1) If the login information incorrect a. System display message "incorrect information". 2) The internet is disconnected: check your internet connection
Post condition	System display message ("The exam was updated").

Table 26. Update Exam Use case

ID:	UC-19
Use Case Name	Delete Exam
Actor	Examiner
Trigger	Used to delete exams
Precondition	Have account on our system as examiner
Basic Path	1. Examiner login 2. Select exam 3. Delete
Alternative Paths	1. If the login information incorrect a. System displays message "incorrect information".
Post condition	System displays message ("Exam Deleted").

Table 27. Delete Exam Use case

ID:	UC-20
Use Case Name	View grades
Actor	Examiner
Level	2
Frequency of use	Frequent used
Trigger	Used To show the degree of the exam for students
Precondition	Have account on our system as examiner
Basic Path	1) Examiner login 2) Select view grades 3) Examiner select exam • for all students' grades Or select exam and student • for only one student grade 4) open the selected exam grades

Alternative Paths	1) If the login information incorrect a. System display message "incorrect information". 2) If there is incompatible or confused information: a) The system displays message "incorrect information". 3) The internet is disconnected: check your internet connection
Post condition	The grades appear

Table 28. View Grades Use case

ID:	UC-21
Use Case Name	Contact with Admin
Actor	Examiner, Student, Visitor
Trigger	Used To contact with admin
Precondition	Actor has knowledge of all applicable information that needs to be entered
Basic Path	1) Open the system 2) Fill information in contact page 3) Submit the information
Alternative Paths	1) The internet is disconnected: check your internet connection
Post condition	System display message ("The massage has been sent").

Table 29. Contact with Admin Use case

ID:	UC-22
Use Case Name	Contact with Student
Actor	Examiner
Trigger	Used To contact with student
Precondition	Have account in our system as examiner
Basic Path	1. Examiner login 2. Enter student_id or email 3. Write the message 4. Send the message
Alternative Paths	1) The internet is disconnected: check your internet connection

Post condition	System display message ("The massage has been sent").
-----------------------	---

Table 30. Contact with Student Use case

ID:	UC-23
Use Case Name	Approve request
Actor	Examiner
Trigger	Used To approve join requests
Precondition	Have account in our system as examiner
Basic Path	<ol style="list-style-type: none"> 1) Examiner login 2) Open request page 3) Approve request
Alternative Paths	<ol style="list-style-type: none"> 1) The internet is disconnected: check your internet connection
Post condition	System display message ("The request has been approved").

Table 31. Approve request Use case

3.2.3) Student Usecases

ID:	UC-24
Use Case Name	Contact with examiner
Actor	Student
Trigger	Used To contact with examiner
Precondition	Have account in our system as student
Basic Path	<ol style="list-style-type: none"> 1) Student login 2) Enter examiner 3) Write the message 4) Send the message
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System display message "incorrect information". 2) The internet is disconnected: check your internet connection 3) if the examiner ID or email is not existing System display message "examiner not exist"
Post condition	System display message ("The massage has been sent").

Table 32. Contact with Examiner Use case

ID:	UC-25
Use Case Name	Show degree
Actor	Student
Trigger	Used To show the degree of the exam
Precondition	Have account on our system as student
Basic Path	<ol style="list-style-type: none"> 1) Student login 2) Go to the page contain all exam 3) Student select the exam 4) open the selected exam degree
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System display message "incorrect information". 2) The internet is disconnected: check your internet connection
Post condition	The degree appears

Table 33. Show Degree Use case

ID:	UC-26
Use Case Name	Solve exam
Actor	Student
Level	3
Frequency of use	Frequent use
Trigger	Used To solve the questions of the exam.
Precondition	Have account on our system as student
Basic Path	<ol style="list-style-type: none"> 1- Student login 2- Select exam 3- Send request 4- The student begins answering the questions 5- Submit answers
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System display message "incorrect information". 2) If system is failed

	<ul style="list-style-type: none"> - The changes on exam file are saved auto - reopen the page and complete entry of solving
Post condition	The solve of the questions are recorded on the system
Technical requirement	<p>Multiple choose:</p> <ul style="list-style-type: none"> • chose at least one answer <p>Short and long answer:</p> <ul style="list-style-type: none"> • enter at least 1 character <p>True false:</p> <ul style="list-style-type: none"> • chose true or false (one of them)

Table 34. Solve exam Use case

ID:	UC-27
Use Case Name	Send join request
Actor	Student
Level	3
Frequently of use	Frequency used
Trigger	Used To send request
Precondition	Have account in our system as student
Basic Path	<ol style="list-style-type: none"> 1) student login 2) Open exam page 3) Send request to join exam 4) Wait examiner to approve the request
Alternative Paths	<ol style="list-style-type: none"> 1) If the login information incorrect <ol style="list-style-type: none"> a. System display message "incorrect information". 2) The internet is disconnected: <ol style="list-style-type: none"> check your internet connection
Post condition	System display message ("The request has been sent").

Table 35. Send Join Request Use case

ID:	UC-28
Use Case Name	Add testimonial
Actor	Student, Examiner
Trigger	Used to add testimonial
Precondition	Have account on our system
Basic Path	<ol style="list-style-type: none"> 1. Login as student or examiner 2. Select add testimonial 3. Fill testimonial info. 4. Save testimonial
Alternative Paths	<p>1) If the login information incorrect</p> <p>a. System display message "incorrect information".</p>
Post condition	System displays message ("Testimonial Added").

Table 36. Add Testimonial Use case

ID:	UC-29
Use Case Name	Send recorrect request
Actor	Student
Level	3
Frequency of use	Used by 1%
Trigger	Used To send request
Precondition	Have account in our system as student
Basic Path	<ol style="list-style-type: none"> 1) student login 2) Open exam 3) Send request to recorrect exam 4) Wait examiner to approve the request
Alternative Paths	<p>1) If the login information incorrect</p> <p>a. System display message "incorrect information".</p> <p>2) The internet is disconnected: check your internet connection</p>
Post condition	System display message ("The request has been sent").

Table 37. Send Recorrect Request Use case

3.3) Other non-functional requirements:

3.3.1) Performance requirements

- 1- The system should be having quickly response to user input.
- 2- The database shall be able to accommodate a minimum of 1,000 records of Users.
- 3- The E-mail should be sent within one hour after the registration.
- 4- The system should support registration for examination maximum of Students.

3.3.2) Safety and Security Requirements

∞ Safety Requirements

The database may get crashed at any time due to virus or operating system failure. Therefore, it is required to take the database backup.

∞ Security Requirements

Some of the factors that are identified to protect the software from accidental or malicious access, use, modification below.

Security Application will allow only valid users to access the system. Secure the accounts of user and its personal data.

3.3.3) Software Quality Attributes

- ∂ The Quality of the System is maintained in such a way so that it can be very user friendly to all the users.

3.3.4) Reliability

- ∞ Reliability is the ability of the system to perform its required functions.
- ∞ The software should be available for any requests when the users use the system.
- ∞ The system should not failure when doing operations on the system.

3.3.5) Availability

- ^ The system will be available around the clock to the user/administrator except for the time required for the backup of data

3.3.6) usability

- ∞ The software should have information error message for the users.
- ∞ The software should have graphical user interface.
- ∞ The system must be responsive to other devices that it run on.

3.3.7) Maintenance

- The system should be able to maintain from time to time to be up-to-date and repair errors if found in the system.

4) analysis model

This chapter provides an overview of the system design specified in UML diagrams and database design.

4.1) Use Case Diagram

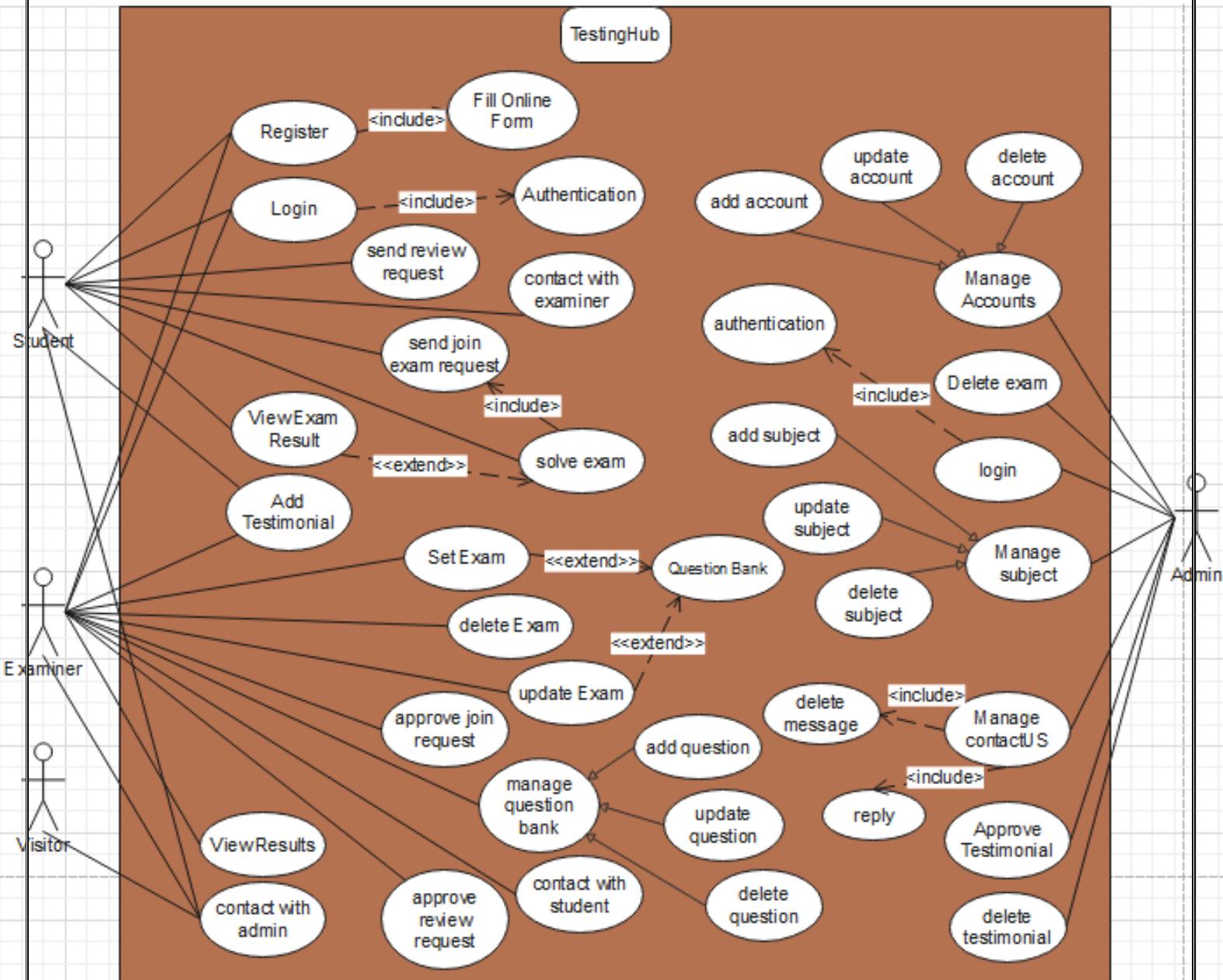


Figure 6. Use case Diagram

4.2) System Sequence Diagram

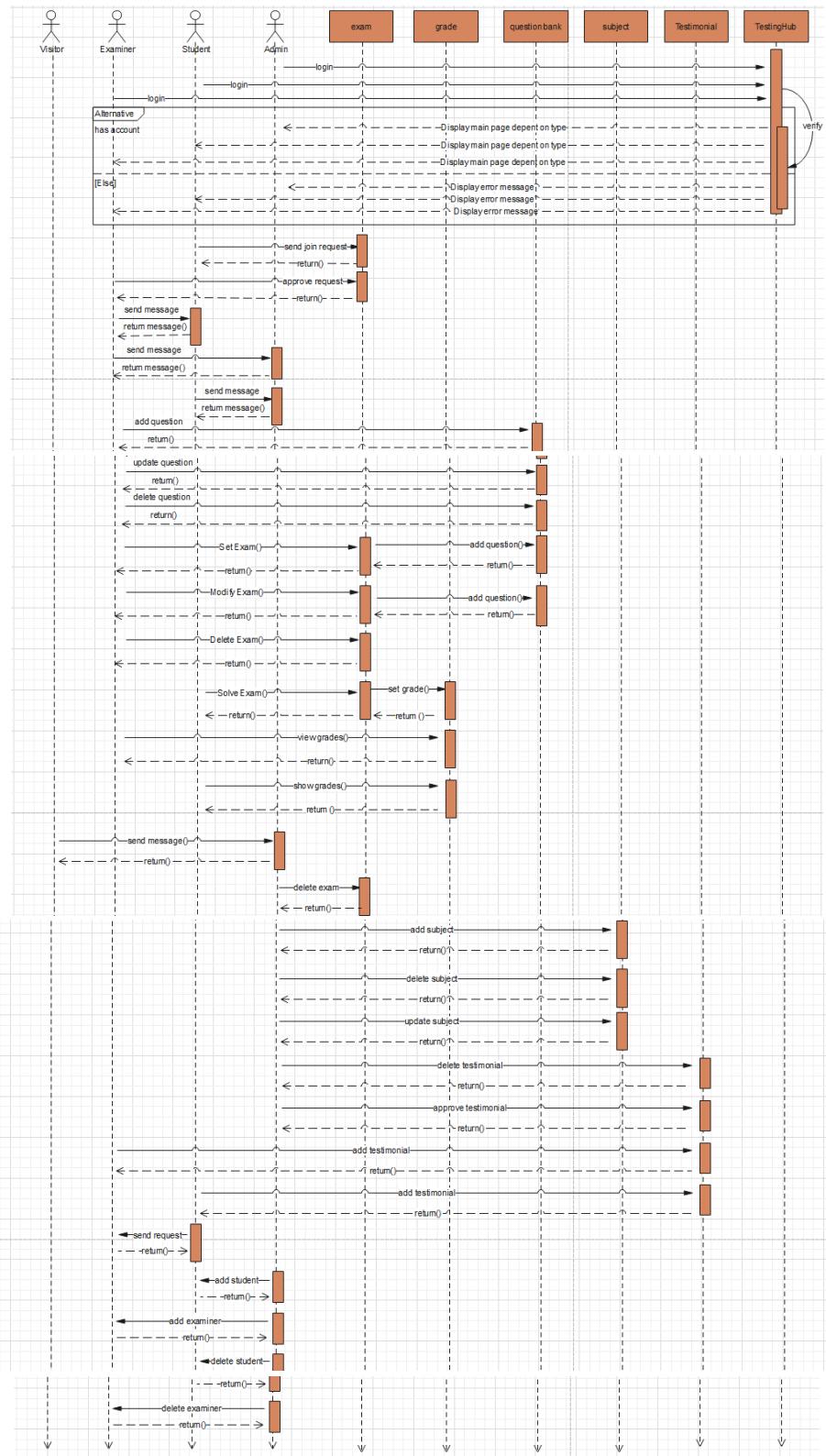


Figure 7. Sequence Diagram

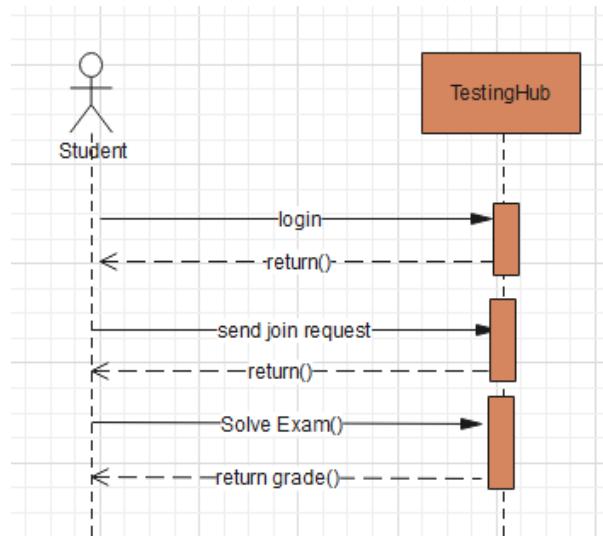


Figure 9. Sequence Diagram: solve exam

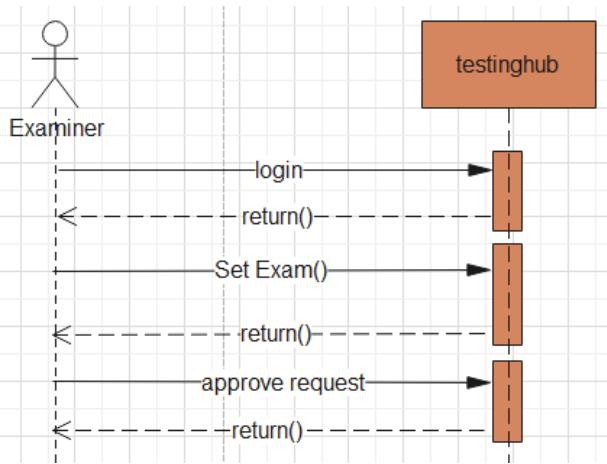


Figure 8. Sequence Diagram: set exam

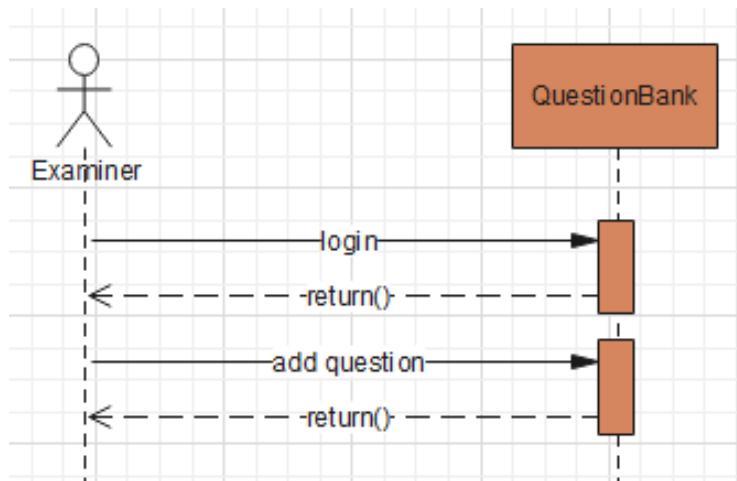


Figure 10.Sequence Diagram: add question in question bank

4.3) Conceptual classes

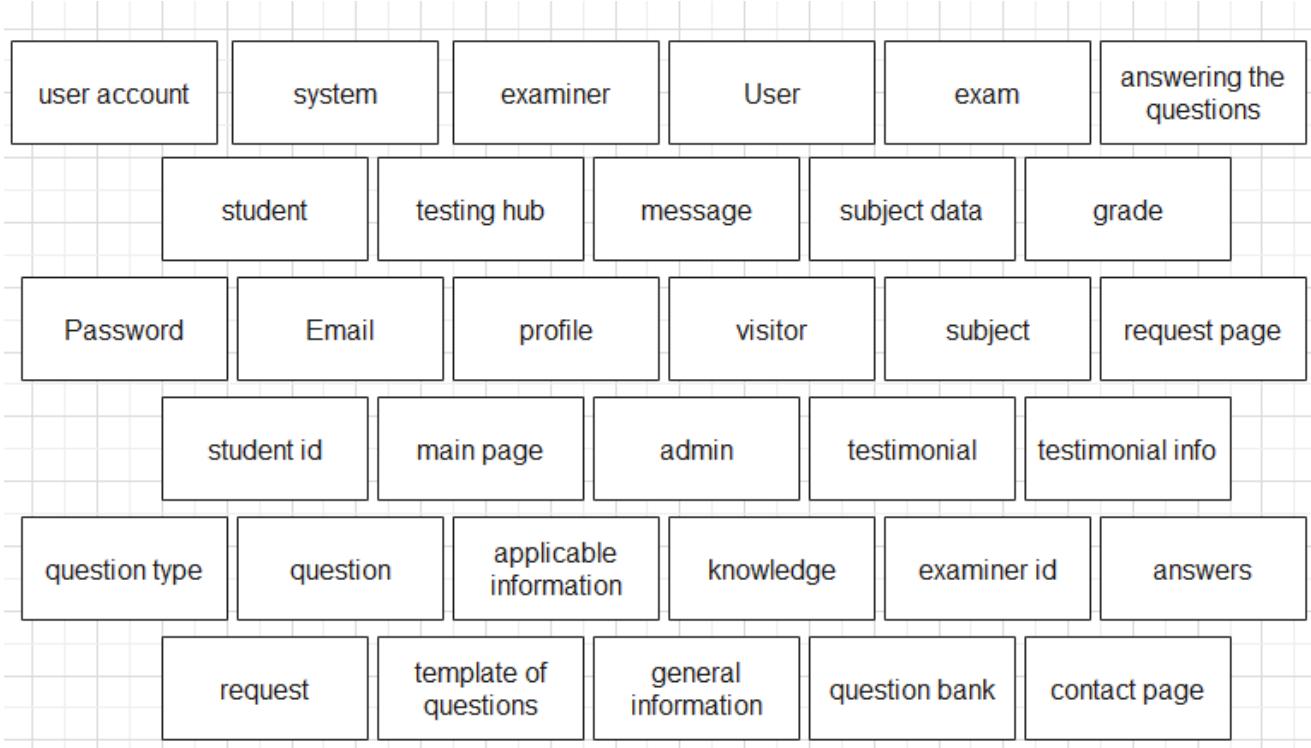


Figure 11. nouns and noun phrases

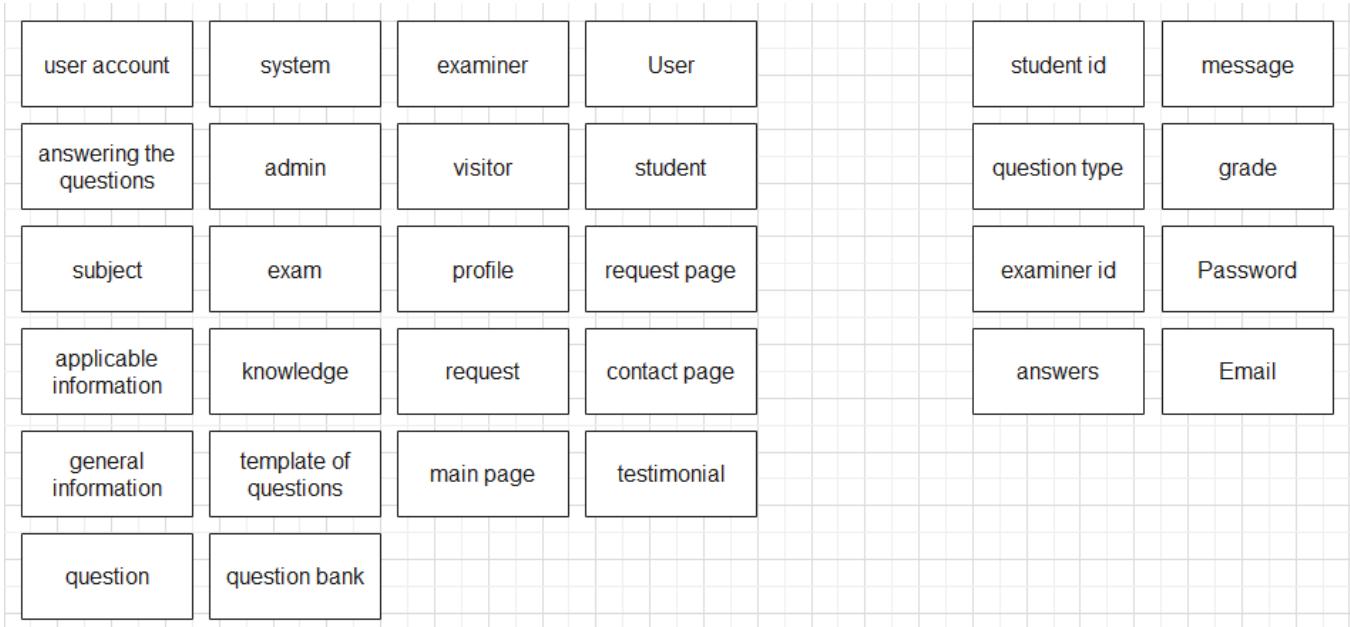


Figure 12. classes and attributes

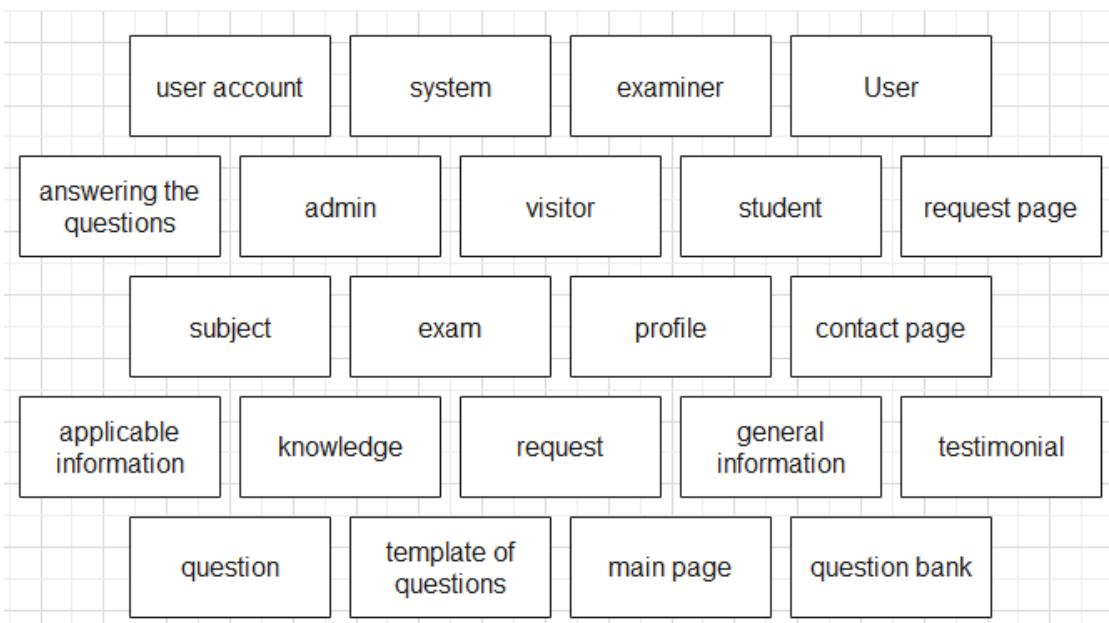


Figure 13. conceptual classes

4.4) Domain Model

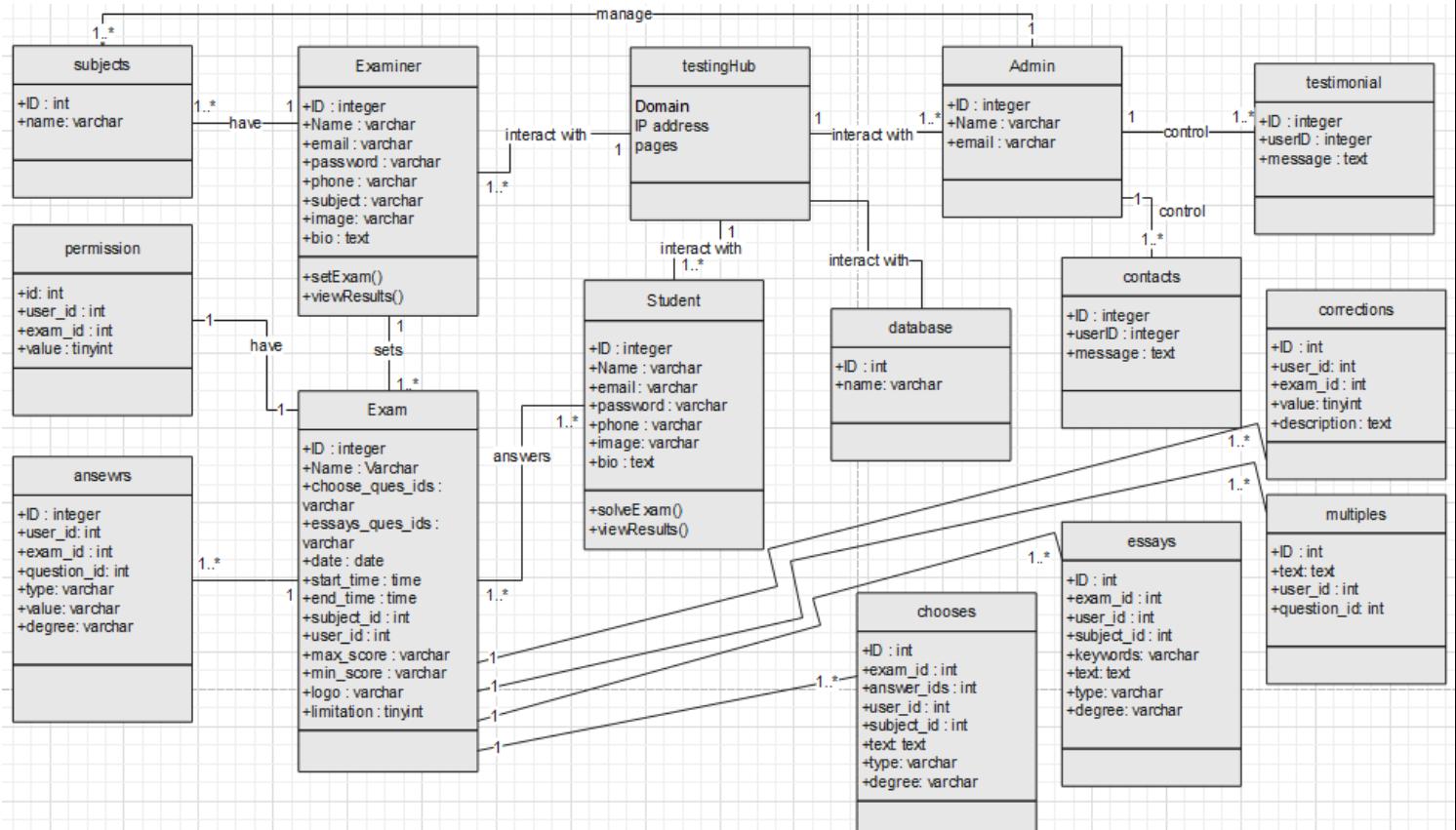


Figure 14. Domain Model Diagram

4.5) Operation Contracts

Contact Name and Identifier	View grades
Operations	View_grades (user_id:int, exam_id:int, subject_id:int, user_registration:string)
Cross Reference	Use case: View grades
Precondition	Have account on our system Must login on system Select exam and solve
Post condition	-A ViewGrade instance vg was created (instance creation) based on exam_id match (association formed). -vg was associated with a student (association formed).

Table 38. View Grades Contact

Contact Name and Identifier	Add question
Operations	Essay question Add (User_id,question_id,text,subject_id,keywords,type,degree)
Cross Reference	Use Case Name: insert question in QB
Precondition	Have account on our system Must login on system as examiner
Post condition	-An AddEssayQuestion instance eq was created (instance creation). -Attributes of eq were initialized. eq was associated with a Subjects, based on subject_id found (association formed).

Table 39. Add Question essay Contact

Contact Name and Identifier	Add question
Operations	Choose question (User_id,question_id,text,subject_id,answer_id,type,degree)
Cross Reference	Use Case Name: insert question in QB

Precondition	Have account on our system Must login on system as examiner
Post condition	<ul style="list-style-type: none"> -An AddChooseQuestion instance cq was created (instance creation). -Attributes of cq were initialized. cq was associated with a Subjects, based on subject_id found (association formed).

Table 40. add question choose contract

Contact Name and Identifier	Add new exam
Operations	Add_Exam (subject_id, exam_id, user_id, exam_name, date, start_time, end_time, max_score, min_score, choose_ids, essay_ids, limitation)
Cross Reference	Use case: add exam.
Precondition	none
Post condition	<ul style="list-style-type: none"> -A AddExam instance ex was created (instance creation). -ex was associated with a subject based on subject_id match (association formed). -Attributes of ex were initialized.

Table 41.Add Exam Contact

4.6) Data Flow Diagram

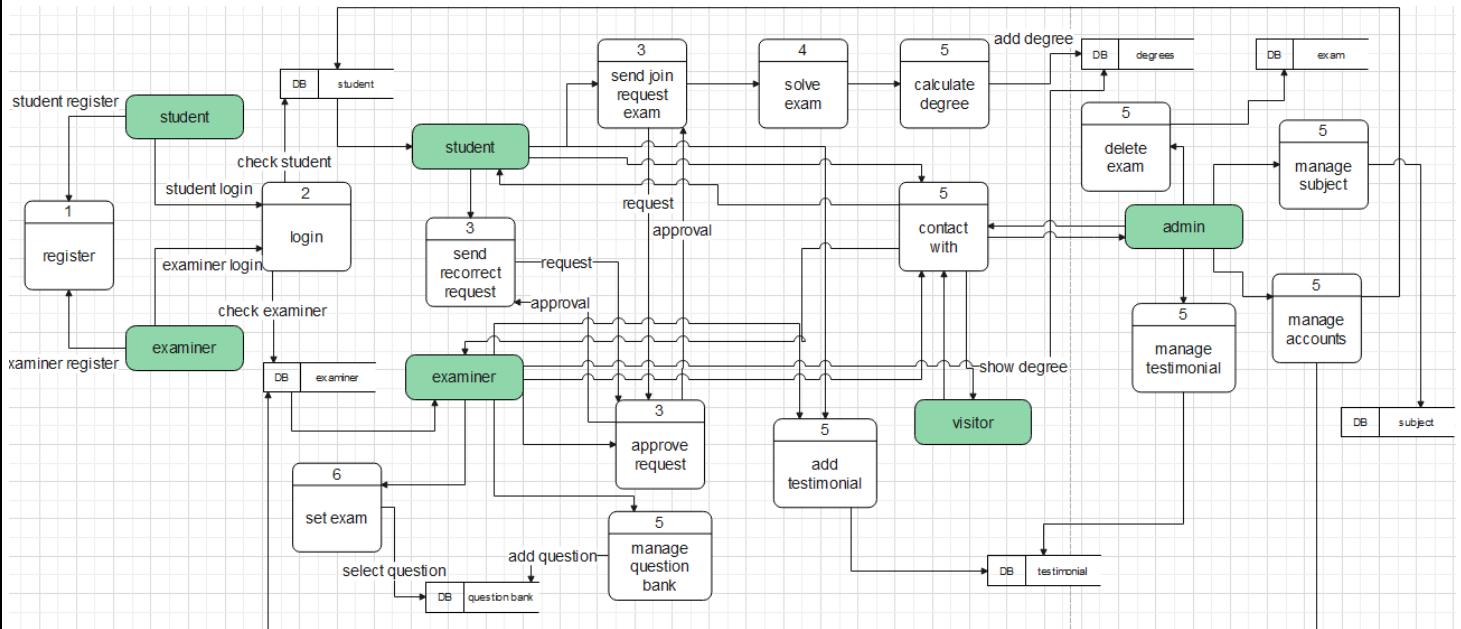


Figure 15.Data Flow Diagram

4.7) ER Diagram

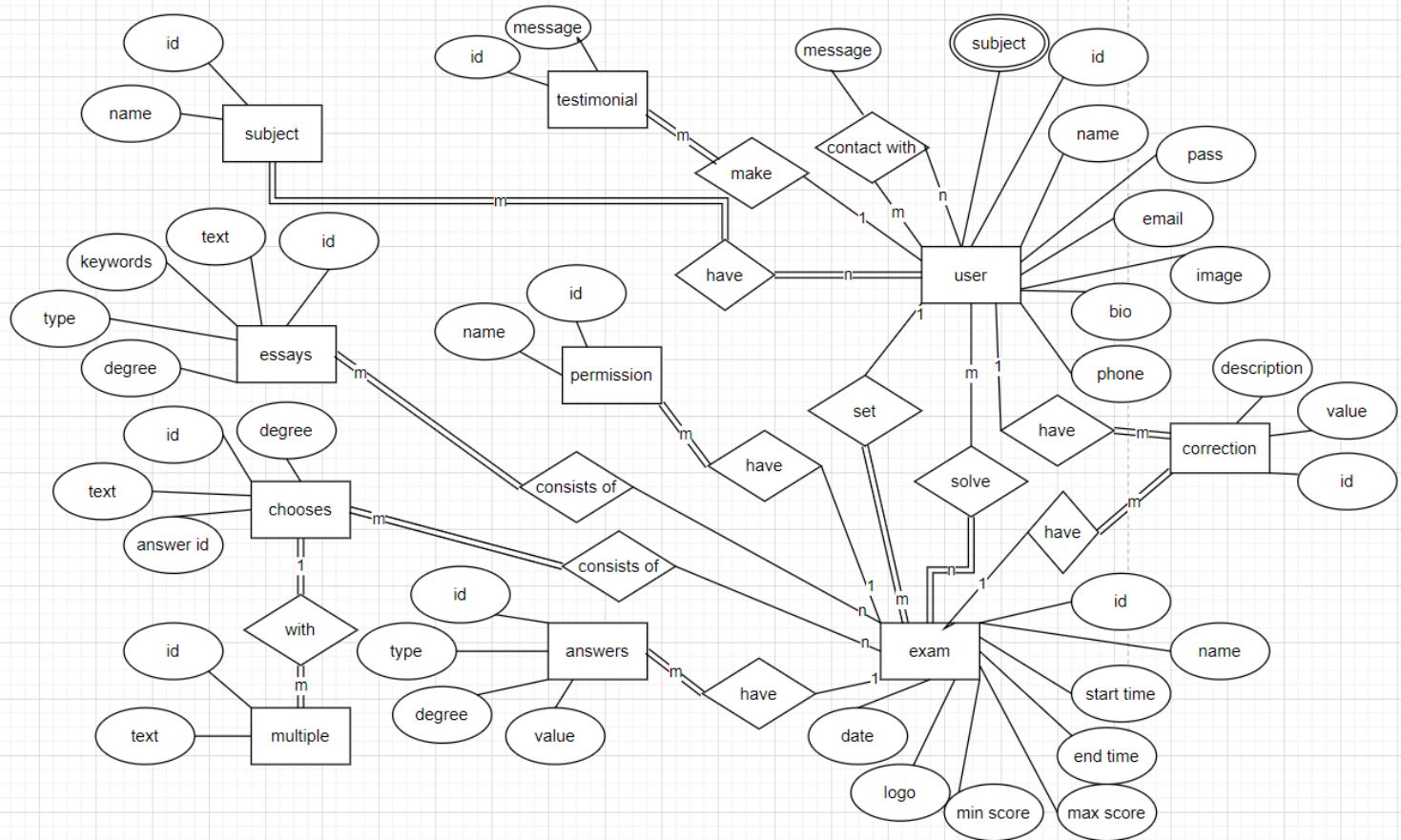


Figure 16.Entity Relationship Diagram

4.8) Object Diagram

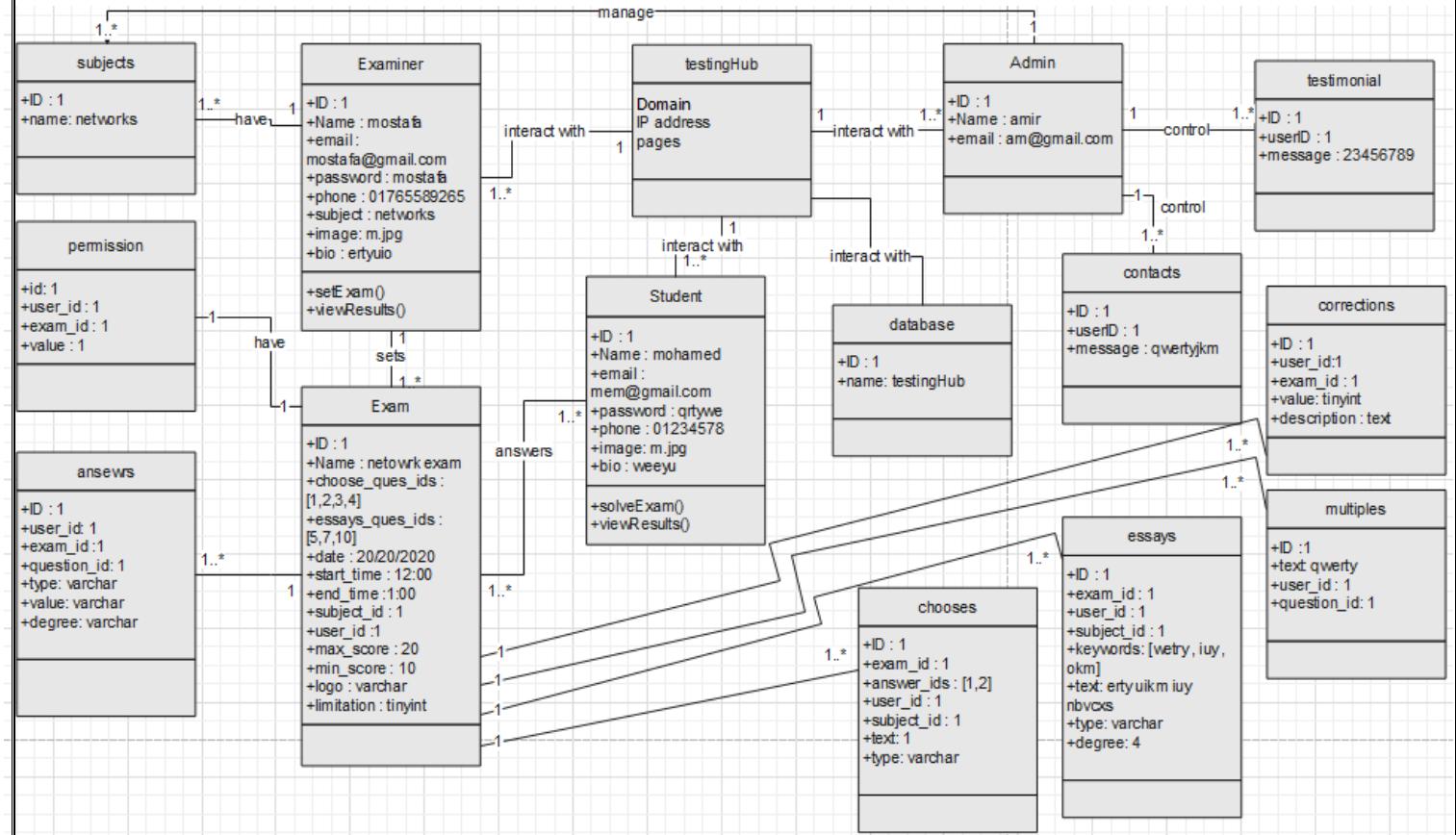


Figure 17. Object Diagram

4.9) State Machine Diagram

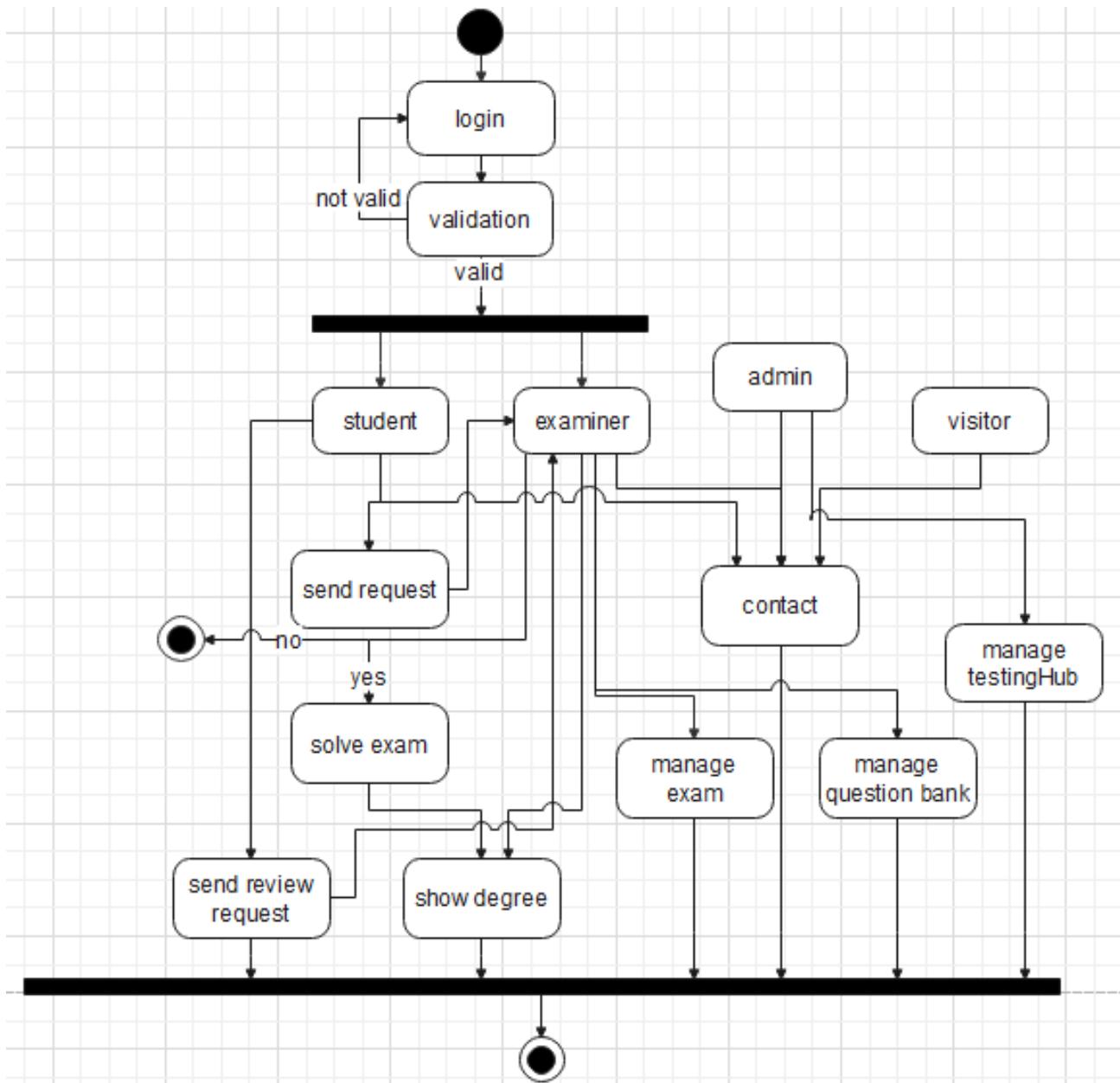


Figure 18. State Machine Diagram

4.10) Component Diagram

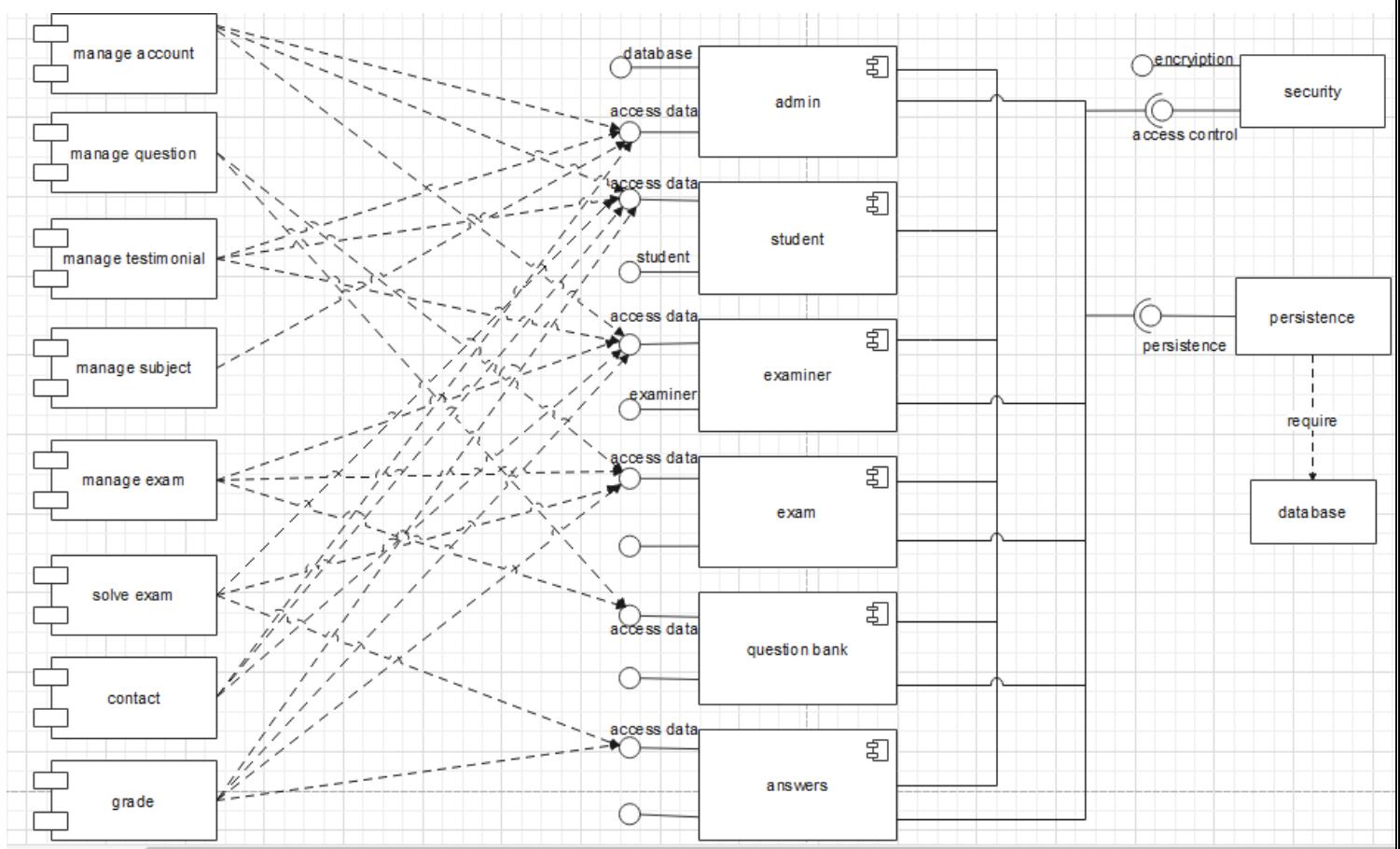


Figure 19. Component Diagram

4.11) Activity Diagram

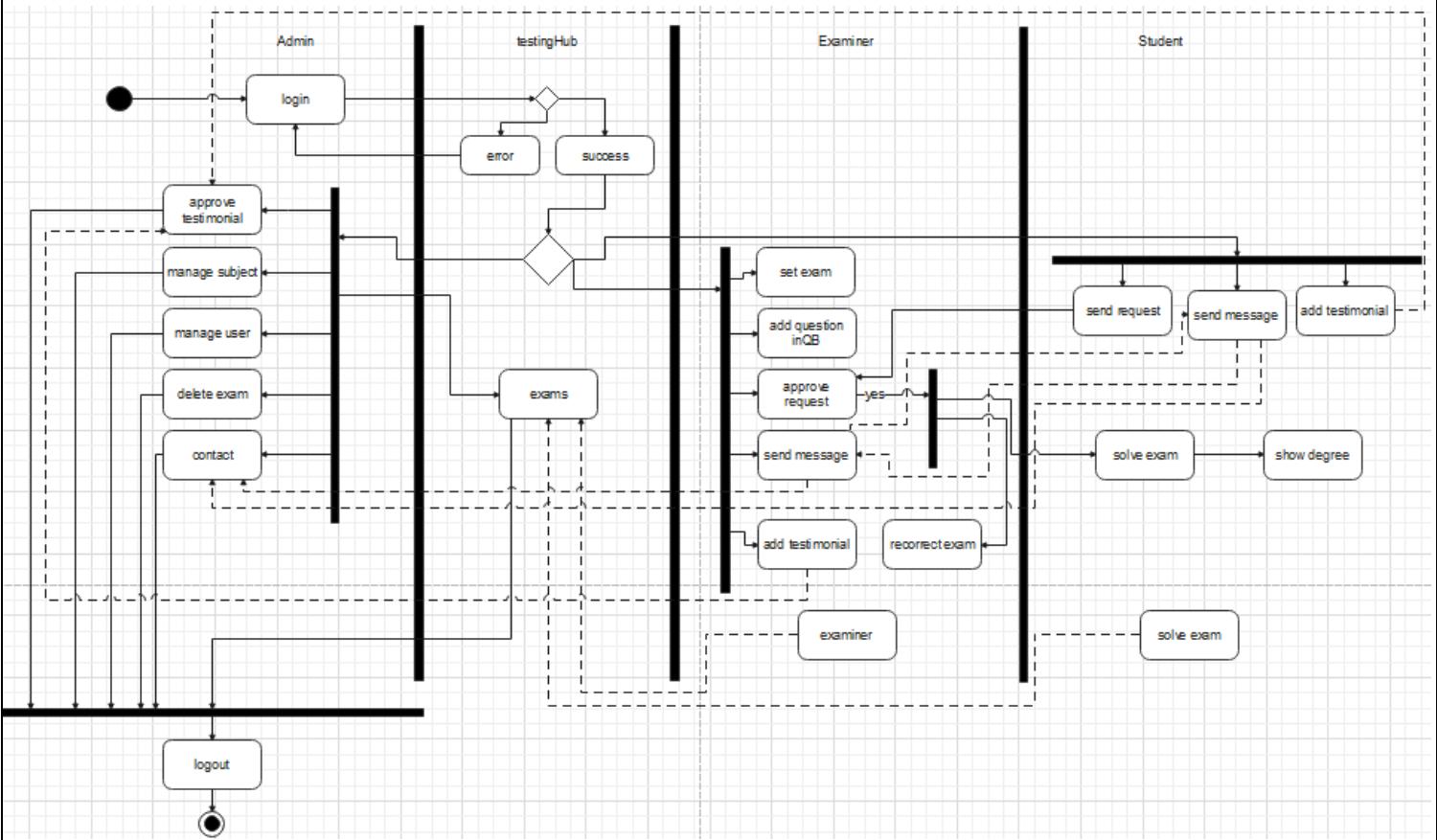


Figure 20. Activity Diagram

4.12) Communication Diagram

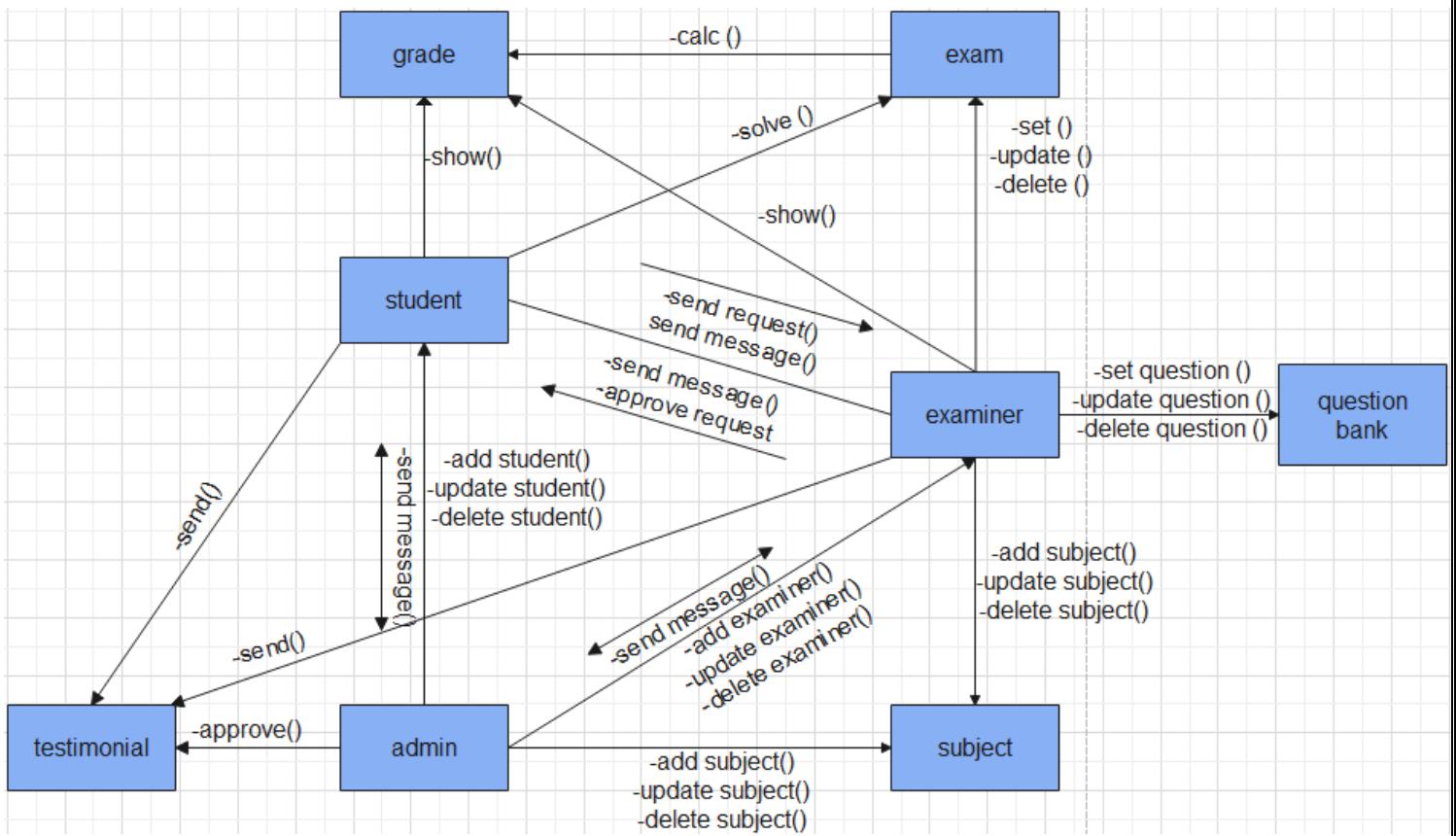


Figure 21. Communication Diagram

4.13) Package Diagram

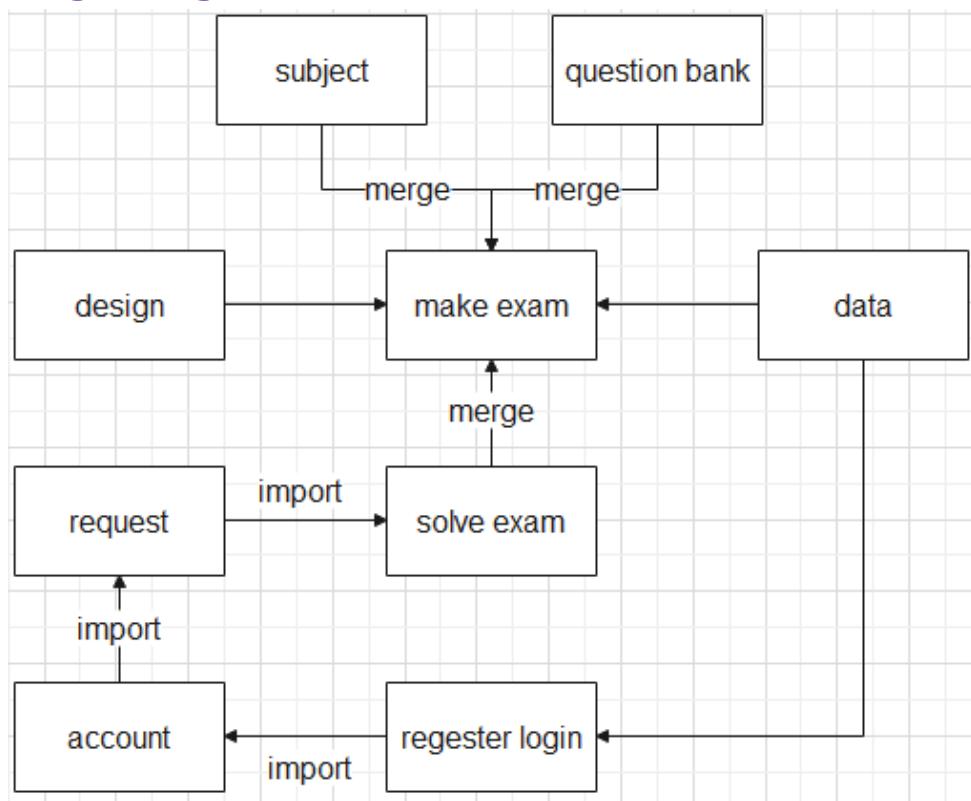


Figure 22. Package Diagram

4.14) deployment Diagram

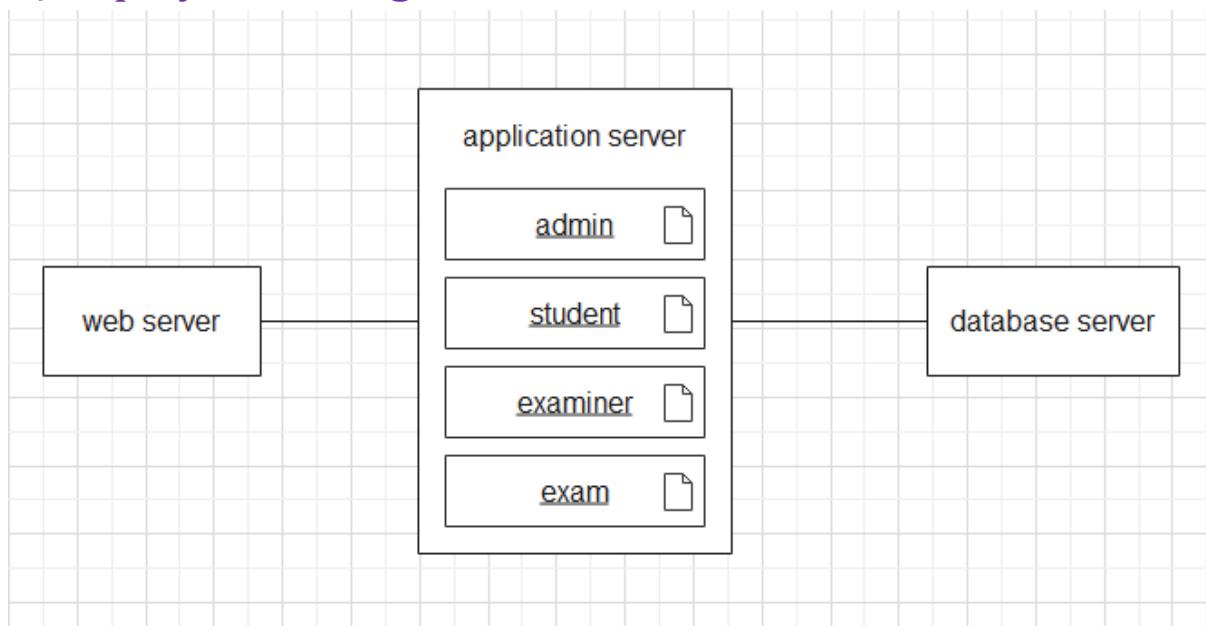


Figure 23. Deployment Diagram

4.15) Schema Diagram

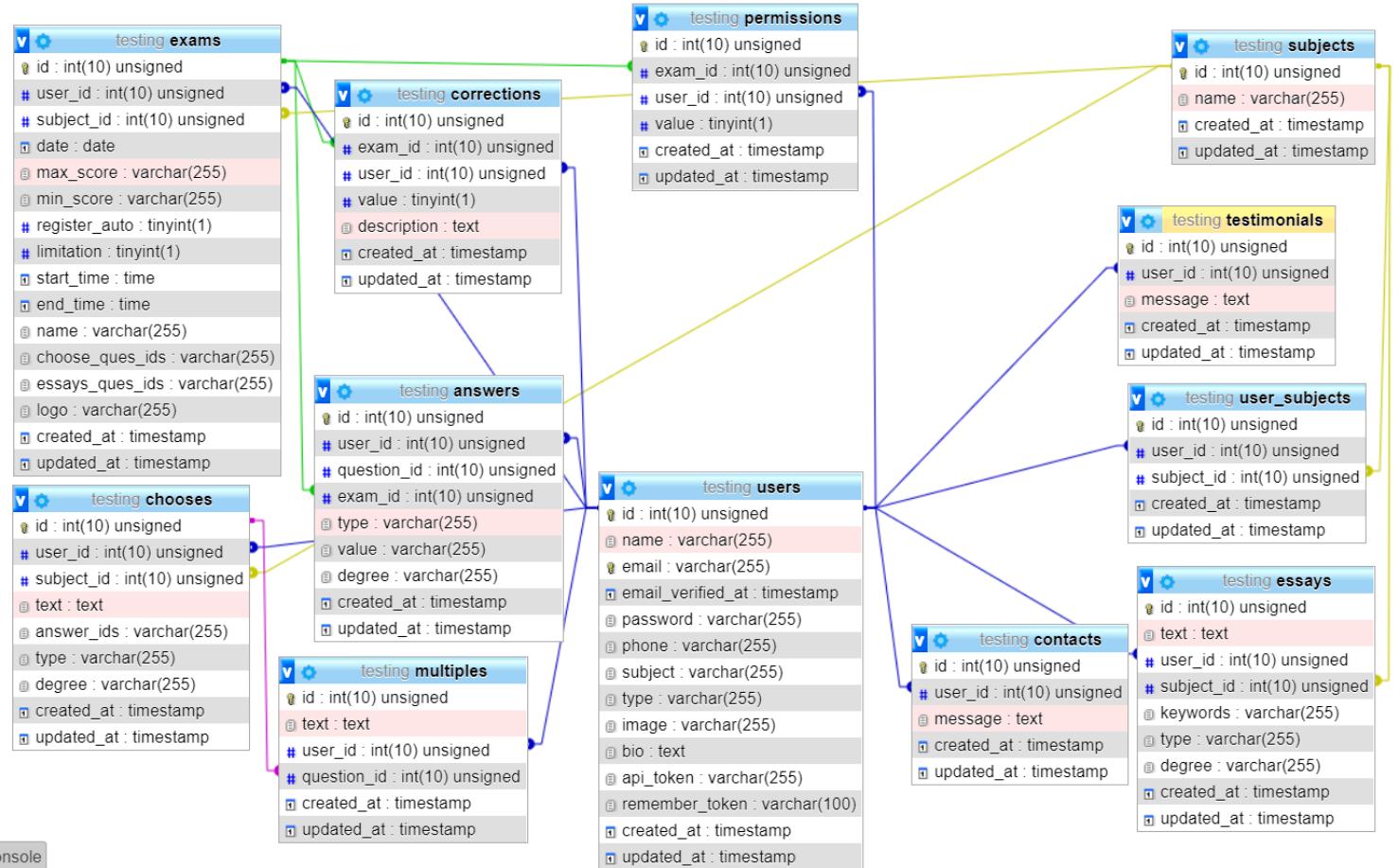


Figure 24. schema diagram

5) System Implementation

This chapter provides the system component implementations specified in a set of algorithms followed by Graphical user interface (GUI) sample and database design schema sample for project.

5.1) Solving exam flowchart

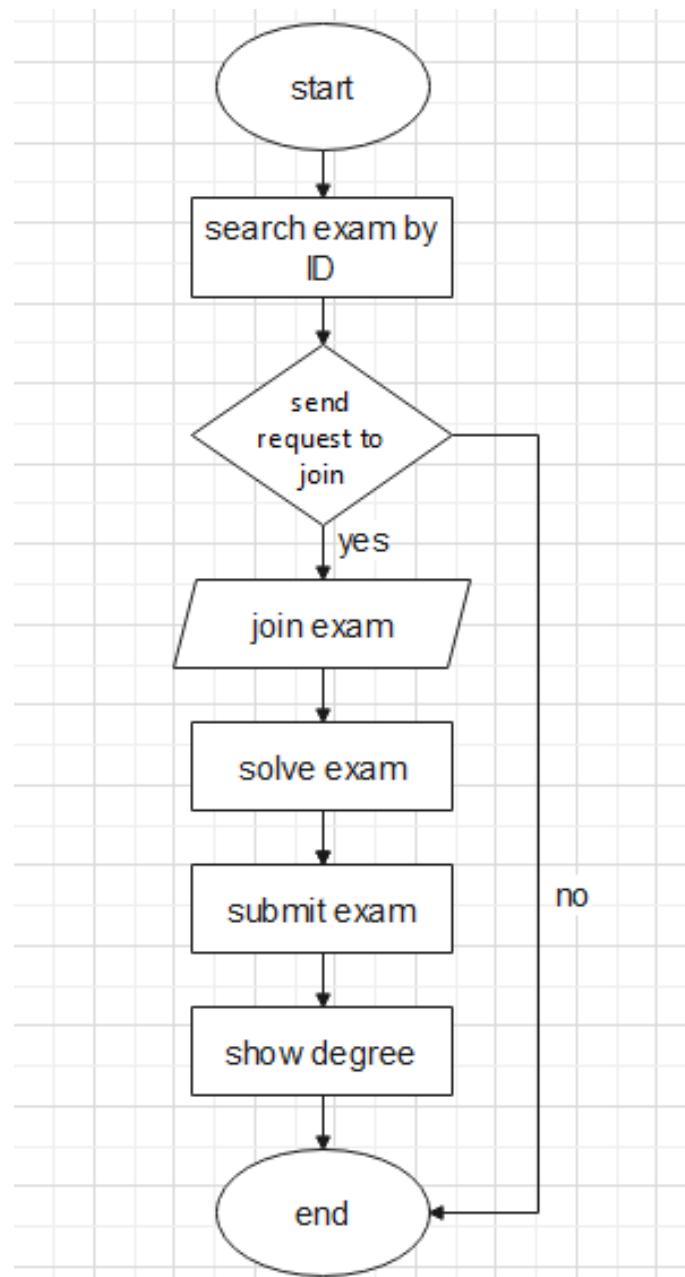


Figure 25. Solving Exam Flowchart

5.2) Users flowchart

For examiner

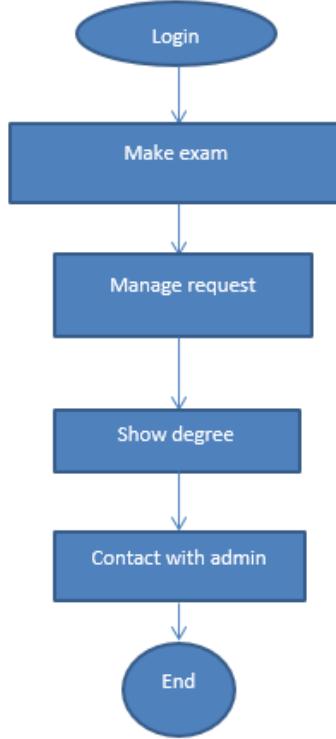


Figure 27. Examiner Flowchart

For admin |



Figure 26. Admin Flowchart

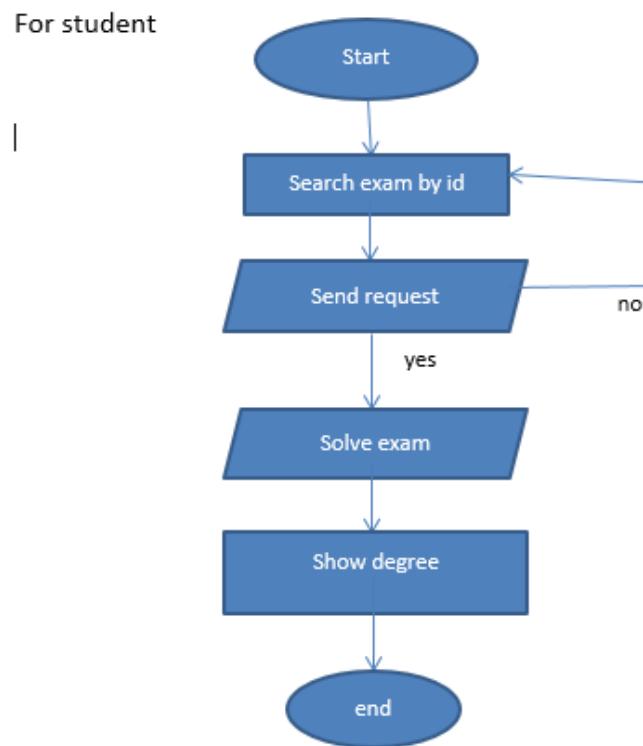


Figure 28. Student Flowchart

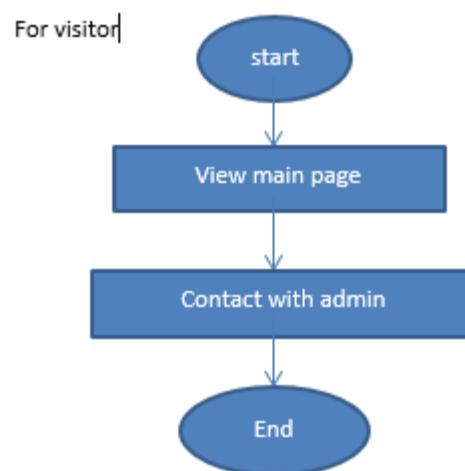


Figure 29. Visitor Flowchart

5.3) GUI

TestingHub has various Graphical user interface and database tables as it provides critical and great number of functions that can be used in any university around the world.

The screenshot shows the 'Exam General Info' page of the TestingHub application. At the top, there is a dark header bar with the 'TestingHub' logo and navigation links for 'Home', 'New Exam', 'Add Question', 'Questions Bank', 'Options', and 'Logout'. Below the header, the main form is titled 'Exam General Info'. It contains the following fields:

- Exam Name: A text input field.
- Subject: A dropdown menu.
- Exam Logo: A file upload field labeled 'Choose File' with the message 'No file chosen'.
- Exam start Time: A date/time input field.
- Exam End Time: A date/time input field.
- Exam Start Date: A date input field.
- Max Score: A text input field.
- Min Score: A text input field.
- Registration Automatically: A section with two radio buttons: 'Yes' and 'No'.
- A blue 'Submit' button at the bottom.

Figure 30. Add Exam

TestingHub		Home	New Exam	Add Question	Questions Bank	Options	Login Successfully
All Exams							
machine		Network					
Date : 2020-02-12	Start Time : 00:12:00.000000	End Time : 02:22:00.000000		Date : 2222-11-21	Start Time : 00:12:00.000000	End Time : 00:12:00.000000	
Max Score : 100	Min Score : 30	Subject :		Max Score : 12	Min Score : 11	Subject :	
compiler		oop					
Date : 1212-12-12	Start Time : 11:11:00.000000	End Time : 00:12:00.000000		Date : 1111-12-12	Start Time : 23:11:00.000000	End Time : 12:12:00.000000	
Max Score : 111	Min Score : 222	Subject :		Max Score : 11	Min Score : 22	Subject :	
security							
Date : 2020-02-22	Start Time : 12:12:00.000000	End Time : 13:13:00.000000					
Max Score : 100	Min Score : 50	Subject :					

Figure 31. Search Exam

Register screen:

For create a new account in our website with all personal information.

Email – Name – Password – Phone – Picture – Bio

TestingHub

Login/SignUp

signup as Student / Examiner

Enter Your Mail

Enter Name

Enter your password

Enter phone

Choose File No file chosen

Enter bio

Have Account >>Login

Sign Up

Figure 32.Register Screen

Login Screen:

This page for authentication the user with email and password to login the website.

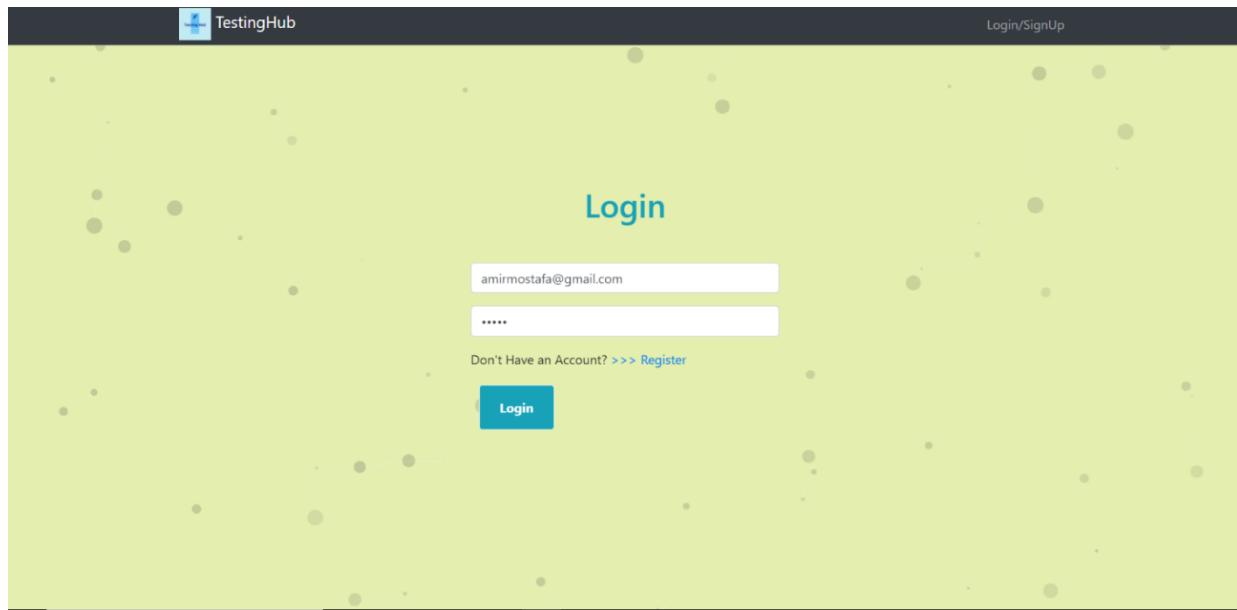


Figure 33. Login Screen

1. As a visitor:

This view for users that have not account's in our website

To know all information about website

How to work with this exam

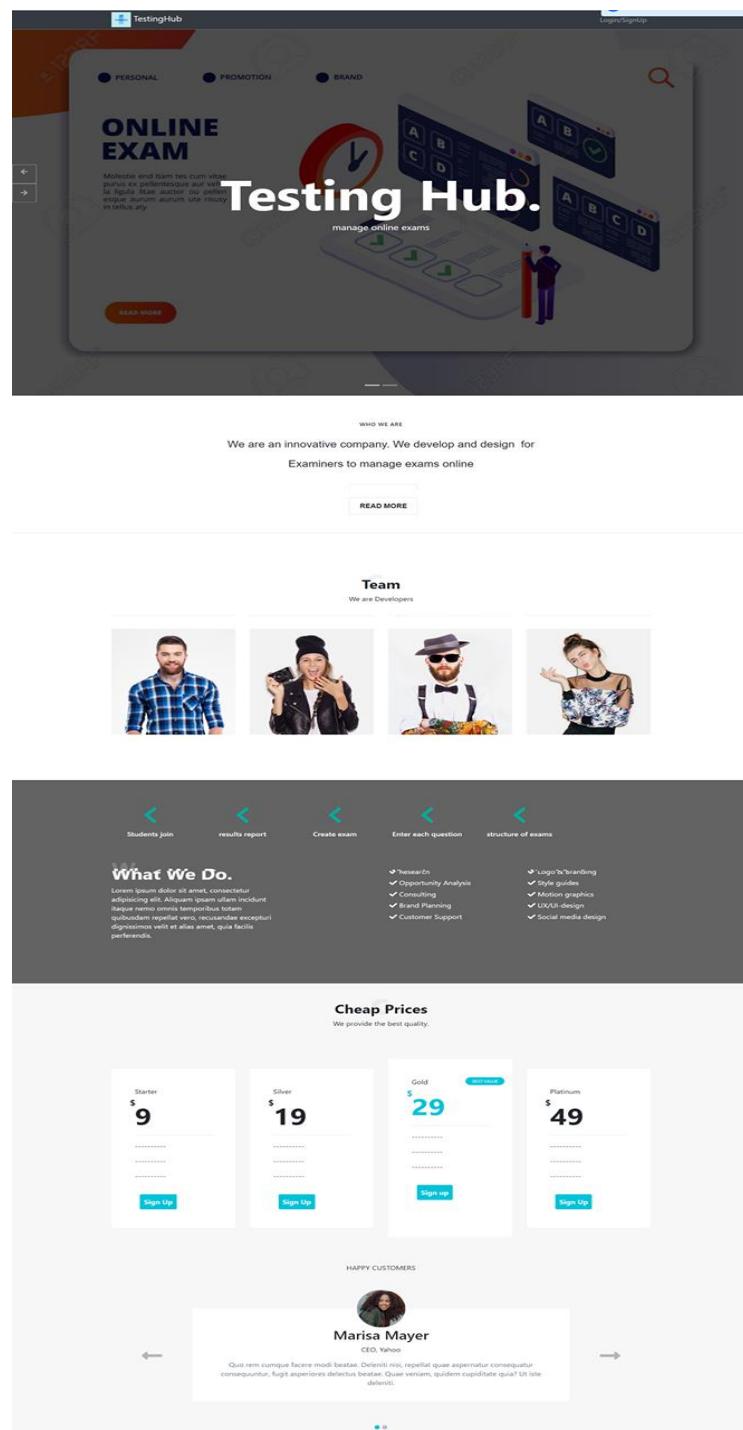


Figure 34. Home Page

Profile page:

Contain general information about examiner

Contain all current exam and ended exam

Student can contact with examiner

The screenshot shows a web browser window with multiple tabs open, displaying the 'Examiner' profile page. The main content area has a dark blue header with the 'TestingHub' logo and a search bar containing 'amir'. Below the header is a banner featuring a profile picture of 'Amir Mostafa' and a bio: 'I am a full stack developer with industry experience building websites and web applications I specialize in JavaScript and have experience working php laravel'. The page is divided into sections: 'About' (listing Email: amirmostafa@gmail.com, Phone: 01203153992, Subjects: oop,c#,data), 'Current Exams' (listing 'Network' exam with Date: 2222-11-21, Start Time: 00:12:00, End Time: 00:12:00, Max Score: 12, Min Score: 11, Subject: bio), and 'Ended Exams' (listing 'machine' exam (Date: 2021-01-28, Start Time: 22:20:00, End Time: 21:04:00, Max Score: 100, Min Score: 30, Subject: c#) and 'compiler' exam (Date: 2021-03-12, Start Time: 22:42:00, End Time: 23:59:00, Max Score: 111, Min Score: 222, Subject: c#), and 'oop' exam (Date: 2021-03-16, Start Time: 11:38:00, End Time: 14:00:00, Max Score: 11, Min Score: 22, Subject: bio) and 'security' exam (Date: 2020-02-22, Start Time: 12:12:00, End Time: 13:13:00, Max Score: 100, Min Score: 50, Subject: c#)).

Current Exams					
Network Date : 2222-11-21 Start Time : 00:12:00 End Time : 00:12:00 Max Score : 12 Min Score : 11 Subject : bio					

Ended Exams					
machine Date : 2021-01-28 Start Time : 22:20:00 End Time : 21:04:00 Max Score : 100 Min Score : 30 Subject : c#	compiler Date : 2021-03-12 Start Time : 22:42:00 End Time : 23:59:00 Max Score : 111 Min Score : 222 Subject : c#				
oop Date : 2021-03-16 Start Time : 11:38:00 End Time : 14:00:00 Max Score : 11 Min Score : 22 Subject : bio	security Date : 2020-02-22 Start Time : 12:12:00 End Time : 13:13:00 Max Score : 100 Min Score : 50 Subject : c#				

Figure 35. Examiner profile

1- Make Exam:

Exam name – Subject – Exam logo – Exam start-time – Exam end-time –

Exam date – Max score – Min score

This process consists of two parts:

1. The first part (exam general information)

- Exam name
- subject
- start time
- end time
- start date
- max score
- min score
- Registration Automatically

The screenshot shows the 'Exam General Info' form from the TestingHub application. The top navigation bar includes links for Home, New Exam, Add Question, Questions Bank, Options, and Logout. The main form has the following fields:

- Exam Name: A text input field.
- Subject: A dropdown menu.
- Exam Logo: A file upload field labeled 'Choose File' with 'No file chosen' displayed.
- Exam start Time: A date/time input field with a clear button.
- Exam End Time: A date/time input field with a clear button.
- Exam Start Date: A date input field with a clear button.
- Max Score: A text input field.
- Min Score: A text input field.
- Registration Automatically: A radio button group with 'Yes' and 'No' options, where 'Yes' is selected.

A blue 'Submit' button is located at the bottom left of the form area.

Figure 36. Insert Exam General Info

2. The second part
select questions from question bank

The screenshot shows a web-based application for selecting exam questions. At the top, there is a navigation bar with links for Home, New Exam, Add Question, Questions Bank, Options, and Logout. Below the navigation bar, the title "Select Exam Questions" is displayed.

The main content area contains five question cards, each with a question, a list of options, and a toggle switch. There are also two additional input fields for defining OOP and namespaces.

- Q what's the meaning of oop in c#**
 ood
 data base
 object orieanted peogramming
- Q choose number of delegate in class ?**
 1
 2
 3
- Q This true or false**
 True
 Fasle
- Q definde oop in c#**
enter Your Answer
- Q define strucure of namespaces**
enter Your Answer

A blue "Save" button is located at the bottom left of the question cards.

Figure 37.Select Exam Question

Reccorrect page:

Contain all student's requests need to reccorrect exam

After review exam send feedback to student

The screenshot shows a dark-themed web application interface. At the top, there is a navigation bar with links: Home, New Exam, Add Question, Questions Bank, Options, and Logout. Below the navigation bar, there are two main sections. The first section, titled "Has not been reviewed" in blue text, contains a table header with columns: "Exam", "Name", "Email", "Description", and "Action". The second section, titled "Reviewed" in blue text, also contains a similar table header. Both sections are currently empty.

	Exam	Name	Email	Description	Action
--	------	------	-------	-------------	--------

	Exam	Name	Email	Description	Action
--	------	------	-------	-------------	--------

Figure 38. reccorrect page

2- Add Question in QB:

Choose the subject - Question type – Question body – Multiple choices – Correct answer

- This page to add questions for specific subject in question bank

The screenshot shows a user interface for adding questions to a question bank. At the top, a navigation bar includes links for Home, New Exam, Add Question, Questions Bank, Options, and Logout. The main title "Questions" is centered above a list of four question creation forms.

- Form 1 (Top):** Subject is set to "bio". The question text is "what is", and there are three answer choice fields: "answer 1" (unchecked), "Enter answer choice" (checked), and "Enter answer choice" (unchecked). A green "+" button is visible below the form.
- Form 2:** Subject is set to "True/False". The question text is empty, and there are two radio button options: "True" (selected) and "False".
- Form 3:** Subject is set to "Essay". The question text is empty, and there is a single "enter keywords" field.
- Form 4:** Subject is set to "Essay". The question text is empty, and there is a single "enter keywords" field.

At the bottom left is a teal "Save" button with a file icon, and at the bottom right is a teal "+" button.

Figure 39. Add Question in Question Bank

3- Question Bank:

- To manage questions in question bank for specific subject

The screenshot shows the 'Questions Bank' page of the TestingHub application. At the top, there is a navigation bar with links for Home, New Exam, Add Question, Questions Bank, Options, and Logout. Below the navigation bar, the page title 'Questions Bank' is displayed in a teal-colored header. A search bar is present, with the placeholder text 'c#' and a 'Search' button. The main content area displays five questions, each in its own card:

- what's the meaning of oop in c#**
Three options are listed:
 - ood
 - data base
 - object orieanted peogrammingA toggle switch and a more options menu are located to the right of the question.
- choose number of delegate in class ?**
Three options are listed:
 - 1
 - 2
 - 3A toggle switch and a more options menu are located to the right of the question.
- This true or false**
Two options are listed:
 - True
 - FasleA toggle switch and a more options menu are located to the right of the question.
- definde oop in c#**
A text input field labeled 'enter Your Answer' is provided.
- define strucure of namespaces**
A text input field labeled 'enter Your Answer' is provided.

Figure 40.Select Questions from Question Bank

3. As Student:

3.1 home page

This page contains all allowed and not allowed exams

The screenshot shows the TestingHub home page with a header bar containing the logo, 'TestingHub', 'Home', 'Search for Examiner', and 'Logout'. Below the header, the text 'All Allowed Exams' is displayed in blue. Two exam entries are shown in a grid format:

compiler	oop
Date : 2021-03-12 Max Score : 111	Date : 2021-03-14 Max Score : 11
Start Time : 22:42:00 Min Score : 222	End Time : 23:59:00 Subject : c#
	Start Time : 14:59:00 Min Score : 22
	End Time : 01:42:00 Subject : bio

Below this section, the text 'Not Approved Exams' is displayed in blue. Two exam entries are shown in a grid format:

machine	Network
Date : 2021-01-28 Max Score : 100	Date : 2222-11-21 Max Score : 12
Start Time : 22:20:00 Min Score : 30	End Time : 00:12:00 Subject : bio
	Start Time : 00:12:00 Min Score : 11
	End Time : 00:12:00 Subject : bio

Figure 41. allowed exams

3.2 Not allow page

This page to send request to examiner to join exam

The screenshot shows the TestingHub page with a header bar containing the logo, 'TestingHub', 'Home', 'Search for Examiner', and 'Logout'. The main content area displays the message 'You do not allowed to access this exam' in red text. A blue button labeled 'Send join request' is centered below the message. In the center of the page is a large red circular icon with a white 'X' inside it.

Figure 42. not allowed page

3.3 not approve page:
Student send request to examiner but examiner not approve request

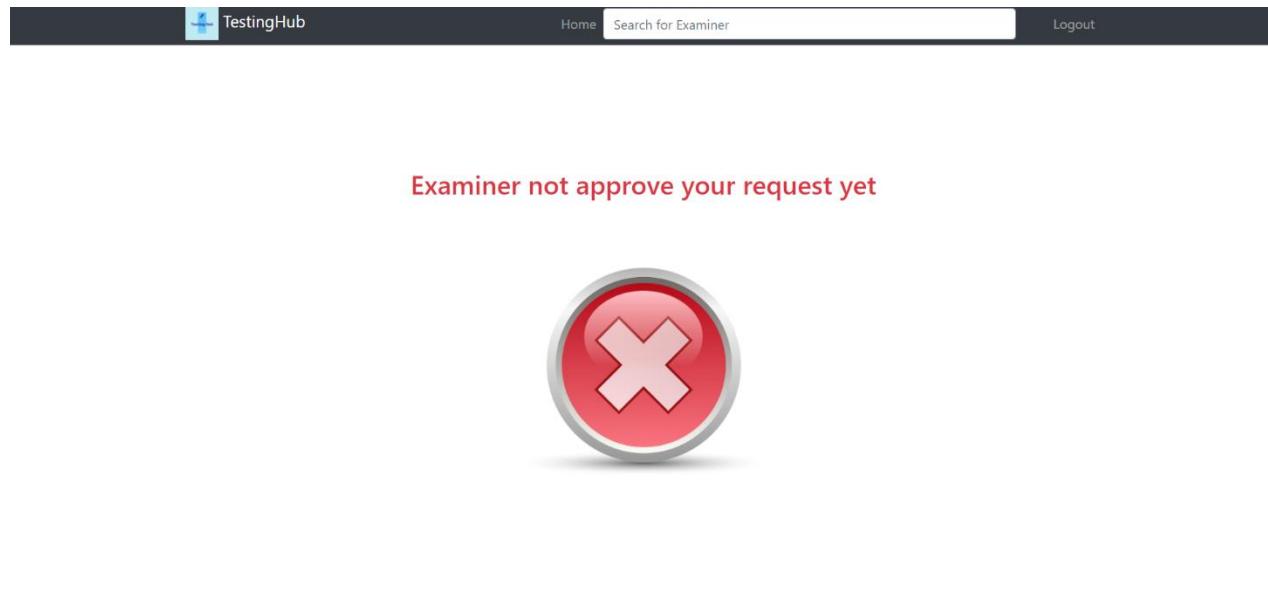


Figure 43. not approve page

3.4 show exam
Display exam question by question for student with timer
When exam ended the student answers ignore

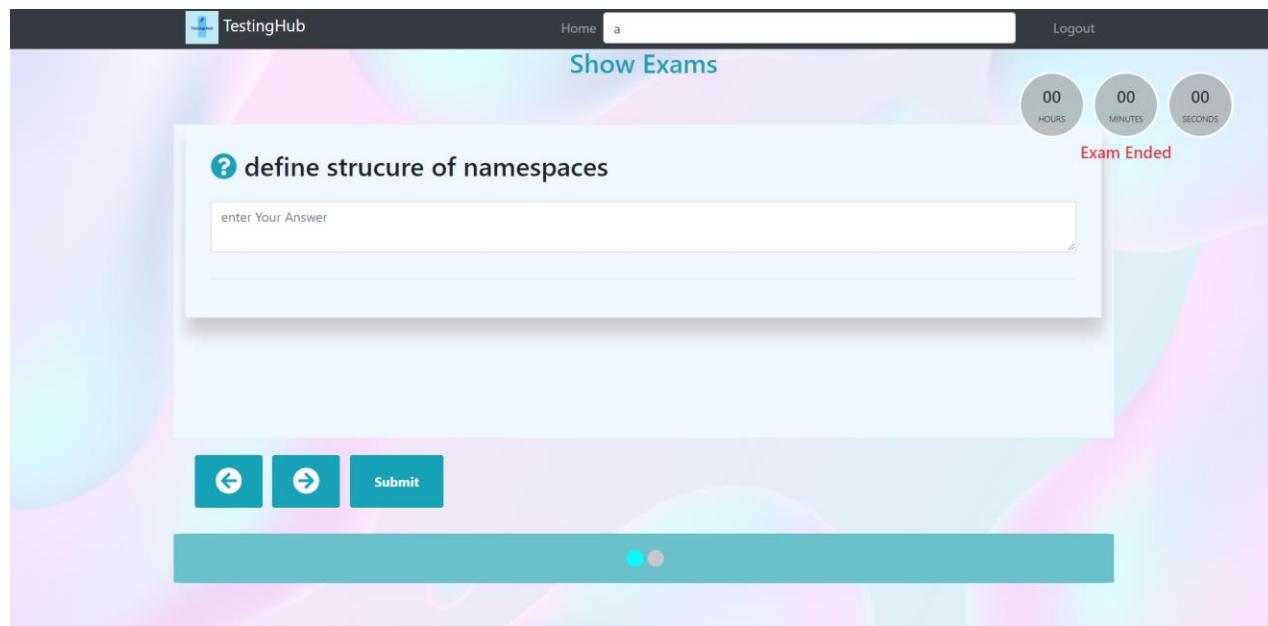


Figure 44. exam page

3.5 Recorrect page:
Send request to examiner to recorrect exam

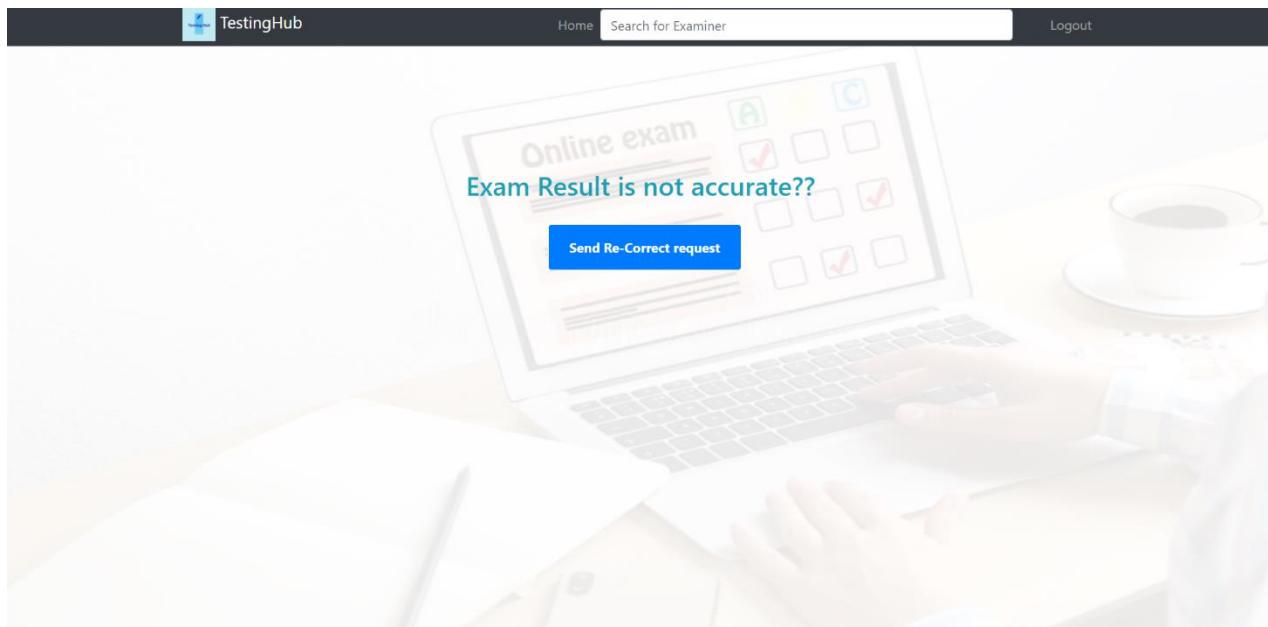


Figure 45. reccorrect page

3.6 pending page
Prevent page from show exam
Student can show exam after start time

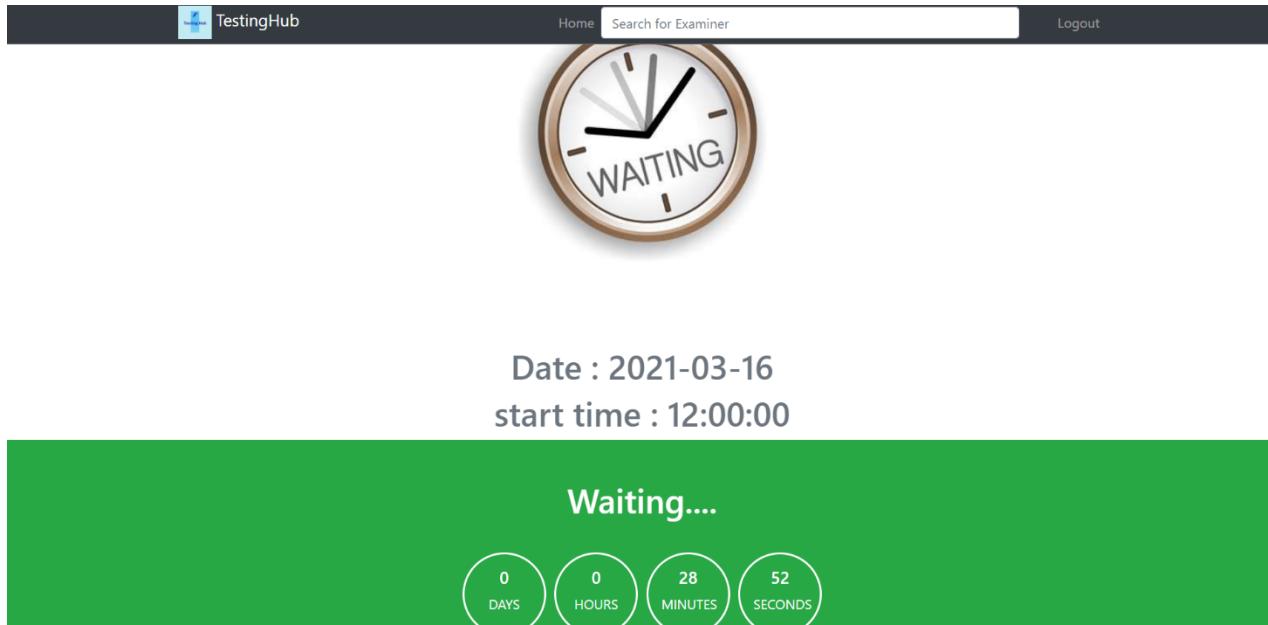


Figure 46. pending page

3.7 search page

Students can search for any examiner to get information about him and get their exam

The screenshot shows a web application interface for 'TestingHub'. At the top, there is a navigation bar with links for 'Home', a search bar containing the letter 'a', and 'Logout'. Below the navigation bar, there is a sidebar with the title 'compiler' and some statistics: Date: 2021-03-12, Start Time: 22:42:00, End Time: 23:59:00, Max Score: 111, Min Score: 222, and Subject: c#. To the right of the sidebar, a search result card for 'Amir Mostafa' is displayed, featuring a profile icon and the name 'Amir Mostafa'. Below this, there are three more entries for 'Nagwa Gamal', each with a profile icon and the name 'Nagwa Gamal'. A vertical ellipsis menu is visible on the right side of the search results.

Figure 47. search page

5.4) Database Table

```
public function up()
{
    Schema::create('users', function (Blueprint $table) {
        $table->increments('id');
        $table->string('name');
        $table->string('email')->unique();
        $table->timestamp('email_verified_at')->nullable();
        $table->string('password');
        $table->string('phone')->nullable();
        $table->string('subject')->nullable();
        $table->string('type');
        $table->string('image')->nullable();
        $table->text('bio')->nullable();
        $table->string('api_token');
        $table->rememberToken();
        $table->timestamps();
    });
}
```

Figure 48. Create User Table

```
public function up()
{
    Schema::create('exams', function (Blueprint $table) {
        $table->increments('id');
        $table->integer('user_id')->unsigned();
        $table->integer('subject_id')->unsigned();
        $table->date('date');
        $table->string('max_score');
        $table->string('min_score');
        $table->boolean('register_auto');
        $table->boolean('limitation');
        $table->time('start_time');
        $table->time('end_time');
        $table->string('name');
        $table->string('choose_ques_ids')->nullable();
        $table->string('essays_ques_ids')->nullable();
        $table->string('logo')->nullable();
        $table->timestamps();
        $table->foreign('subject_id')
            ->references('id')->on('subjects')
            ->onDelete('cascade');
        $table->foreign('user_id')
            ->references('id')->on('users')
            ->onDelete('cascade');
    });
}
```

Figure 49. Create Exam Table

```
public function up()
{
    Schema::create('contacts', function (Blueprint $table) {
        $table->increments('id');
        $table->integer('user_id')->unsigned();
        $table->text('message');
        $table->timestamps();
        $table->foreign('user_id')
            ->references('id')->on('users')
            ->onDelete('cascade');
    });
}
```

Figure 50. Create Contact Table

6) Benefits and limitations:

This chapter summarizes the conclusion of the system followed by the next version.

6.1) Conclusion

The online examinee system is a powerful application system based on the computer network. The design of this system is based on the Laravel framework, the purpose of this system is to explore a test pattern. Through this new mode, the long and complicated process of traditional examination mode has been changed.

Making full use of the environment of the campus network to carry out examination to students at anytime and anywhere, greatly simplifies the traditional examination process, reduces the work intensity of the teaching management departments and teachers, and improves the work efficiency and standardization level.

6.2) Future works

In future the system uses at any organization interested by the learning, correct the exam by flexibility. System helps the learning to high level and help examiner to make perfect exam by Ideal standards. Adding chat between users (examiner, student, admin and visitor).

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