SRI GURU GOBIND SINGH COLLEGE OF COMMERCE

UNIVERSITY OF DELHI

DEPARTMENT OF COMPUTER SCIENCE

PROJECT REPORT ON:

SUBMITTED BY:

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SUBMITTED TO:

Mrs. Musarrat Ahmed

SUBJECT:

SOFTWARE ENGINEERING

ACKNOWLEDGEMENT

With a deep sense of gratitude, we wish to express our sincere thanks to our guide, **Mrs. Musarrat Ahmed**, Software Engineering teacher for giving us the opportunity to work under her on this project.

We truly appreciate and value her esteemed guidance and encouragement from the beginning to end of this project. We are extremely grateful to her. We thank our parents and all our teachers for teaching us. They have been great source of inspiration to us and we thank them from the bottom of our heart.

At last, we would like to thank our Computer Science department for giving us the opportunity and platform to make our effort a successful one.

CERTIFICATE

This is to certify that Prabhjeet Singh, Rajan Mishra, Rashpreet Singh students of B.Sc. Honours Computer Science, Semester IV have submitted the project entitled "QPG(Question Paper Generator)" for the partial fulfilment of the requirements of software engineering project. It embodies the work done by them during semester IV of their course under the due supervision of Mrs. Musarrat Ahmed.

Mrs. Musarrat Ahmed

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INTRODUCTION

Giving an examination is a difficult work or to create a question paper? We say creating a question paper is more time consuming. Sometimes teachers have to make question paper, a day before examination which is very difficult for them. Moreover, they have to find good questions for the exam that consumes a lot of time.

But don't worry, we are here with our QPG that is "Question Paper Generator". It will be the best opportunity to generate question papers and even their answer keys in minutes.
It allows you to input the set of questions with the help of provided question bank. You can also create your own question bank. So there is no need to search the questions. It will save your time.

PROBLEM STATEMENT

Nowadays, we heard the news about the question paper leakage before the examination starts. There are number of incidences occurring across many universities. Moreover, delivering of printed question papers at examination centers has been a big task of administration and logistics.

The question paper setters have to travel to university locations to define question papers. Whole process is manual and takes a lot of time and resources and thus, possibility of leakageof question paper increases. Examination is one of the most important parts of the academic performance of students. So it is very helpful to choose the technological way to eliminatethese problems in creating question papers.

The QPG software is now here for you to generate question papers from the pool of question banks. There is no need of transporting the papers to colleges through security vans. You can send to colleges through Email. Every college gets digital delivery of question papers. The highly Secure process saves your time and manual paper works.

ADVANTAGES AND USP OF SOFTWARE

ADVANTAGES:

- No chance of paper leaks.
- Wide portion coverage and efficient question paper generation.
- No need of transporting papers through police/security vans to all colleges.
- Thus the system excludes human efforts and saves time and resources.

USP OF THE SOFTWARE:

Creating an application is quite challenging and difficult. It is because these days completion is very high and everything is so dependent on the technology. So, the big challenge for us is to make our software better than the others. For this, our software will provide you to create question paper in minutes along with that you can even create an answer key.

Moreover, there is no need to search the questions on the web because software will provide you the question bank. If you need your questions you can even upload the document of your question bank. So it will be easy for you to do your work. We ensure you that our software will meet your requirements.

INITIAL REQUIREMENTS

User: SUBJECT MATTER EXPERT

Login: User will have a login account. He has to login with his username and password.

Registration: If he is new to the system, he has to register himself. He has to fill up a form for that with his credentials.

After Login, The User can perform the following options:

1. **Create Question Paper:**

   1.1 Set Details:

   1.1.1 Set Course and Subject Details: User has to fill up a form which includes course id, course name, subject name, subject id.

   1.1.2 Set Question Paper Details: User has to fill up a form which includes details such us year, subject Id, time, number of questions, university name etc.

1.2 Add Questions: User has to fill up a form which includes subject id, question number, question, marks etc. The system tries to cover as many chapters as possible for that subject.

2. View Question Paper: User can see and download the question paper.

REQUIREMENT ANALYSIS

We have taken suggestions from the teachers for our software. These suggestions are as follows:

1. Ms. Musarrat Ahmed: According to ma'am there should be a feature of question bank so that user can add questions with the help of bank. Moreover, she suggested us to add an optionof creating an answer key along with the question paper.

2. Mr. Dilip Kumar: According to sir, the questions should be skilled & application based.

3. Dr. Megha Ummat: According to ma'am, question paper should be such that equal marks weight age should be allocated to all units

FINAL REQUIREMENTS

User: SUBJECT MATTER EXPERT

Login: User will have a login account. He has to login with his username and password.

Registration: If he is new to the system, he has to register himself. He has to fill up a form for that with his credentials.

After Login, The User can perform the following options:

1. Create Question Paper:

1.1 Set Details:

1.1.1 Set Course and Subject Details: User has to fill up a form which includes course id, course name, subject name, subject id.

1.1.2 Set Question Paper Details: User has to fill up a form which includes details such us year, subject Id, time, number of questions, university name etc.

1.2 Add Questions: User has to fill up a form which includes subject id, question number, question, marks etc. The system tries to cover as many chapters as possible for that subject.

2. **View Question Paper:** User can see and download the question paper.

3. **Question Bank:**

3.1 Create Own Question Bank: User can upload its document of question bank.

3.2 View Own Question Bank: User can view the uploaded question bank.

3.3 View QPG Question Bank: User can view the QPG question bank.

4. **Create Answer Key:**

4.1 Set Details: User has to fill up a form which includes details such us year, subject Id, number of answers etc.

4.2 Add Answers: User has to fill up a form which includes answer number, answer etc.

5. **View Answer Key:** User can see and download the question paper.

User: ADMIN

Login: User will have a login account. He has to login with his username and password.

After Login, The User can perform the following options:

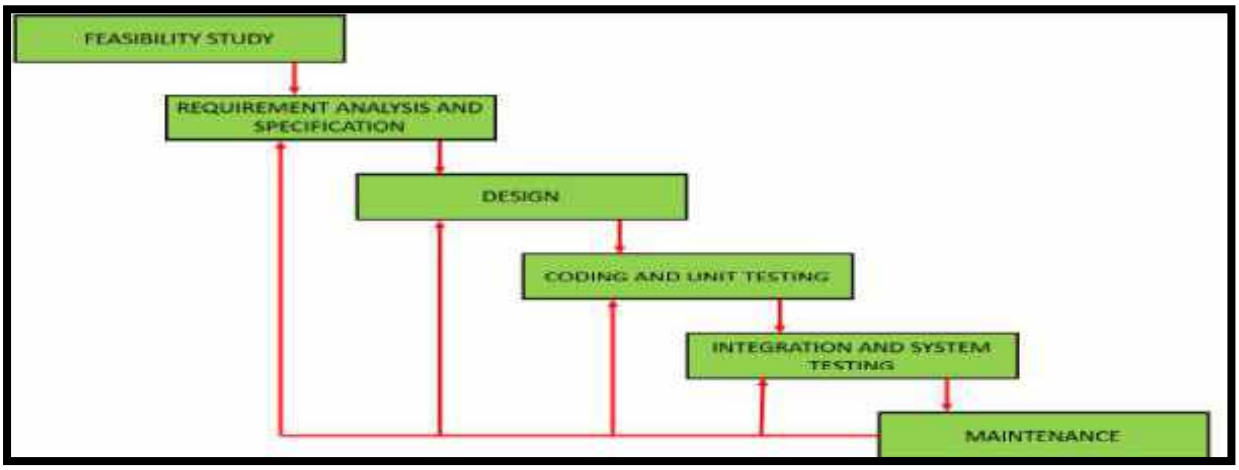
1. **Question Bank:**

1.1 Create QPG Question Bank: User can upload its document of question bank.

1.2 View QPG Question Bank: User can view the uploaded question bank.

PROCESS MODEL

"A software process model is a simplified representation of a software process. Each model represents a process from a specific perspective."



The software model we are using in our Project **"QPG Question Paper Generator"** is IterativeWaterfall Model which is given above.

Different phases of Model:

1. Feasibility Study:

Feasibility Study in Software Engineering is a study to evaluate feasibility of proposed project orsystem. Feasibility study is carried out based on many purposes to analyze whether software product will be right in terms of development, implantation, contribution of project to the organization etc.

2. Requirement Analysis and Specifications:

Requirement analysis is significant and essential activity after elicitation. We analyze, refine, and scrutinize the gathered requirements to make consistent and unambiguous requirements. This activity reviews all requirements and may provide a graphical view of the entire system. After the completion of the analysis, it is expected that the understandability of the project mayimprove significantly.

3. Design:

The design phase of software development deals with transforming the customer requirements as described in the SRS documents into a form implementable using a programming language.It is divided into three levels:

1. Interface Design
2. Architectural Design
3. Detailed Design

4. Coding and Unit testing:

Design must be translated into a machine readable form which is done by coding and Unit testing is a type of software testing where individual units or components of software are tested.

5. Integration and System testing:

Integration testing validates the collection and interface module and System testing test the finished product.

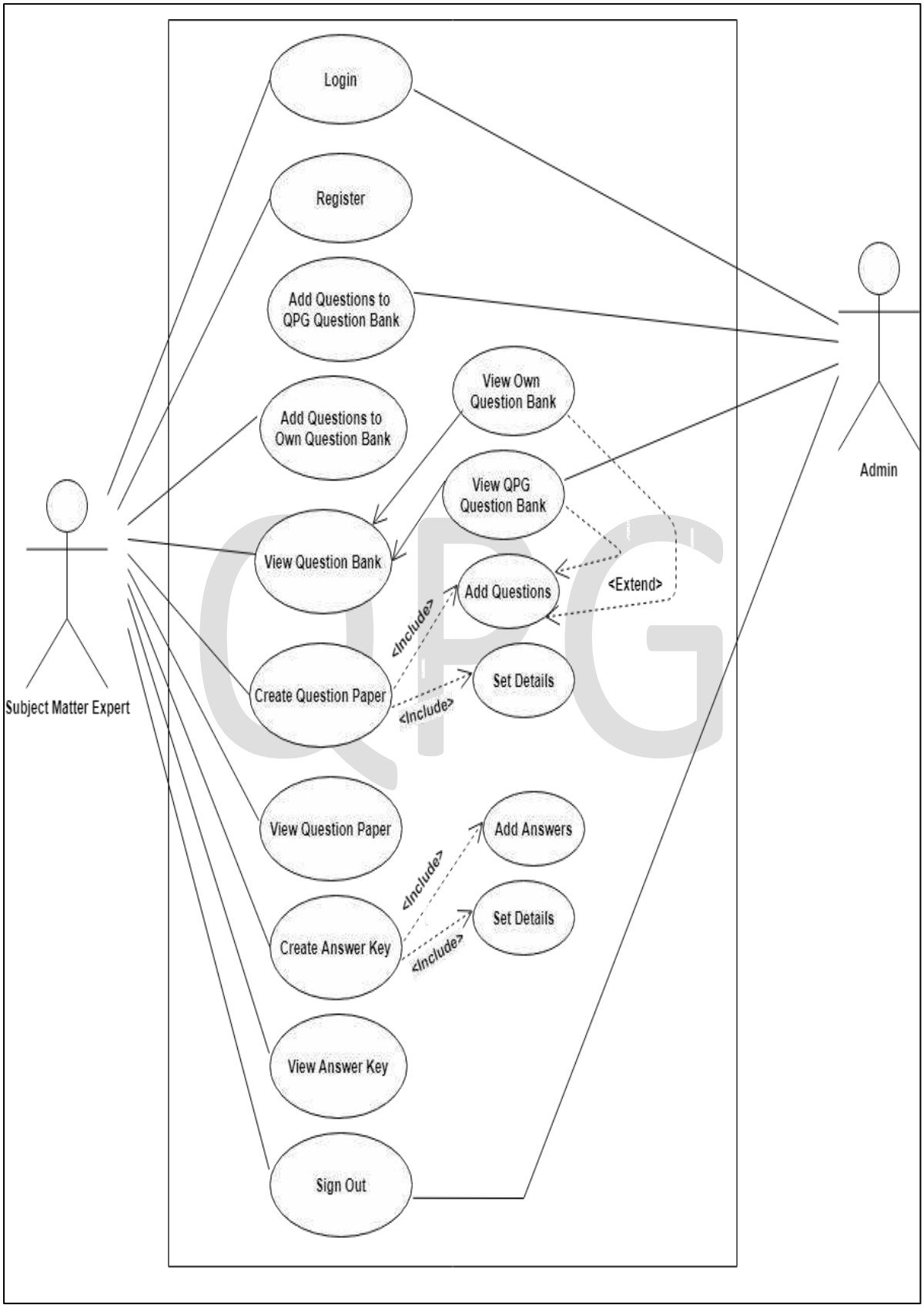
6. Maintenance:

Software Maintenance is the process of modifying a software product after it has been delivered to the customer. The main purpose of software maintenance is to modify and update software application after delivery to correct faults and to improve performance.

Why we chose this model for our Project?

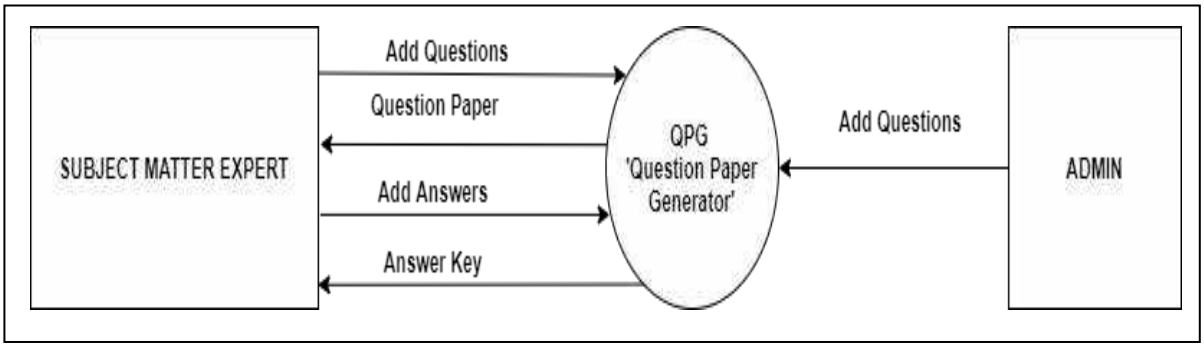
- In our project all the requirements are already known.
- Our Project is not complex.
- If we stuck at any step mentioned above then we can take feedbacks from others and can solve the issues which will come in different phases of model.

USE CASE

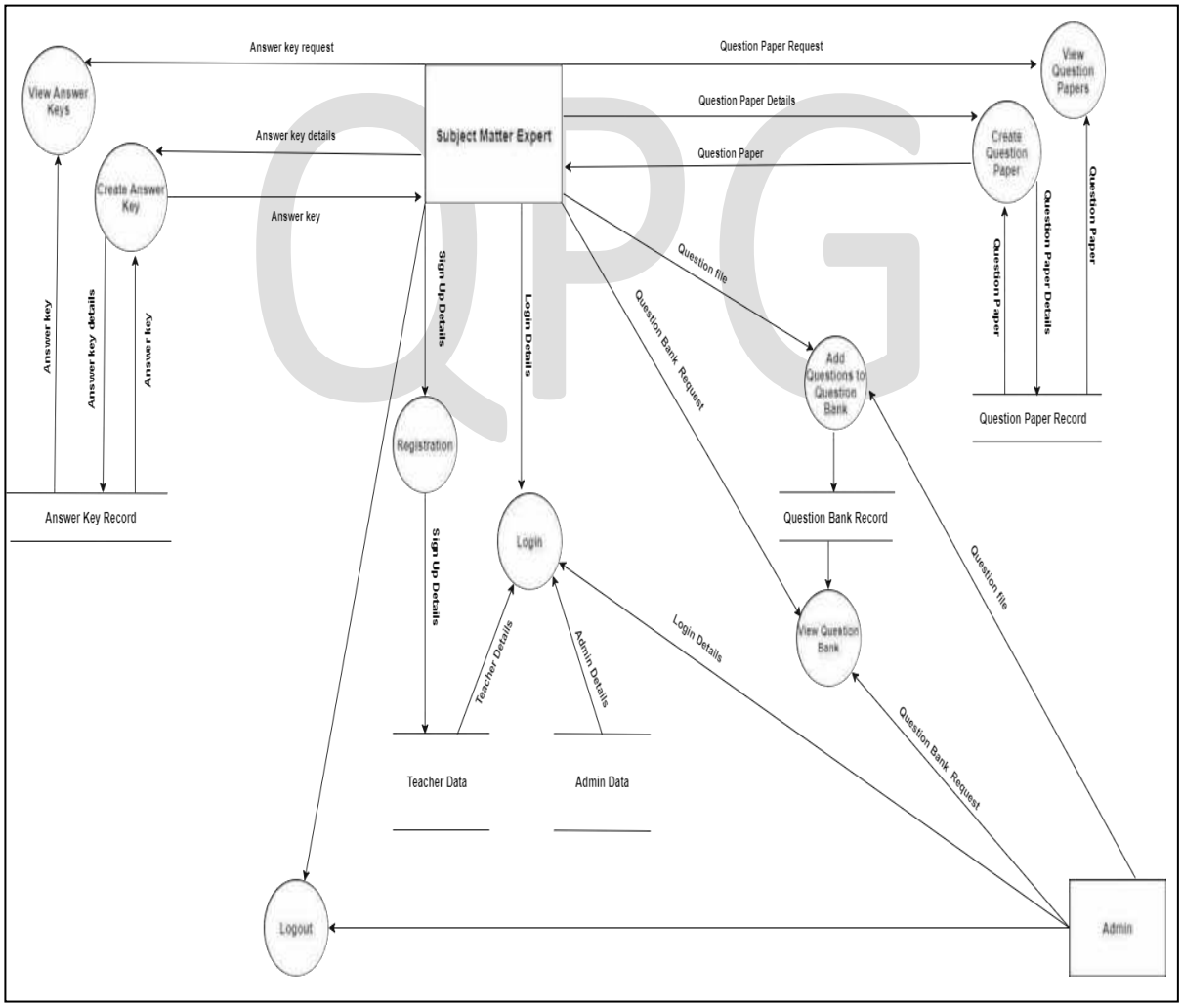

Login
Register
Add Questions to QPG Question Bank
Add Questions to Own Question Bank
View Own Question Bank
View QPG Question Bank
View Question Bank
Add Questions
<Extend>
<Include>
Create Question Paper
Set Details
<Include>
View Question Paper
Add Answers
<Include>
Create Answer Key
Set Details
<Include>
View Answer Key
Sign Out
Admin
Subject Matter Expert

DFD (DATA FLOW DIAGRAM)

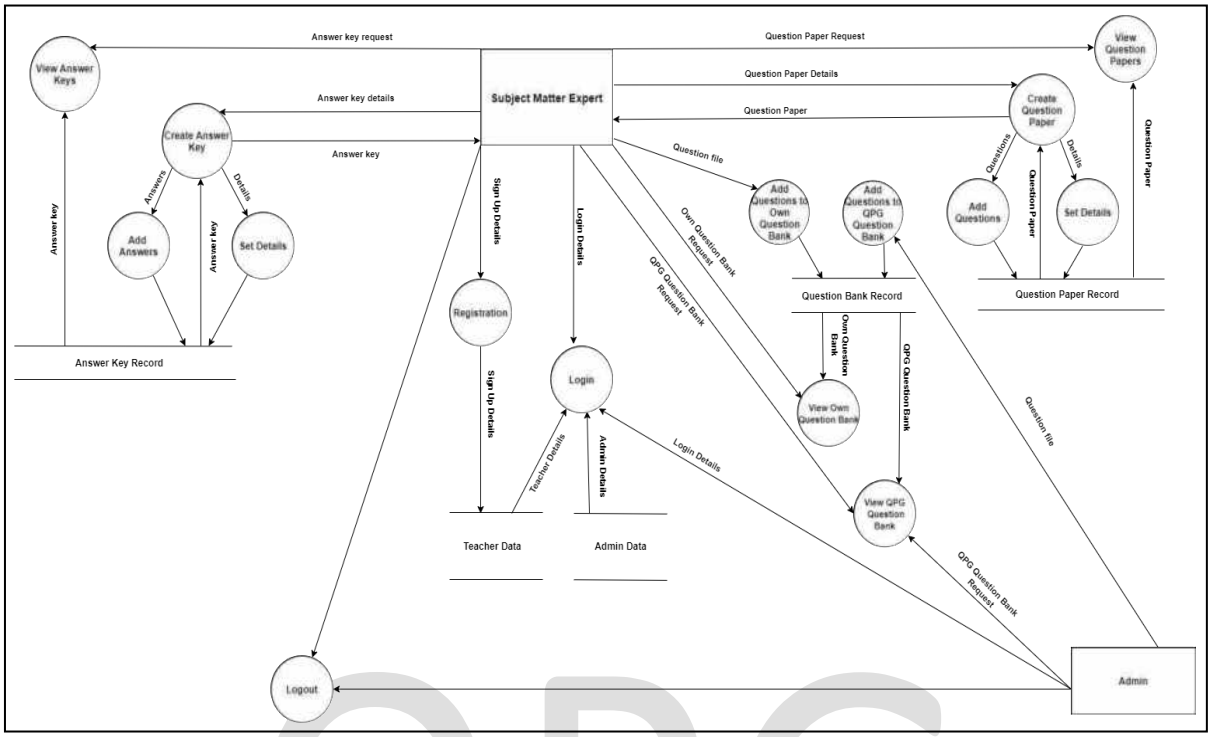
0 LEVEL



1 LEVEL



2 LEVEL



DATA DICTIONARY

1. **Sign Up details** = Username + Email + Password
2. **User(Subject Matter Expert) Login Details** = Username + Password
3. **Admin Login Details** = Username + Password
4. **Question Paper Details** = Details + Questions

4.1. Details = Course Id + Course Name + Subject Name + Subject Id + Year + Time + Number of Questions+ Total Marks + University Name.

4.2 Questions = Question No. + Question + Marks

5. **Question Bank Request** = Own Question Bank + QPG Question Bank

QPG ="Question Paper Generator" and **Own** = Subject Matter Expert

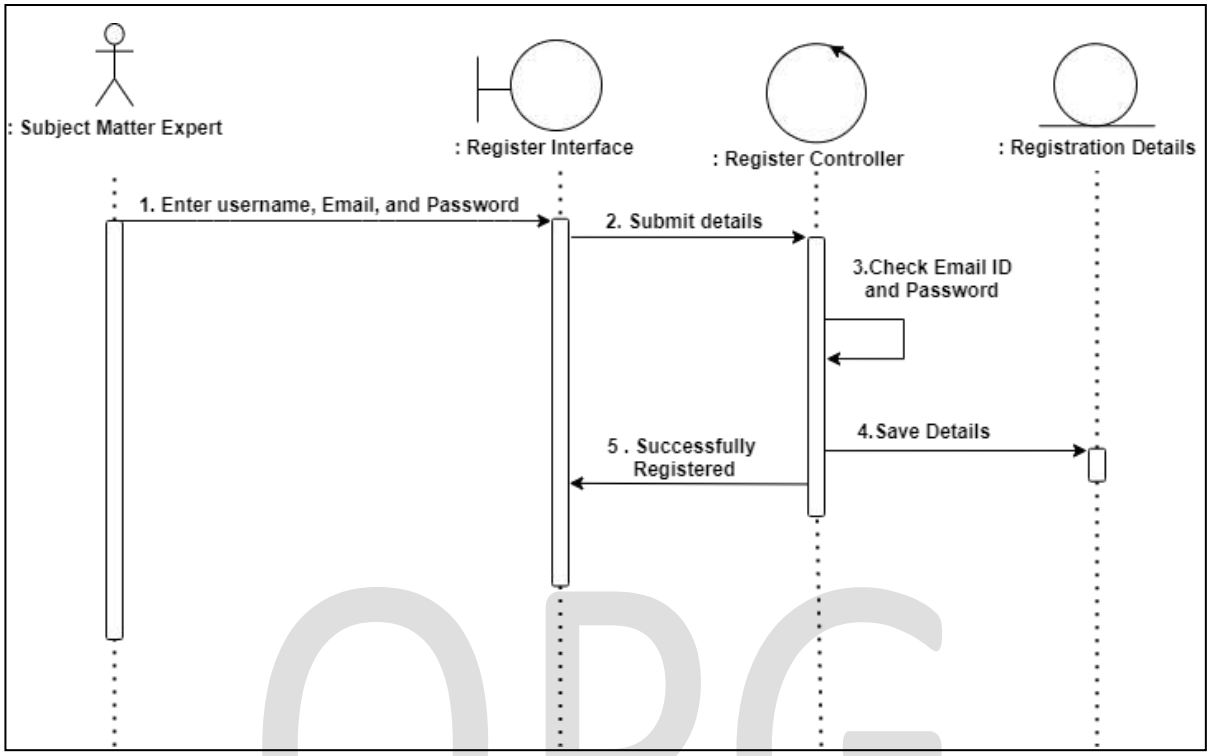
6. Answer Key Details = Details + Answers

6.1 Details = Year + Subject Id + Number of Answers + Course Id

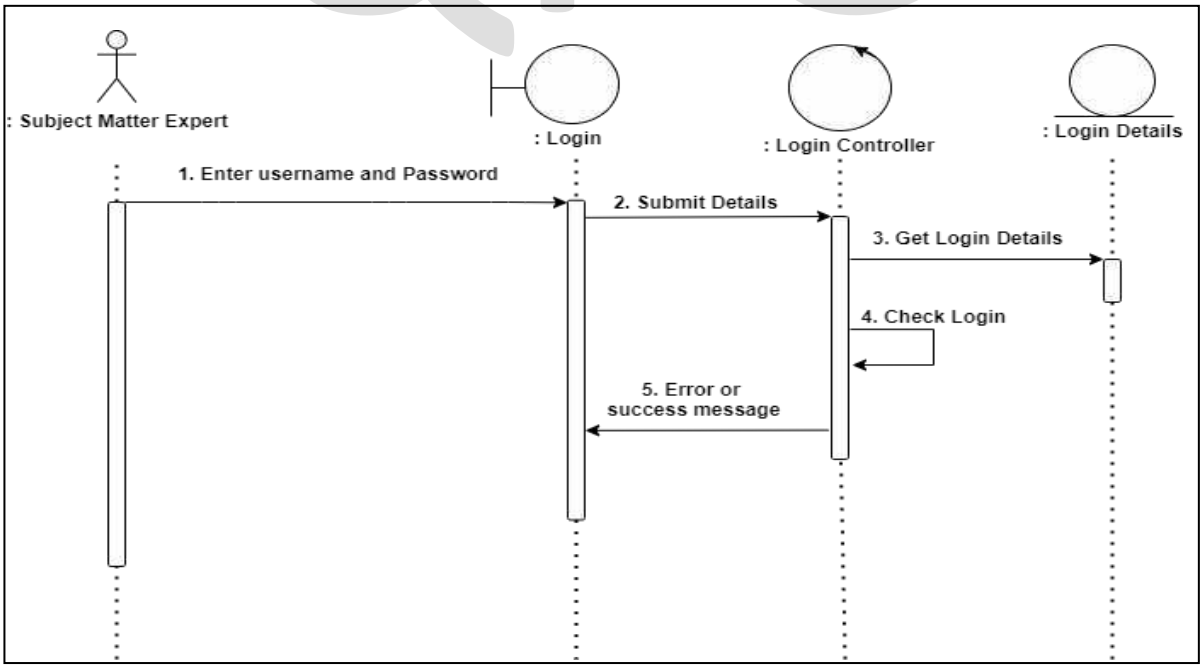
6.2 Answers = Answer No. + Answer

SEQUENCE DIAGRAMS

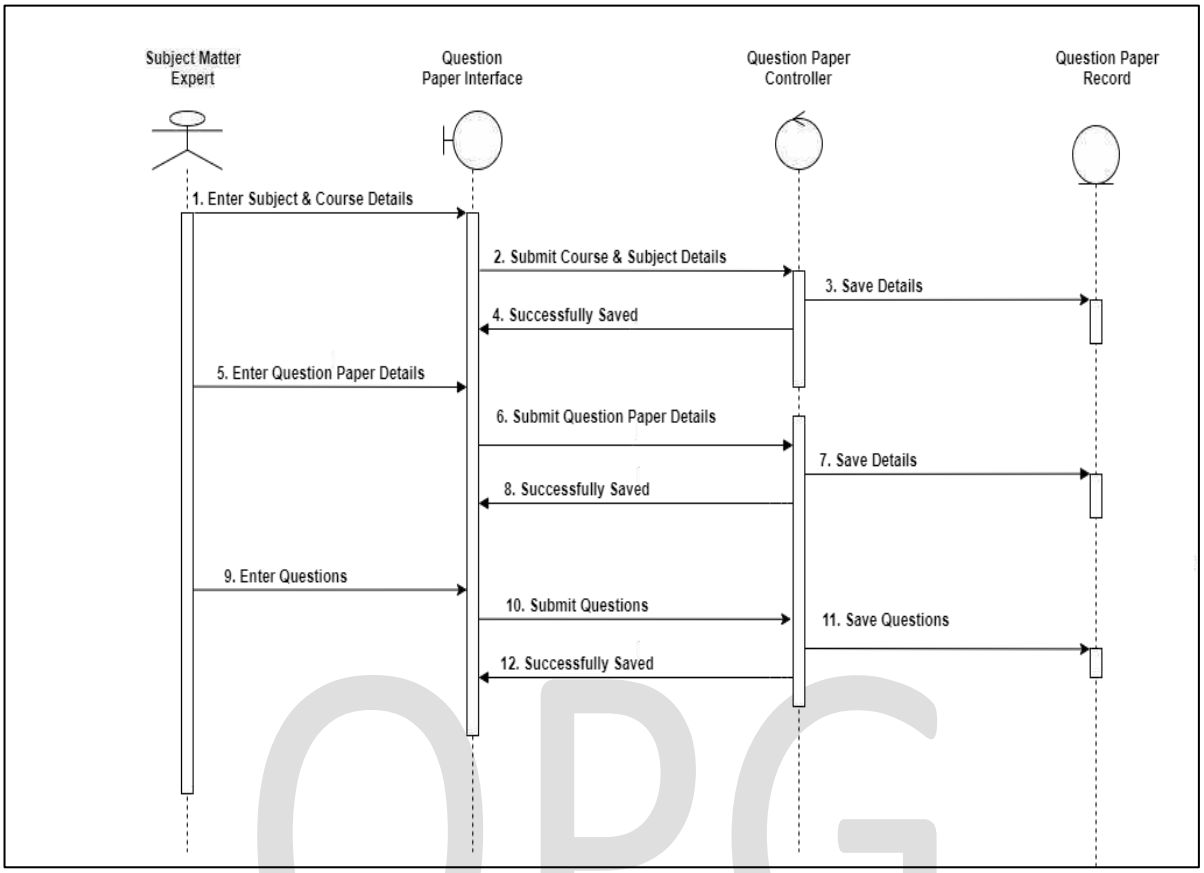
1. Registration:



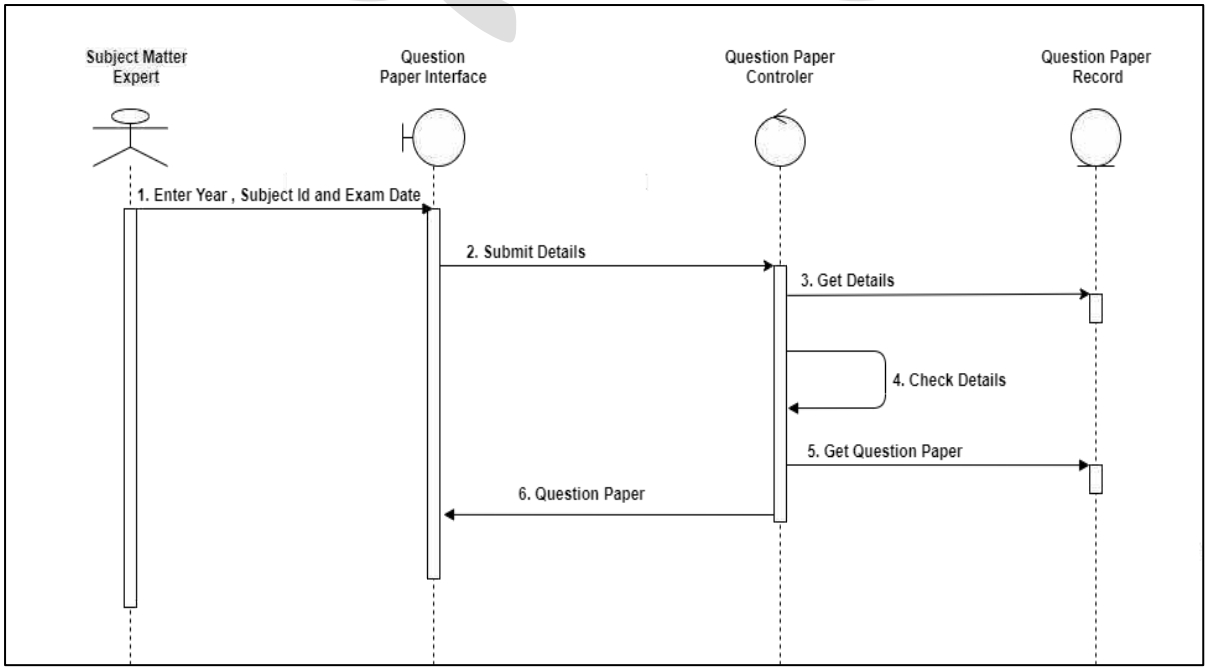
2. Login:



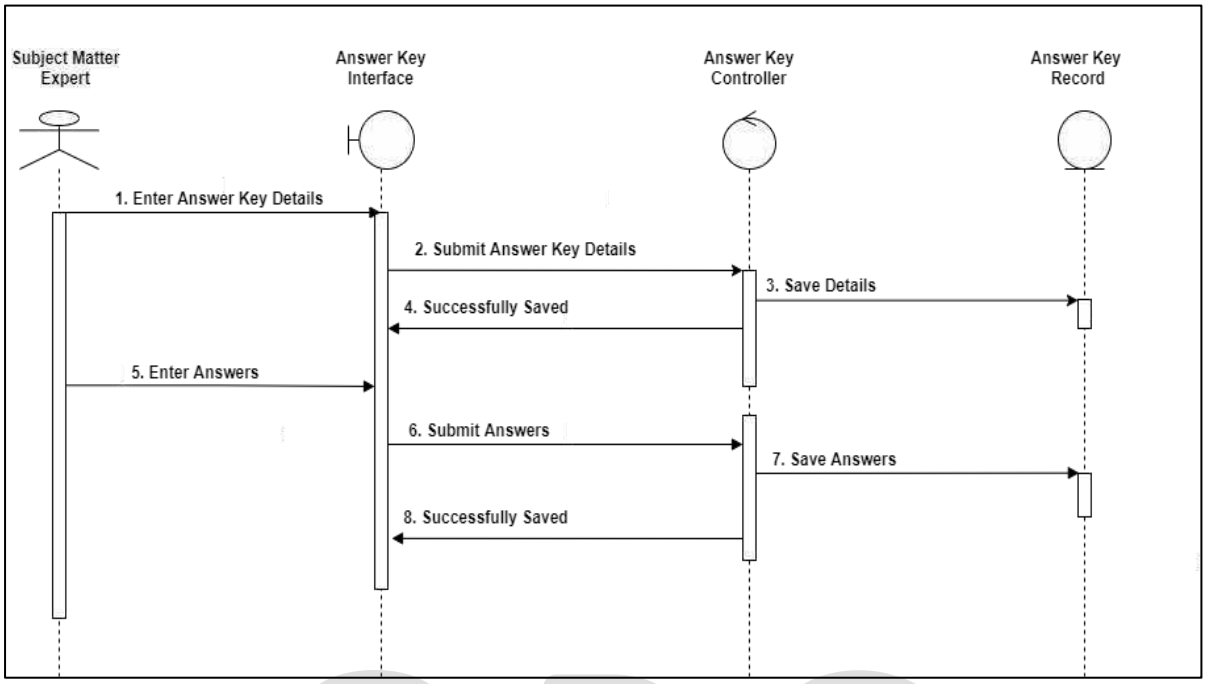
3. Create Question Paper:



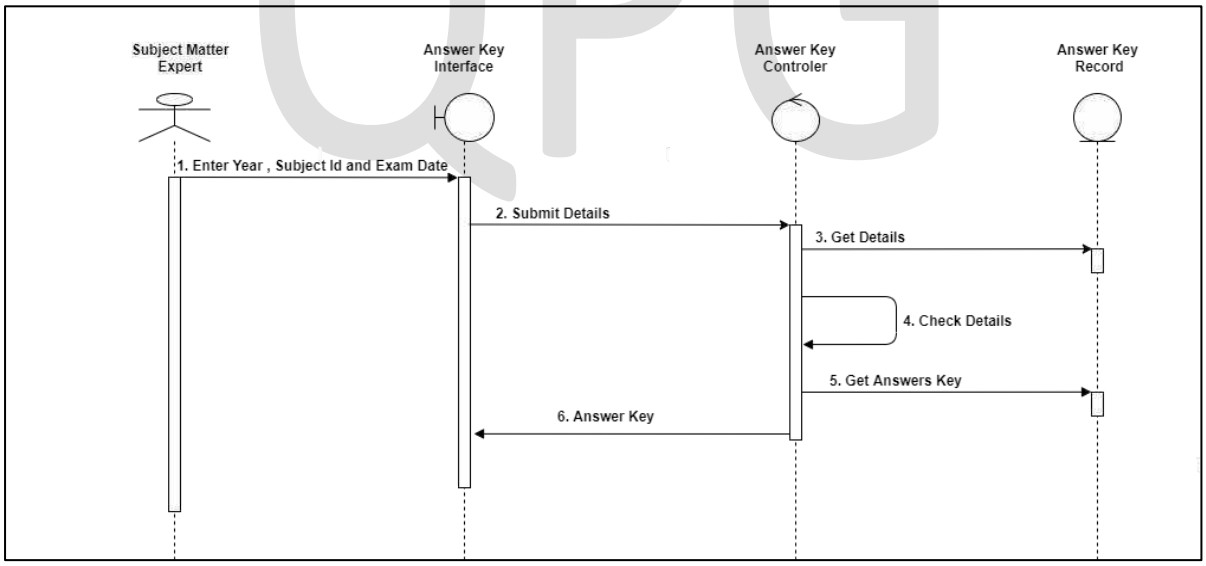
4. View Question Paper:



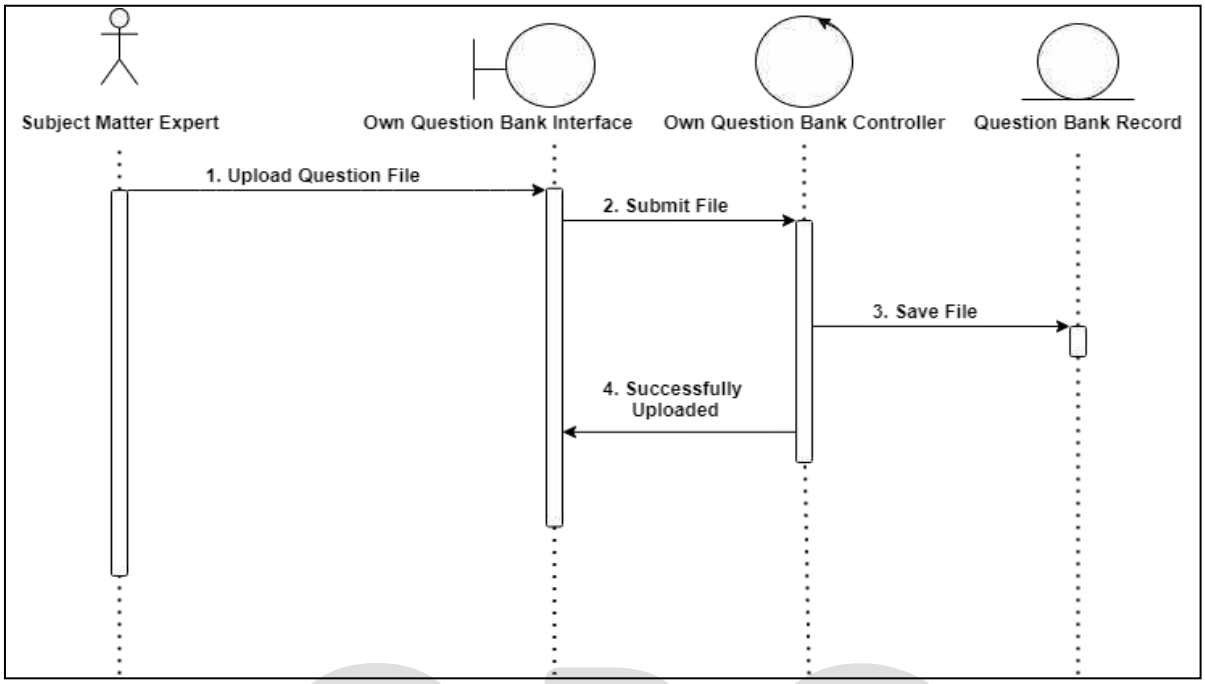
5. Create Answer Key:



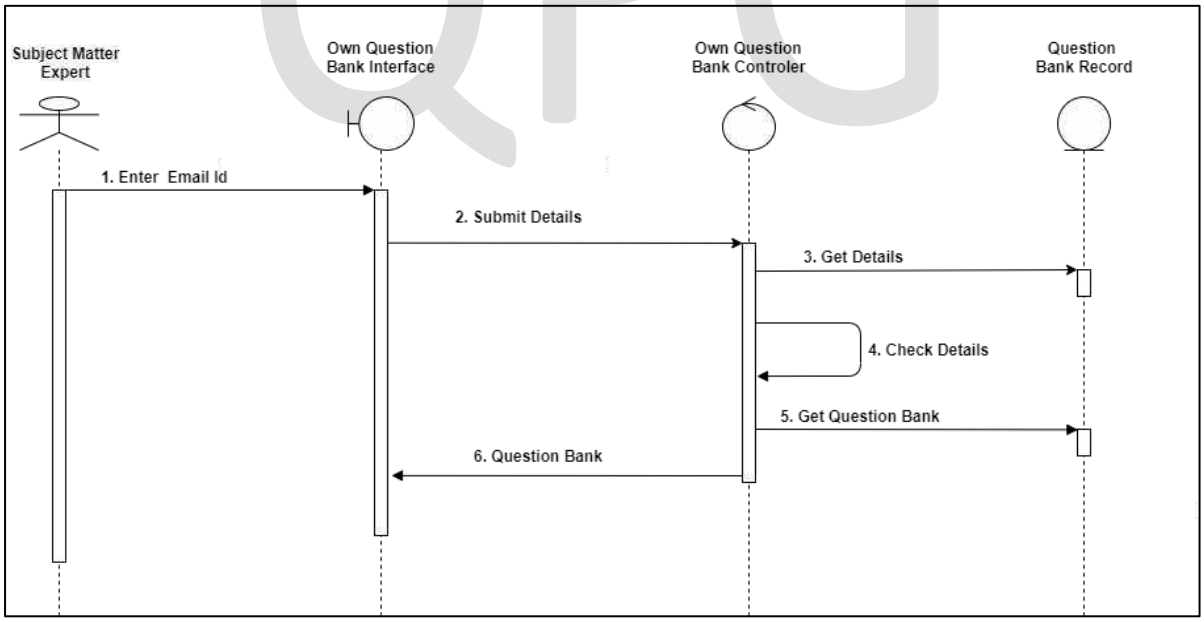
6. View Answer Key:



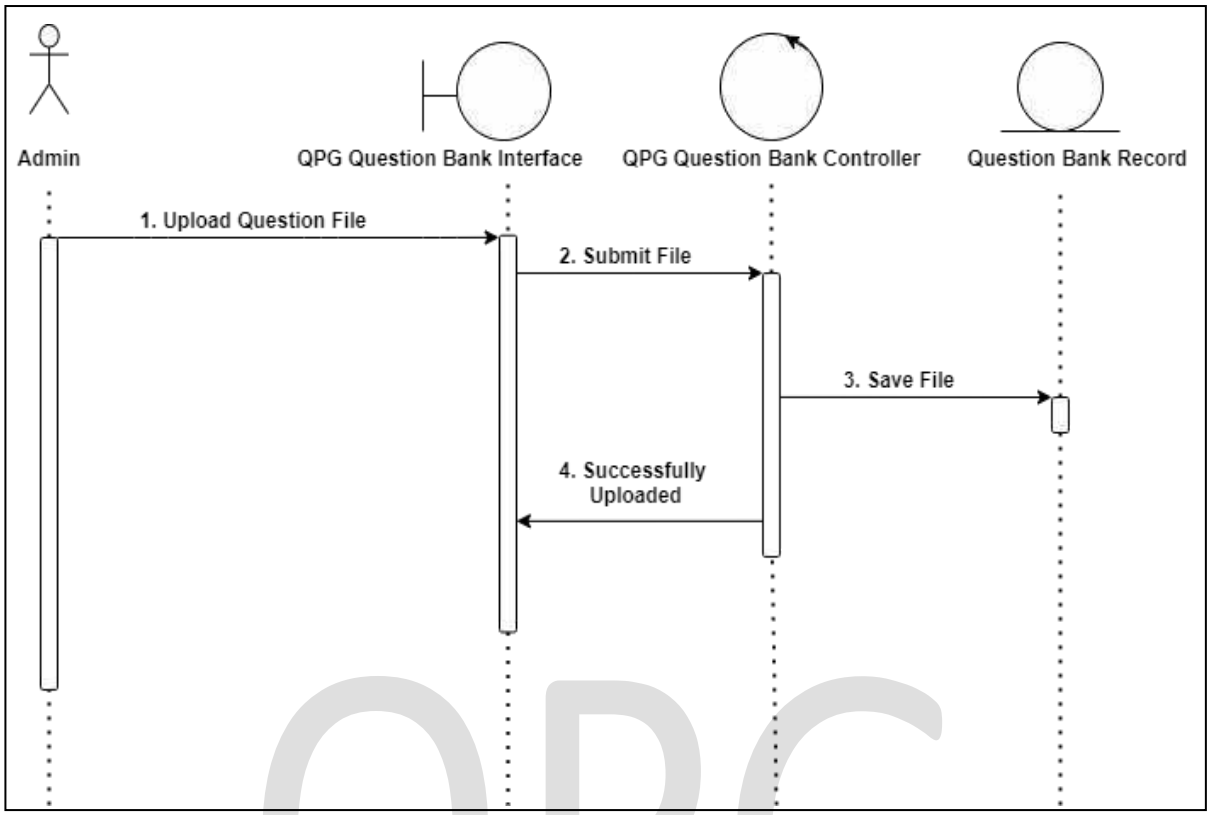
7. Add Questions to Own Question Bank:



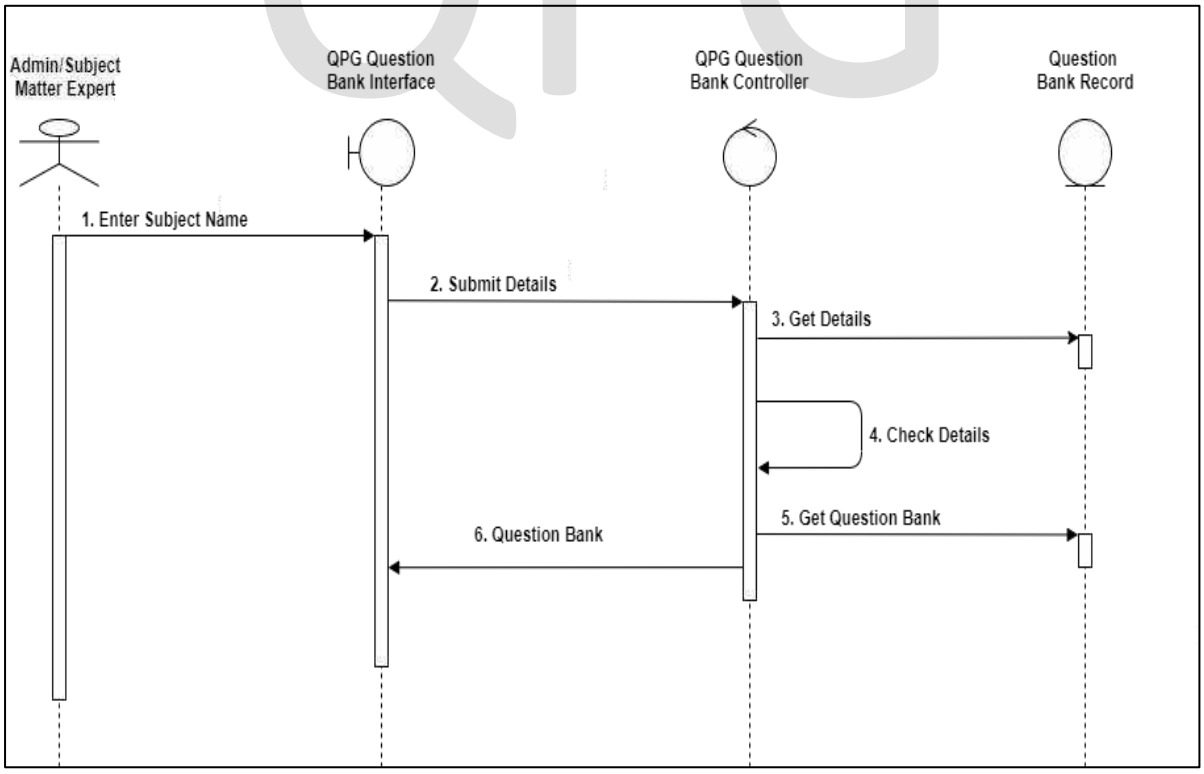
8. View Own Question Bank:



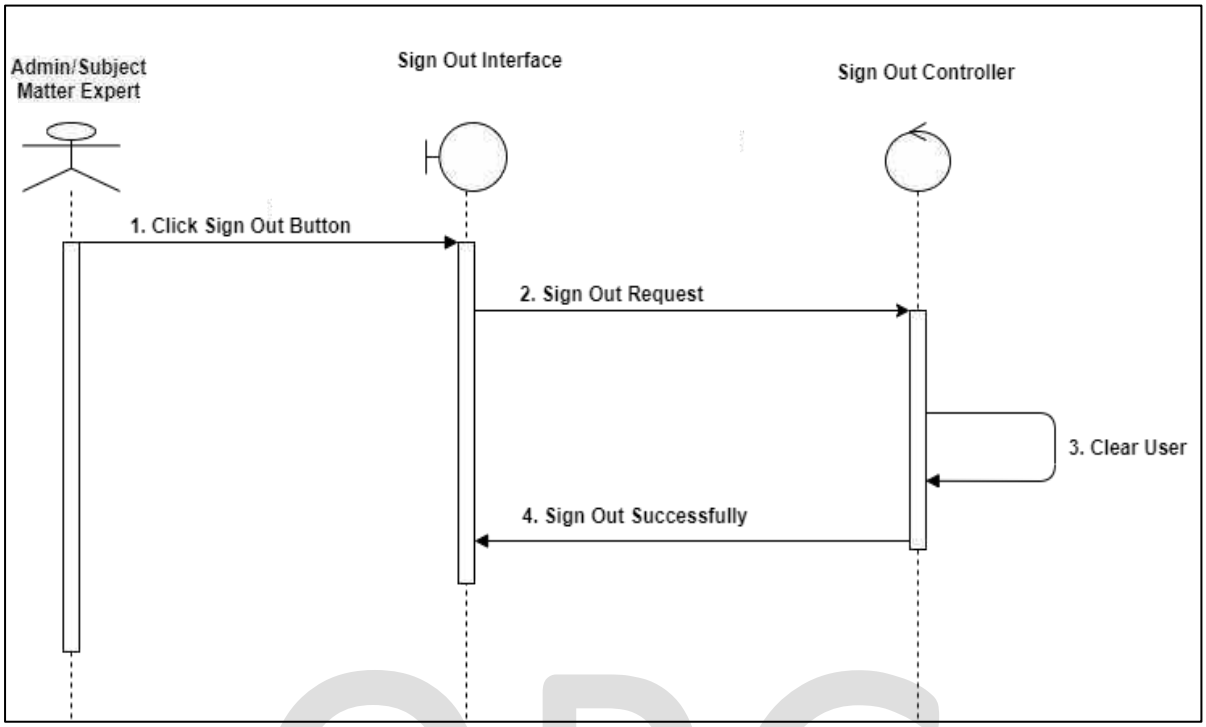
9. Add Questions to QPG Question Bank:



10. View QPG Question Bank:



11. Sign Out:



FUNCTION POINT ANALYSIS (FPA)

The "size" of software to be built can be estimated using a direct measure, LOC, or an indirect measure, FP. They are a part of problem based estimation. LOC and FP data are used in two ways during software project estimation:

- As estimation variables to "size" each element of the software
- As baseline metrics collected from past projects and used in conjunction with estimation variables to develop cost effort projections.

Function points are derived using an empirical relationship based on countable measures of Software's information domain and qualitative assessments of the software complexity. Information domain values are defined in the following manner:

Number of External Inputs (EIs)

Number of External Outputs (EOs)

Number of External Inquiries (EQs)

Number of Internal Logical Files (ILFs)

Number of External Interface file (EIFs)

Once this data has been collected, FP is calculated using the following relationship:

FP = Count total * [0.65 + 0.01 * ∑F(i)]

Advantages of FPA:

1. The technique to measure the units of a software product to support quality and productivity analysis.
2. It is a tool to estimate cost and resources required for software development and maintenance.
3. The normalization factor for software comparison.

Step-1: Calculate Unadjusted Function Point (UFP):

EXTERNAL INPUTS:

Input Names	Fields	Tables	Complexity
User Details	4	1	Low
Course and Subject Details	4	1	Low
Question Paper Details	5	1	Low
Questions	6	1	Low
Answers	5	1	Low
Answer Key Details	4	1	Low
User Question Bank Details	2	1	Low
QPG Question Bank Details	2	1	Low

EXTERNAL OUTPUTS:

Name	Complexity
Question Paper	Low
Answer Key	Low

EXTERNAL INQUERIES:

In query	Complexity
View Question Paper	Low
View Answer Key	Low
View Own Question Bank	Low
View QPG Question Bank	Low

INTERNAL LOGICAL FILES:

Input Names	Fields	Tables	Complexity
User Details	3	1	Low
Course and Subject Details	4	1	Low
Question Paper Details	5	1	Low
Questions	6	1	Low
Answers	5	1	Low
Answer Key Details	4	1	Low
QPG Question Bank Details	2	1	Low

EXTERNAL INTERFACE FILE:

Name	Complexity
User defined Question Bank	Low

PREPARING TABLE FOR UNADJUSTED FUNCTION POINT (UFP):

Function Types	Estimated Count	Weight Factor			Function Type Total
		Low	Average	Complex	
EI	8	3	4	6	24
EO	2	4	5	7	8
EQ	4	3	4	6	12
ILF	7	7	10	15	49
EIF	1	5	7	10	5
Total Unadjusted Function Point: 3*8+4*2+3*4+7*7+5*1 = 98					

ADJUSTMENT VALUES TABLE

S No.	Parameters Adjustment	Adjustment Factor
1.	Does the system require reliable backup and recovery	3
2.	Are specialised data communications required to transfer information to or from application?	4
3.	Are there distributed processing functions?	3
4.	Is performance critical?	4
5.	Will the system run in an existing, heavily utilized operational Environment?	4
6.	Does the System require online data Entry?	4
7.	Does the on-line data entry require the input transaction to be built over multiple screens or operations?	3
8.	Are the ILFS updated online?	2
9.	Are the inputs, outputs, in queries complex?	1
10.	Is the internal processing complex?	3
11.	Is the code designed to be reusable?	3
12.	Are conversion and installation included in the design?	1
13.	Is the system designed for multiple installations in different organizations?	3
14.	Is the application designed to facilitate change and ease of use by the user?	4

Sum [F(I)] = 42

FUNCTION POINT:

Scale varies from 0 to 5 according to character of Complexity Adjustment Factor (CAF).

Below table shows scale:

0 = No influence

1 = Incidental

2 = Moderate

3 = Average

4 = Significant

5 = Essential

Step-2: **Calculate Complexity Adjustment Factor (CAF):**

$0.65 + \sum Fi * 0.01 = 0.65 + 42 * 0.01 = 1.07$

Step-3: Calculate Function Point:

FP = UFP * CAF = 98*1.07 = 104.86

TIMELINE CHART

A timeline chart is a way to visualize a process using chronological order. Timeline charts illustrates the project's schedule to keep the project on track. Timeline charts functions as a sort of calendar of events within a specific period of time.

S No.	Process/Phase	Start Date	End Date
1.	Problem Statement	Feb 9, 2021	Feb 10, 2021
2.	Requirements Gathering	Feb 10, 2021	Feb 11, 2021
3.	Requirement Analysis	Feb 11, 2021	Feb 12, 2021
4.	Process Model	Feb 12, 2021	Feb 12, 2021
5.	Use Case Diagram	Feb 26, 2021	Feb 28, 2021
6.	Data Flow Diagrams, Data Dictionary	Feb 28, 2021	Mar 3, 2021
7.	Sequence Diagrams	Mar 12, 2021	Mar 16, 2021
8.	Functional Point Analysis	Mar 19, 2021	Mar 23, 2021
9.	Timeline charts and Risk table	Apr 13, 2021	Apr 18, 2021
10.	Pseudocode and Implementation	Apr 21,2021	Apr 24,2021
11.	White Box Testing	Apr 25,2021	Apr 27, 2021

RISK MANAGEMENT

What is risk?

"Tomorrow problems are today's risk." Hence, a clear definition of a "risk" is a problem that could cause some loss or threaten the progress of the project, but which has not happened yet.

• It can be defined as the probability of an event, hazard, accident, threat or situation occurring and its undesirable consequences.

• It always involves:

• Uncertainty-the risk may or may not happen.

• Loss-if the risk become reality, unwanted consequences and losses will occur.

Risk = Probability of occurrence of the event * Impact if it did happen

What is Risk Management?

Risk management is the area that tries to ensure that the impact of risks is minimal on

- Cost
- Quality
- Schedule

Types of Risk

- Technical Risk
- Business Risk
- Predictable Risks
- Unpredictable Risks

RMMM (Risk Mitigation, Monitoring, Management) Table

S No.	Risk	Category	Probability	Impact	RMMM Plan
1.	Number of people assigned for the project are inadequate to do the job.	Project Risk	10%	2	• Organize task network. • Assign backup staff member as third party for testing and review.
2.	Lack of training on tools or insufficient skills for operating the system.	Business Risk	30%	2	Staff must be trained to manage the working of tools.
3.	Customer will change the requirements.	Project Risk	20%	3	Get customer feedback periodically
4.	The project may have to deal with clients. They may find it difficult to interact with software.	Business Risk	10%	3	The client could communicate with the staff and try to resolve their problem.
5.	The project may not be deliver on time.	Project Risk	10%	4	Schedule made should be realistic and achievable.

PSUEDOCODE: "CREATE QUESTION PAPER MODULE"

CHECK Course and Subject Details:

1. // Using bulit-in namespaces which are used to organize the classes.

using System;

2. class CheckCourseAndSubject : System.Web.UI.Page

{

2.1 Page_Load(object sender, EventArgs e):

{ }

2.2 Search_Click(object sender, EventArgs e):

{

Set Visibility of GridView true

}

}

Enter the Subject Id

Press Search Button //This will call Search_click function.

ADD Course and Subject Details:

1. // Using bulit-in namespaces which are used to organize the classes.

using System;

using System.Data.SqlClient;

using System.Configuration;

2. class CourseAndSubjectForm : System.Web.UI.Page

{

2.1 Page_Load(object sender, EventArgs e):

{ }

2.2 Add_Click(object sender, EventArgs e):

{

2.2.1 try

{

2.2.1.1 Make a SQL connection

2.2.1.2 SQL Command of Insertion in a [CourseAndSubject] table.

2.2.1.3 Open The SQL Connection

2.2.1.4 Exceute SQL Command and read the result of command.

2.2.1.5 if (The Result has rows) then:

2.2.1.5.1 Transfer the result in GridView.

}

2.2.2 catch (Exception):

{

2.3.2.1 Set this Text "Your Subject ID is allready added!" to Label.

}

}

}

ADD Question Paper Details

1. // Using bulit-in namespaces which are used to organize the classes.

using System;

2. class DetailsQuesForm : System.Web.UI.Page

{

2.1 Make a SQL connection

2.2 Page_Load(object sender, EventArgs e):

{ }

2.3 Submit_Click(object sender, EventArgs e):

{

2.3.1 try

{

2.3.1.1 SQL Command of Insertion in a [DetailsQues] table.

2.3.1.2 Open The SQL Connection

2.3.1.3 Exceute SQL Command

2.3.1.4 Close The SQL Connection

2.3.1.5 Go to AddQuestionForm.aspx

}

2.3.2 catch (Exception):

{

2.3.2.1 Set this Text "Enter The Correct Details!" to Label.

}

}

}

ADD Questions

1. // Using bulit-in namespaces which are used to organize the classes.

using System;

using System.Data.SqlClient;

2. class AddQuestionForm : System.Web.UI.Page

{

2.1 Make a SQL connection

2.2 Page_Load(object sender, EventArgs e):

{ }

2.3 Add_Click(object sender, EventArgs e):

{

2.3.1 try

{

2.3.1.1 SQL Command of Insertion in a [AddQues] table.

2.3.1.2 Open The SQL Connection

2.3.1.3 Exceute SQL Command

2.3.1.4 Close The SQL Connection

2.3.1.5 Goto(2)

}

2.3.2 catch (Exception):

{

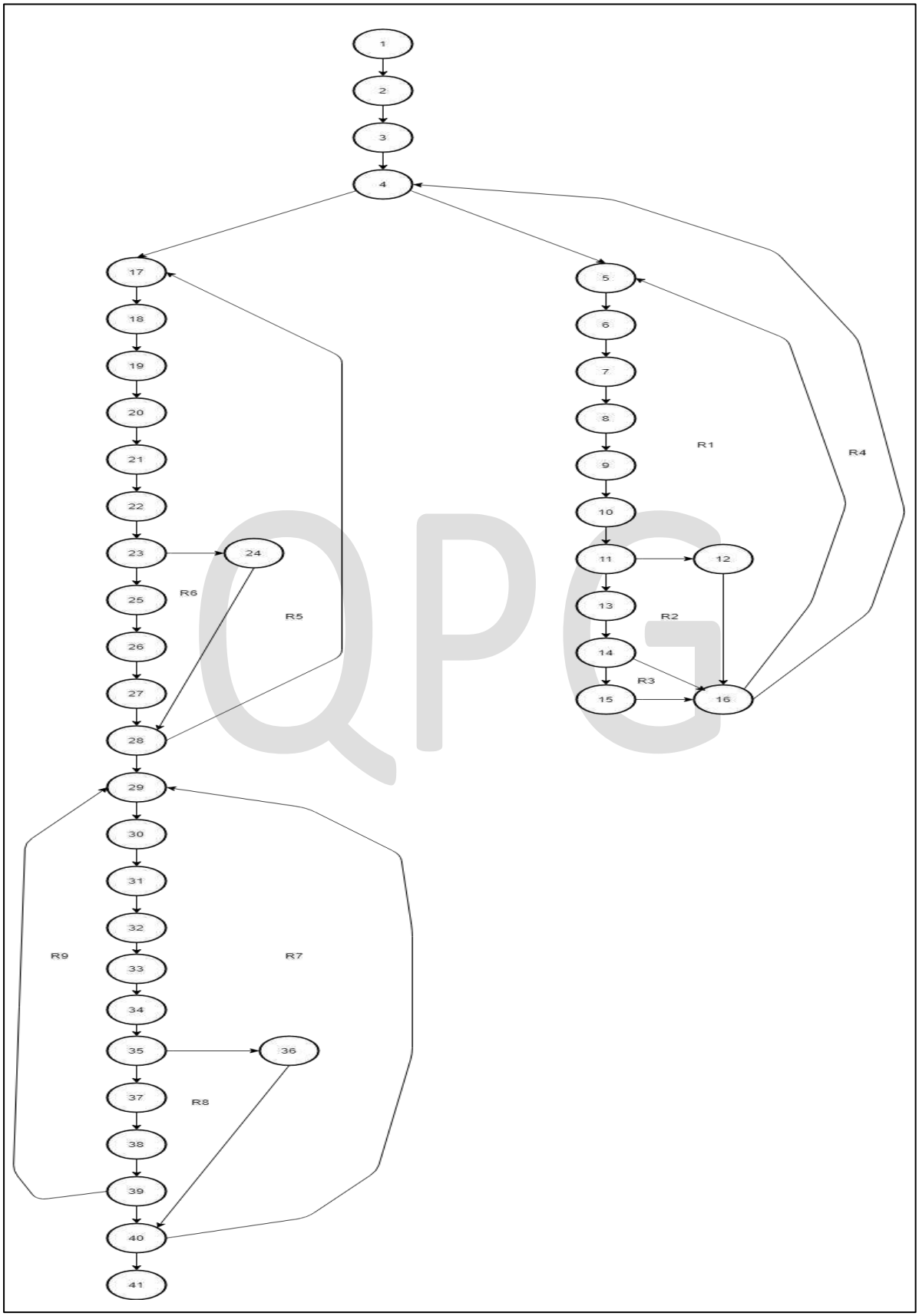
2.3.2.1 Set this Text "Duplicate entry of 'Question Number' not allowed" to Label.

}

}

}

FLOW GRAPH OF CREATE QUESTION PAPER MODULE



Cyclomatic Complexity: 10

- In the above Flow graph, there are 9 regions ranges from **R1 to R9.**
  9 Totals Regions + 1 Outer Region = 10 Total Regions.
- In the above Flow graph, there are 9 predicate nodes: **4, 11, 14, 16, 23, 28, 35, 39, 40**
  9 Predicate Nodes + 1 = 10
- Edges – nodes + 2 = 49 – 41 + 2 = 10

Independent Paths:

1. 1,2,3,4,5,6,7,8,9,10,11,13,14,15,16,4,17,18,19,20,21,22,23,25,26,27,28,29,30,31,32,33, 34,35,37,38,39,29,30,31,32,33,34,35,37,38,39,40,41
2. 1,2,3,4,5,6,7,8,9,10,11,12,16,5, 6,7,8,9,10,11,13,14,15,16,4, 17,18,19,20,21,22,23,25, 26,27,28,29,30,31,32,33,34,35,37,38,39,29,30, 31,32,33,34,35,37,38,39,40,41
3. 1,2,3,4, 5,6,7,8,9,10,11,13,14,15,16,4,17,18,19,20,21,22,23,24,28, 17, 18,19,20, 21,22, 23,25,26,27,28,29,30,31,32,33,34,35,37,38,39, 29,30, 31,32,33,34,35,37,38,39,40,41
4. 1,2,3,4, 5,6,7,8,9,10,11,13,14,15,16,4, 17,18,19,20,21,22,23,25,26,27,28, 29,30,31,32, 33,34,35,36,40,29, 30,31,32,33,34,35,37,38,39,29,30, 31,32,33,34,35,37,38,39,40,41
5. 1,2,3,4,5,6,7,8,9,10,11,12,16,5, 6,7,8,9,10,11,13,14,15,16,4, 17,18,19,20,21,22,23,24, 28, 17, 18,19,20, 21,22, 23,25,26,27,28, 29,30,31,32,33,34,35,37,38,39,29,30,31,32,33, 34,35,37,38,39,40,41
6. 1,2,3,4, 5,6,7,8,9,10,11,12,16,5, 6,7,8,9,10,11,13,14,15,16,4, 17,18,19,20,21,22,23,25, 26,27,28, 29,30,31,32, 33,34,35,36,40,29, 30,31,32,33,34,35,37,38,39,29,30, 31,32,33, 34,35,37,38,39,40,41
7. 1,2,3,4, 5,6,7,8,9,10,11,13,14,15,16,4,17,18,19,20,21,22,23,24, 28, 17, 18,19,20, 21,22, 23,25,26,27,28, 29,30,31,32, 33,34,35,36,40,29, 30,31,32,33,34,35,37,38,39,29,30,31, 32,33,34,35,37,38,39,40,41
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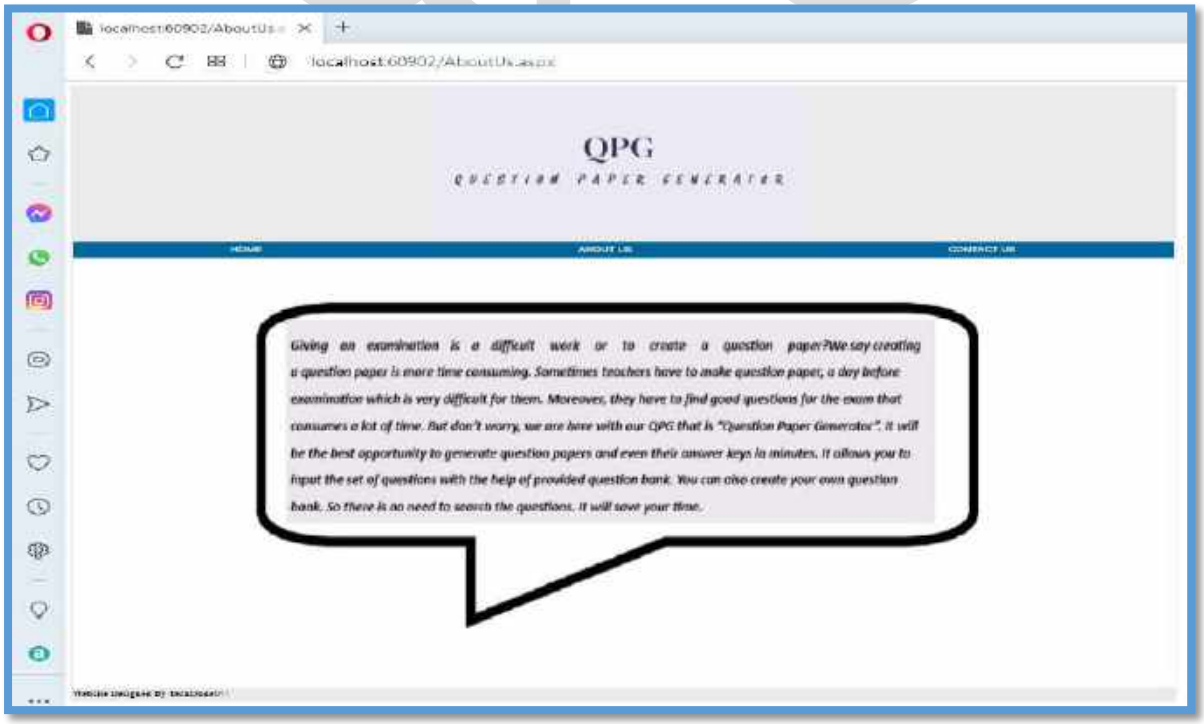
9. 1,2,3,4, 17,18,19,20,21,22,23,25,26,27,28, 29,30,31,32,33,34,35,37,38,39,29,30, 31,32,33,34,35,37,38,39,40,41
10. 1,2,3,4, 17,18,19,20,21,22,23,25,26,27,28, 29,30,31,32, 33,34,35,36,40,29,30,31, 32,33,34,35,37,38,39,29,30, 31,32,33,34,35,37,38,39,40,41

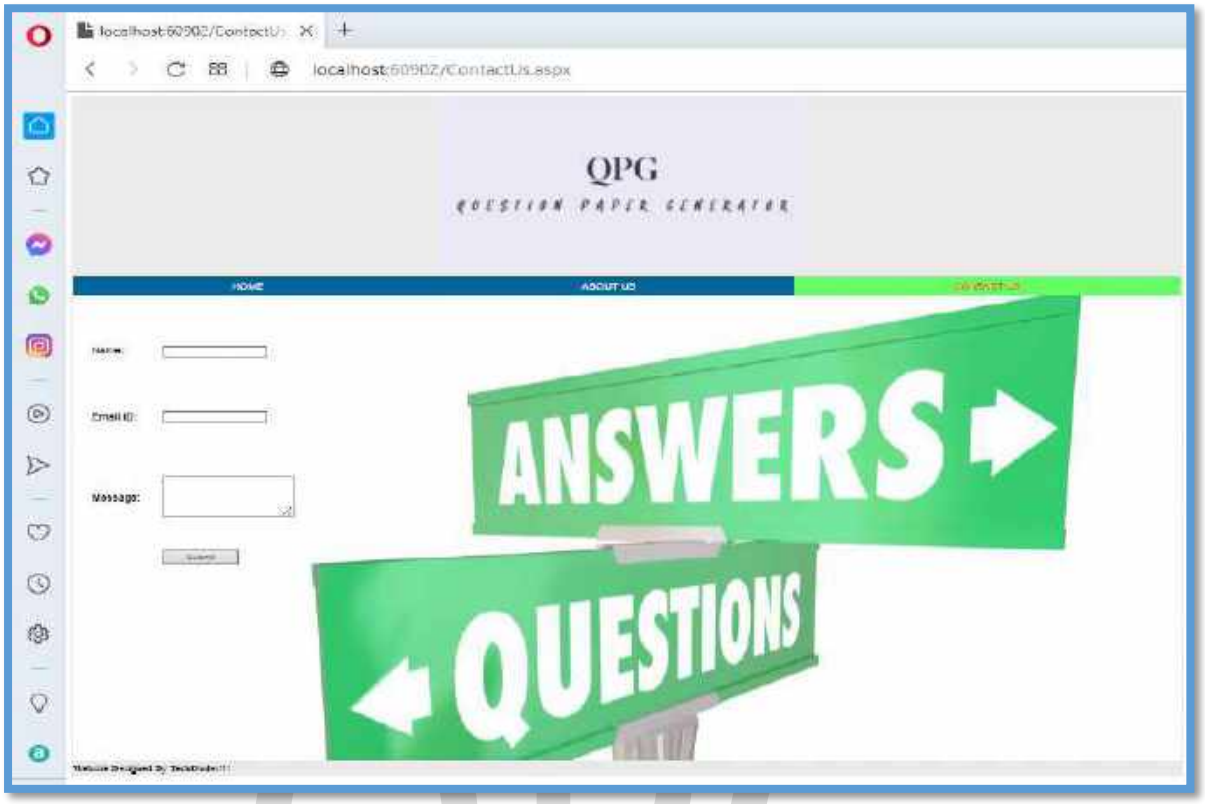
INTERFACE DESIGN

HOME PAGE

ABOUT US PAGE

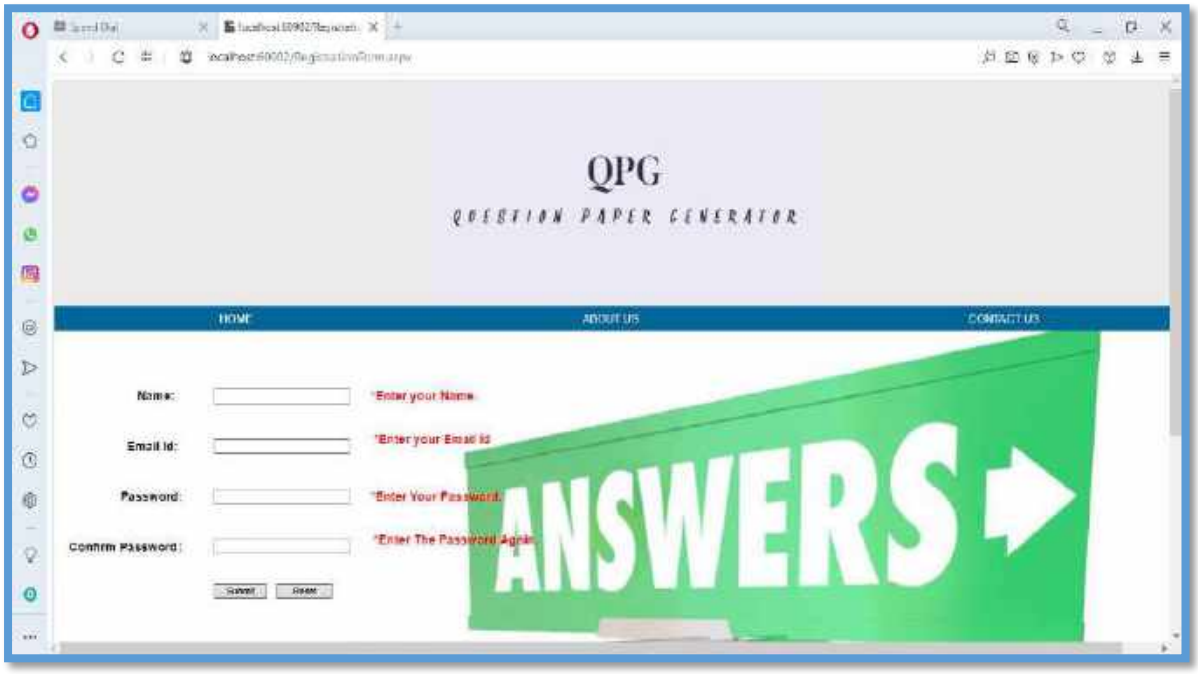


CONTACT US PAGE



REGISTRATION PAGE

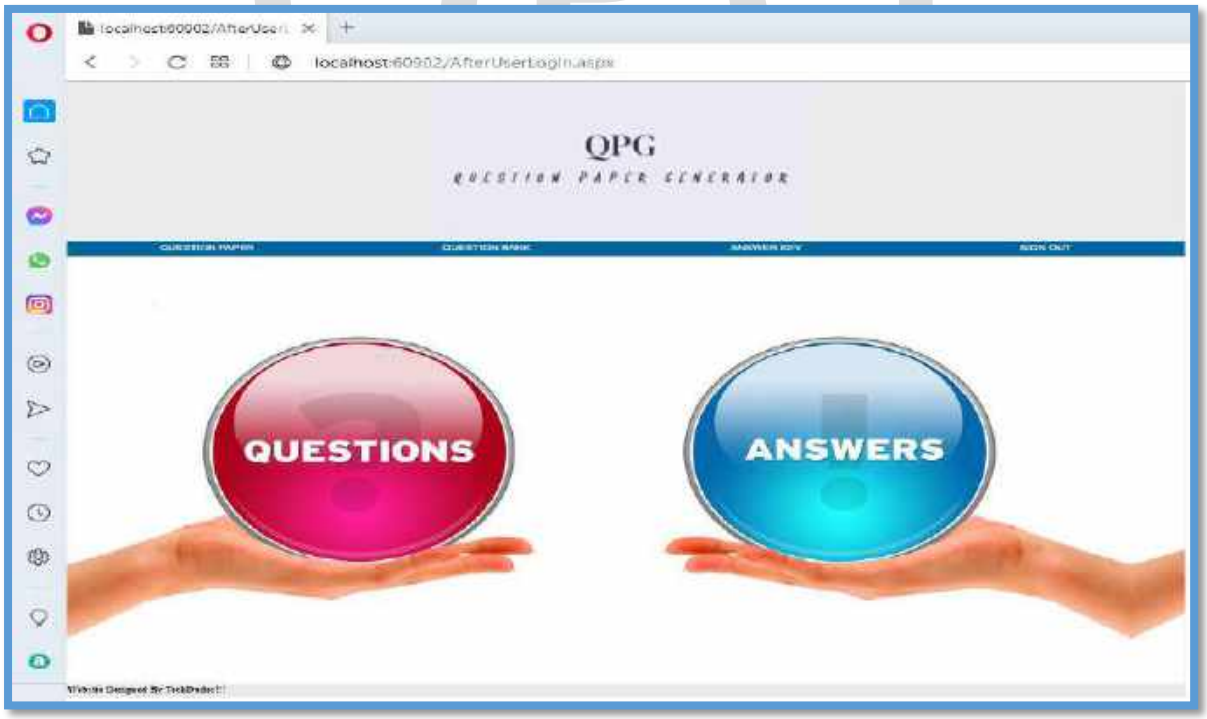
VALIDATIONS IN EVERY FORM



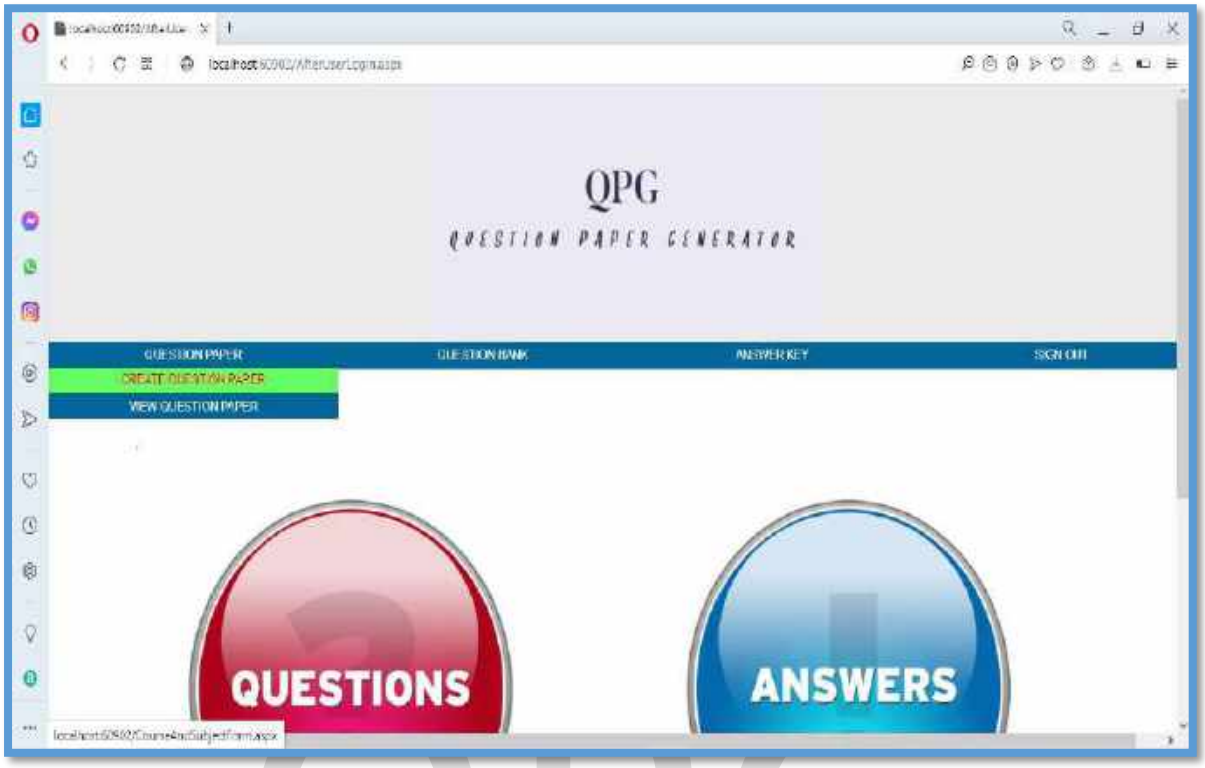
FORGET PASSWORD PAGE

USER LOGIN PAGE

AFTER USER LOGIN PAGE



MENU BAR AT EVERY PAGE AFTER USER LOGIN

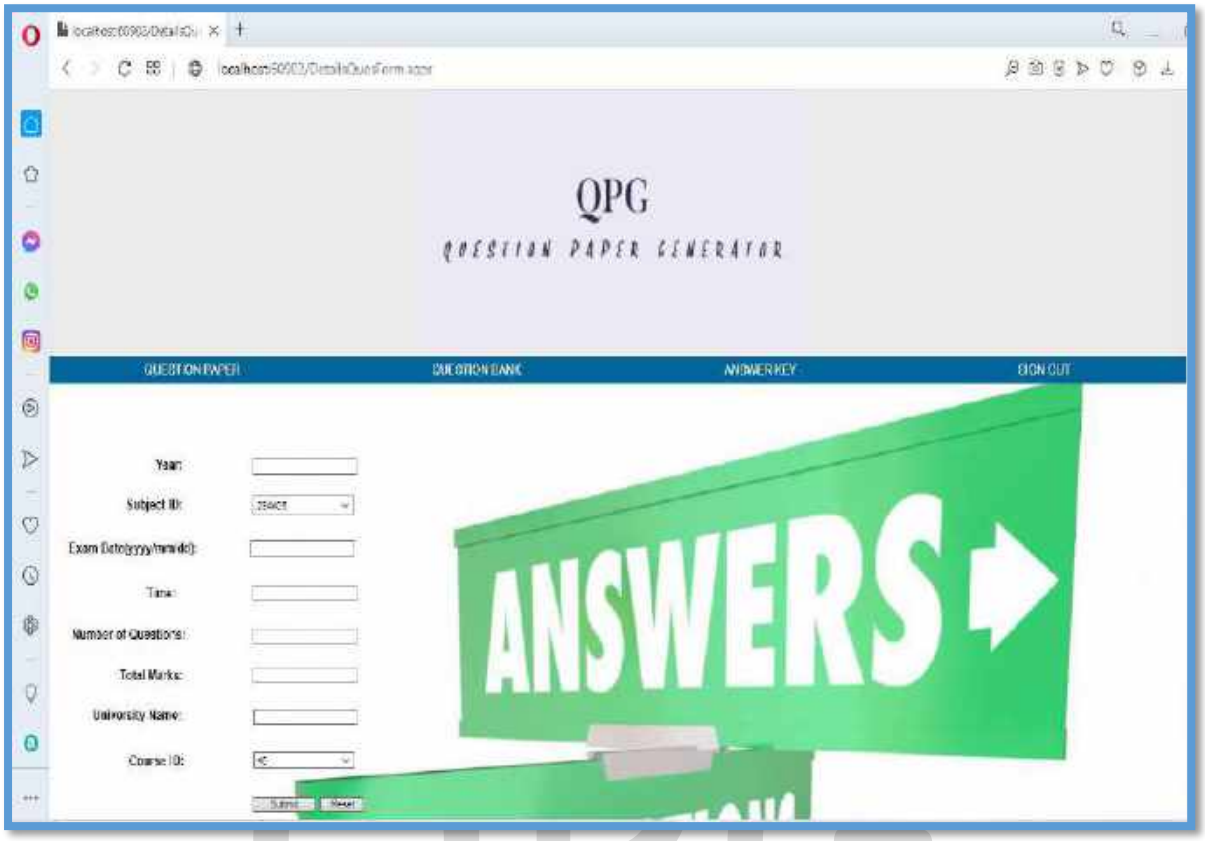


SEARCH YOUR COURSE AND SUBJECT DETAILS?
IF IT IS NOT ADDED THEN PRESS BACK

IF YOUR DETAILS ARE ADDED THEN PRESS BACK

ADD COURSE AND SUBJECT DETAILS

ADD QUESTION PAPER DETAILS

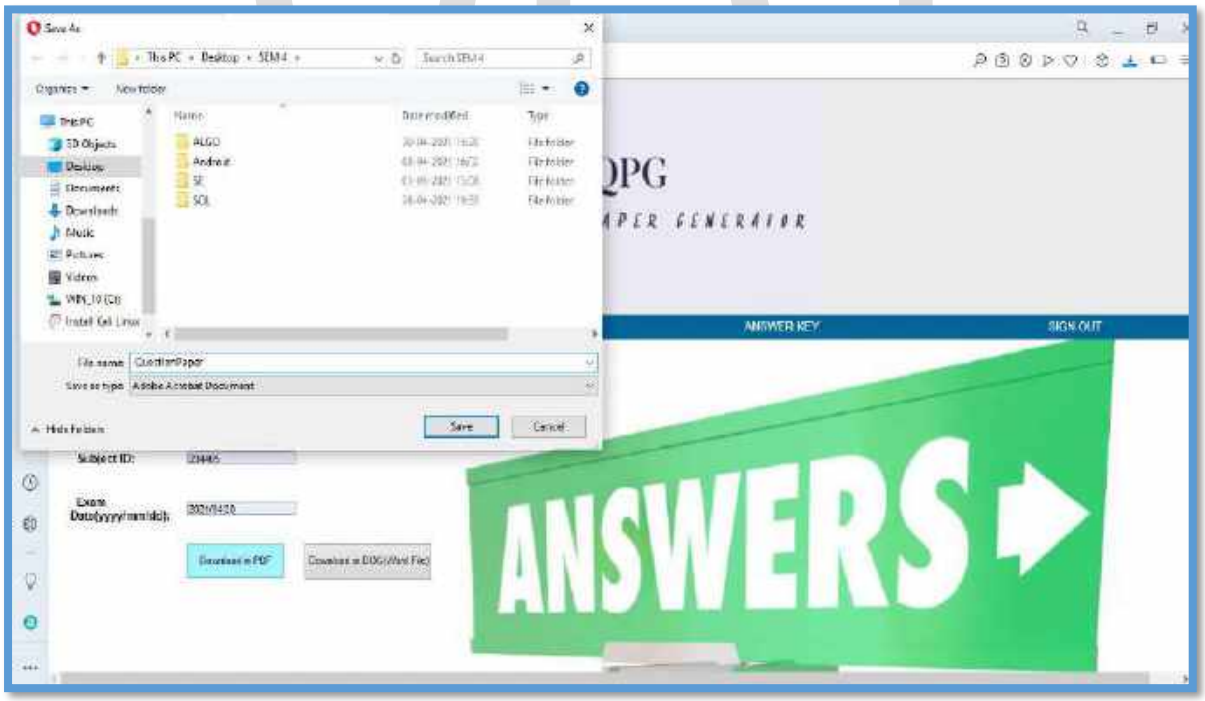


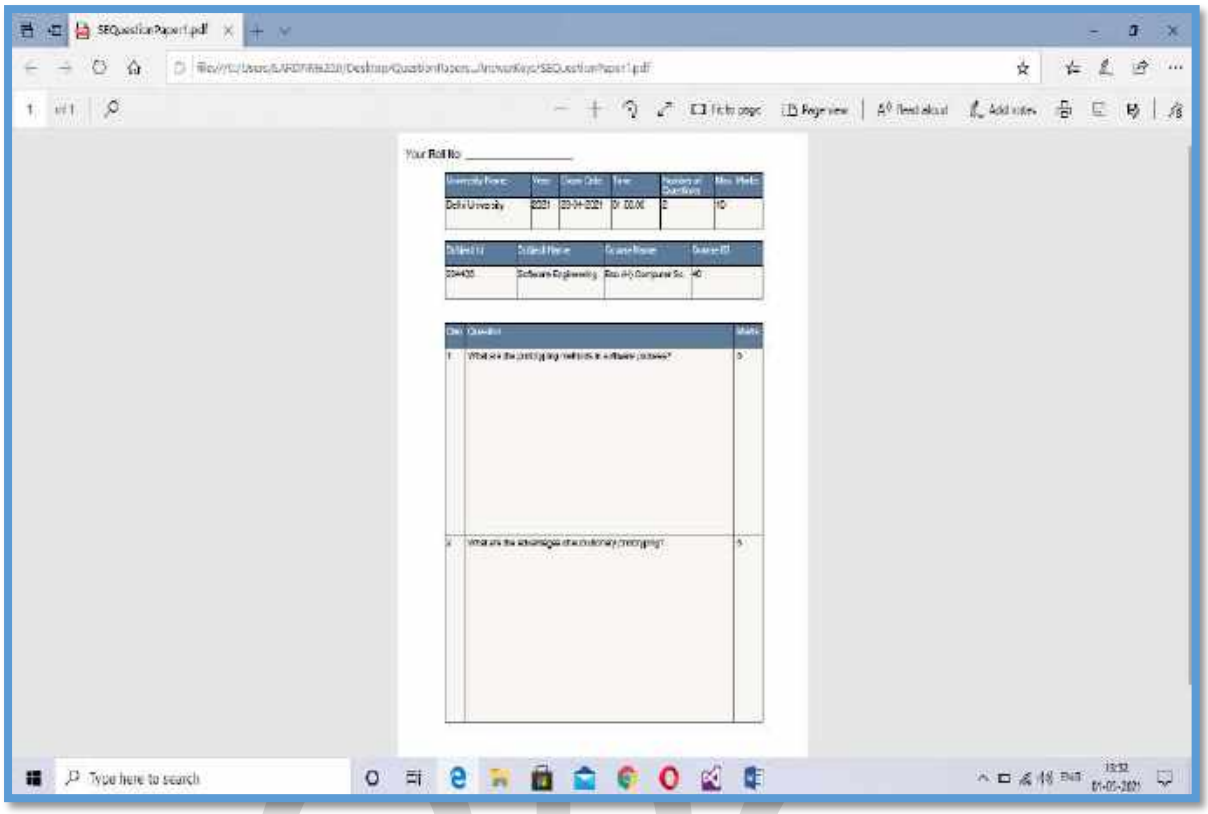
ADD QUESTIONS

VIEW YOUR QUESTION PAPER

DOWNLOAD YOUR QUESTION PAPER IN PDF AND DOC FORMAT

1) PDF FORMAT





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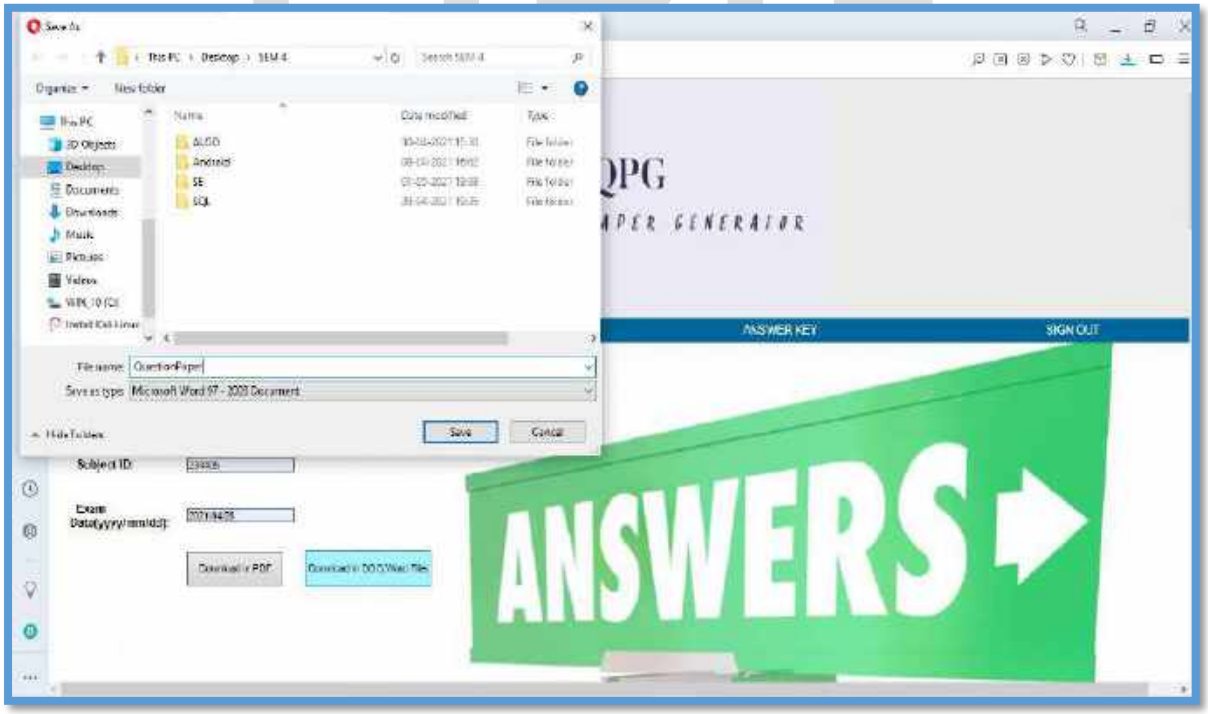
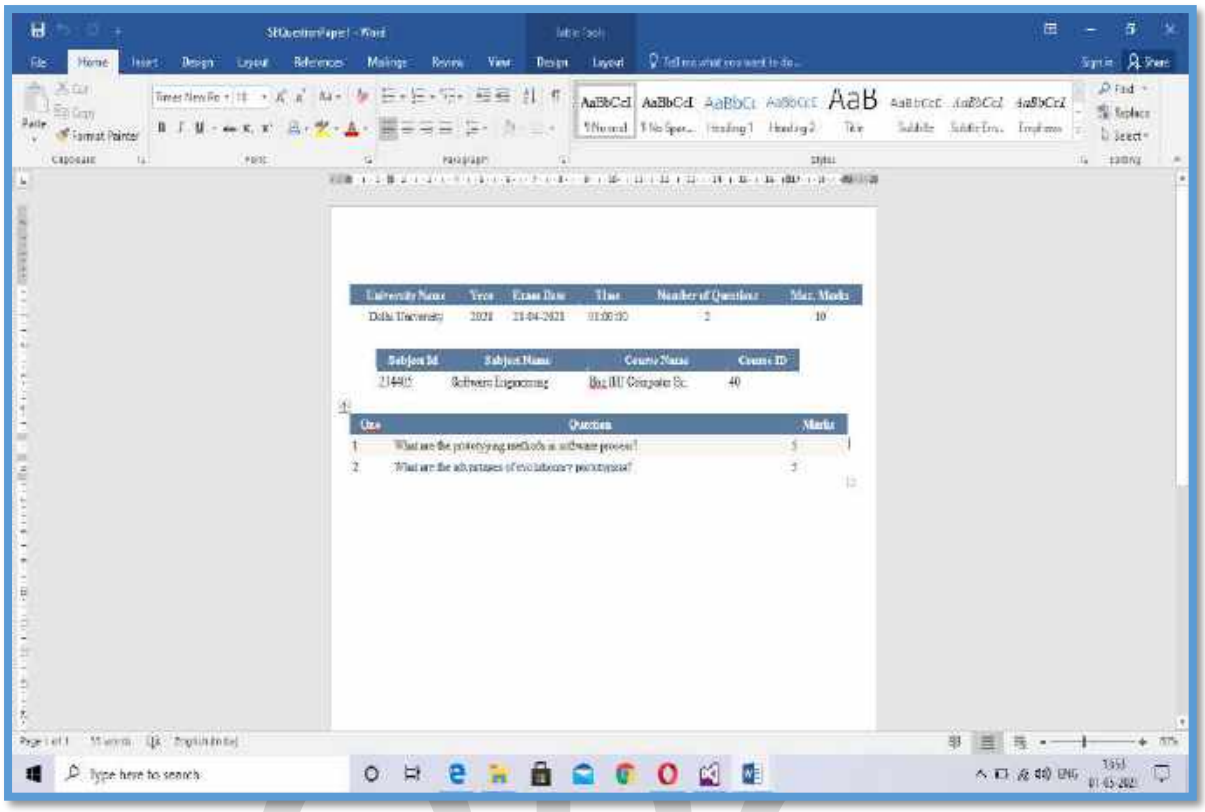
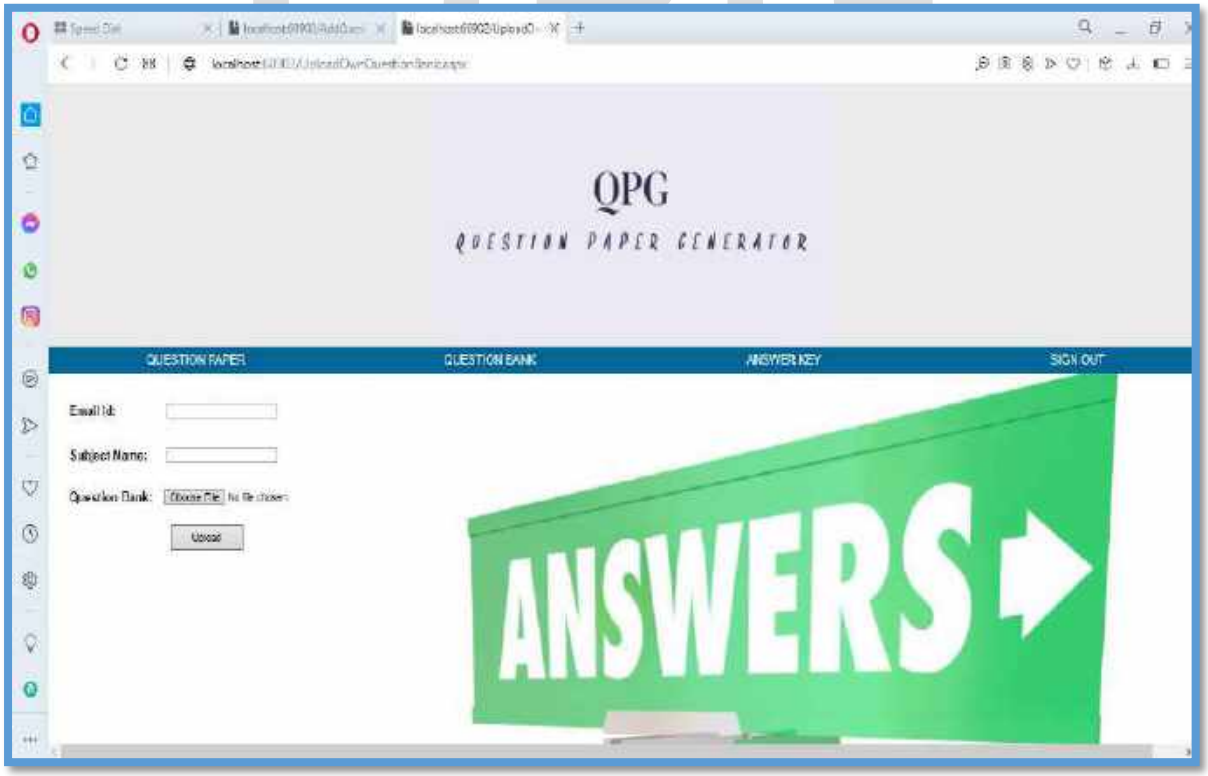


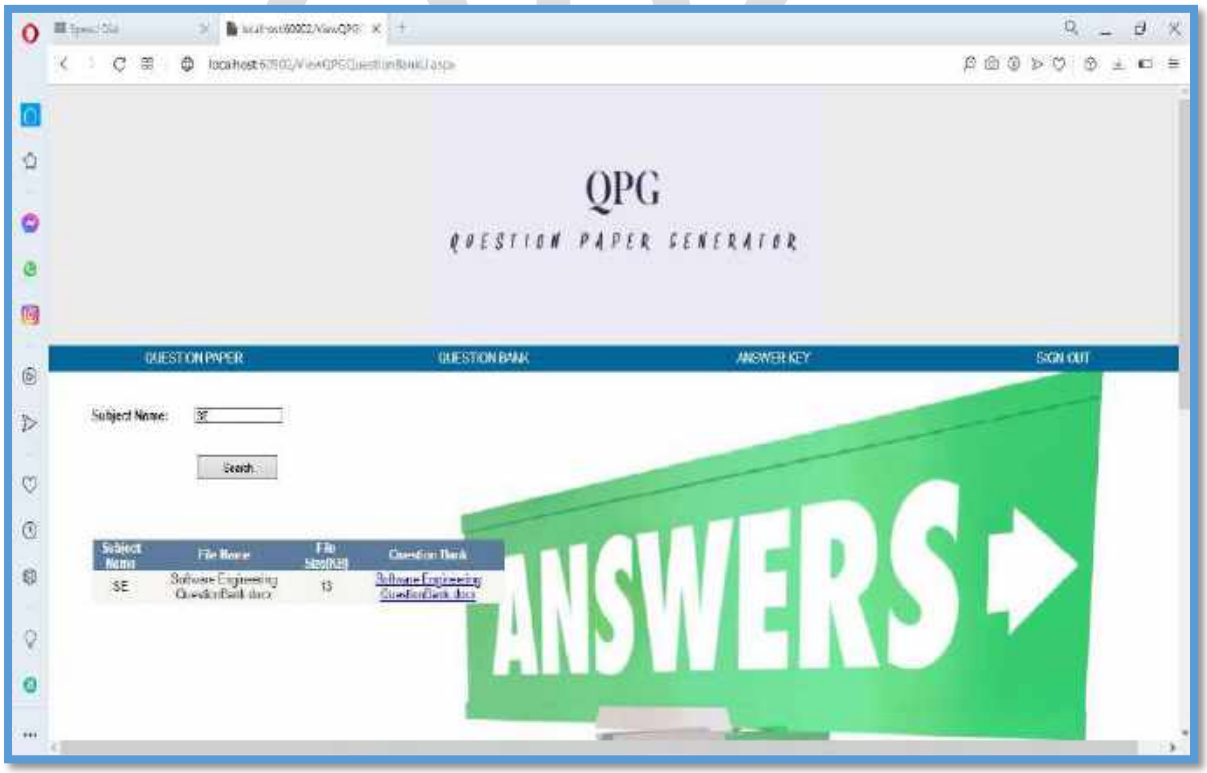


UPLOAD YOUR QUESTION BANK



VIEW YOUR QUESTION BANK

VIEW QPG QUESTION BANK



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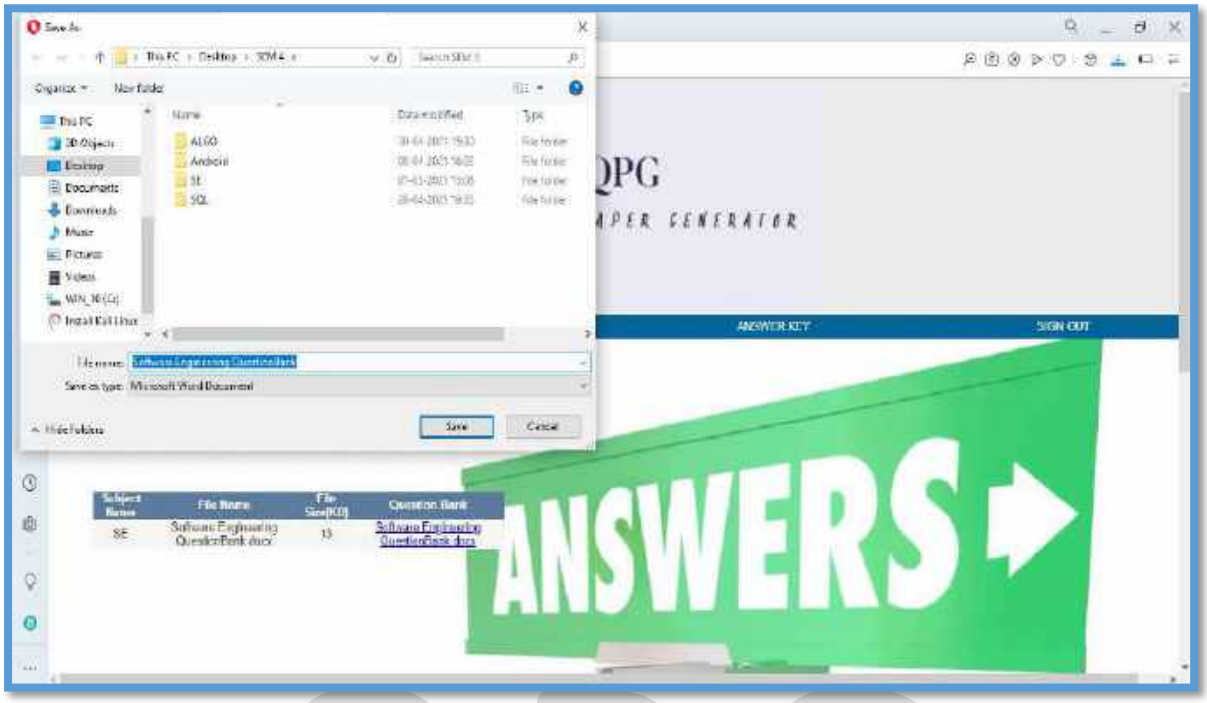


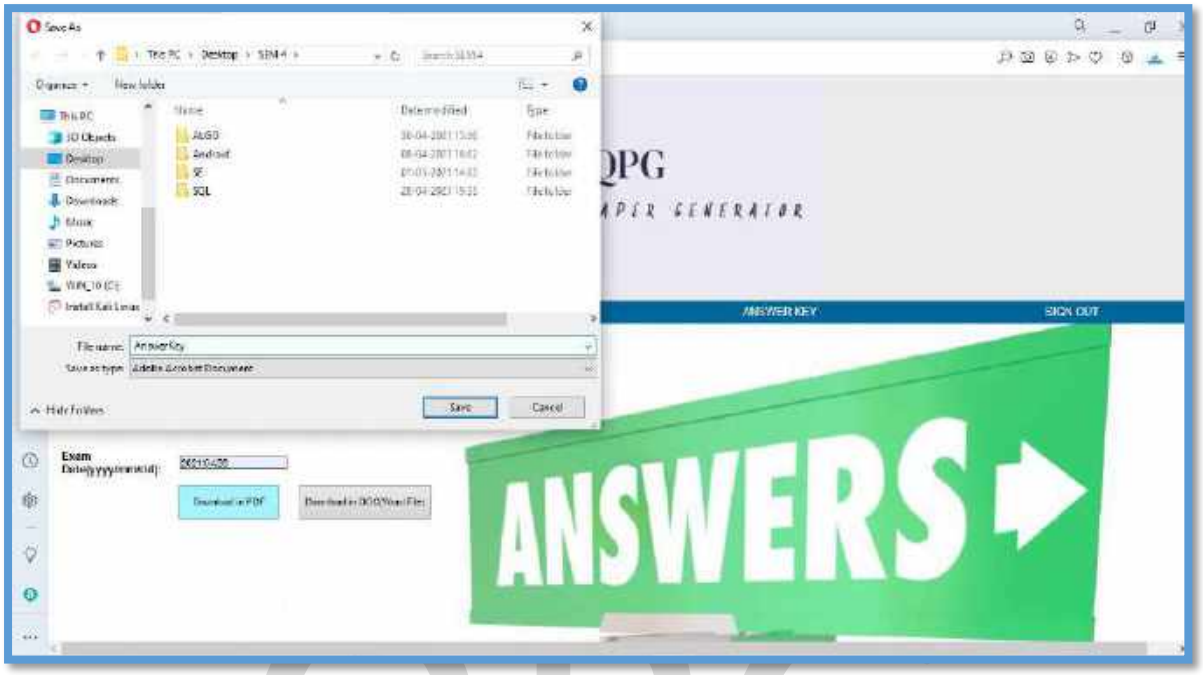
ADD ANSWER KEY DETAILS

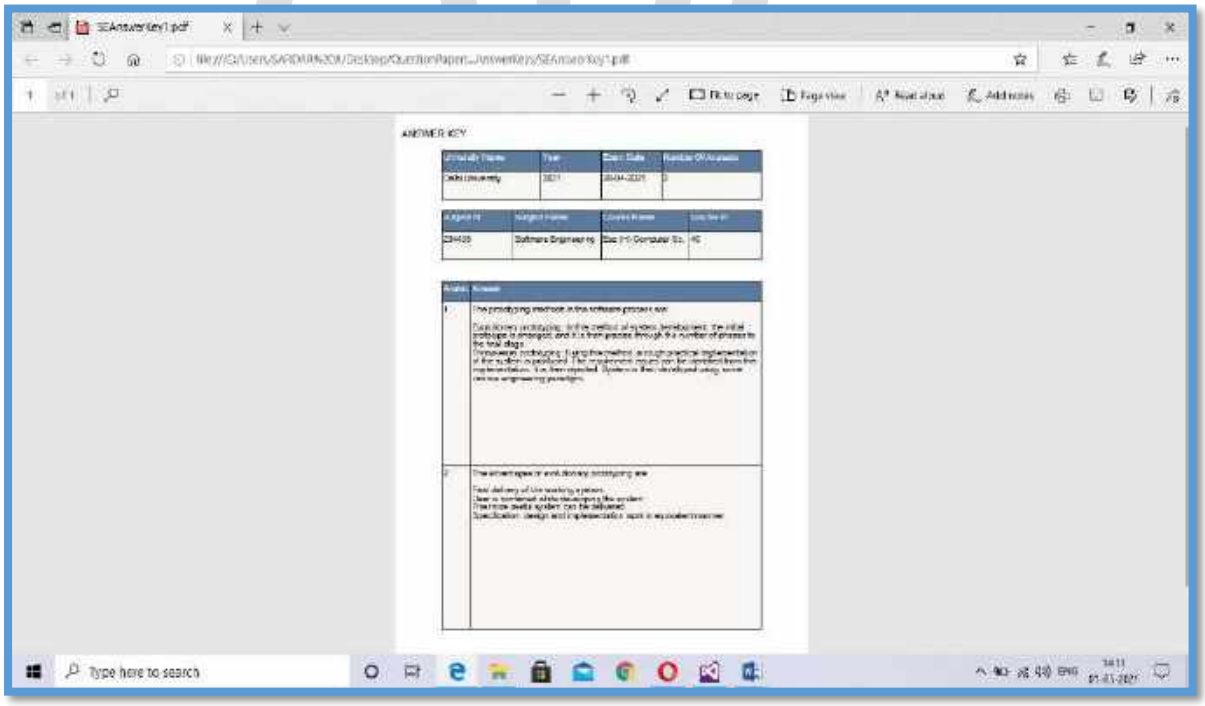
ADD ANSWERS

VIEW ANSWER KEY

DOWNLOAD YOUR ANSWER KEY IN PDF AND DOC FORMAT

1) PDF FORMAT





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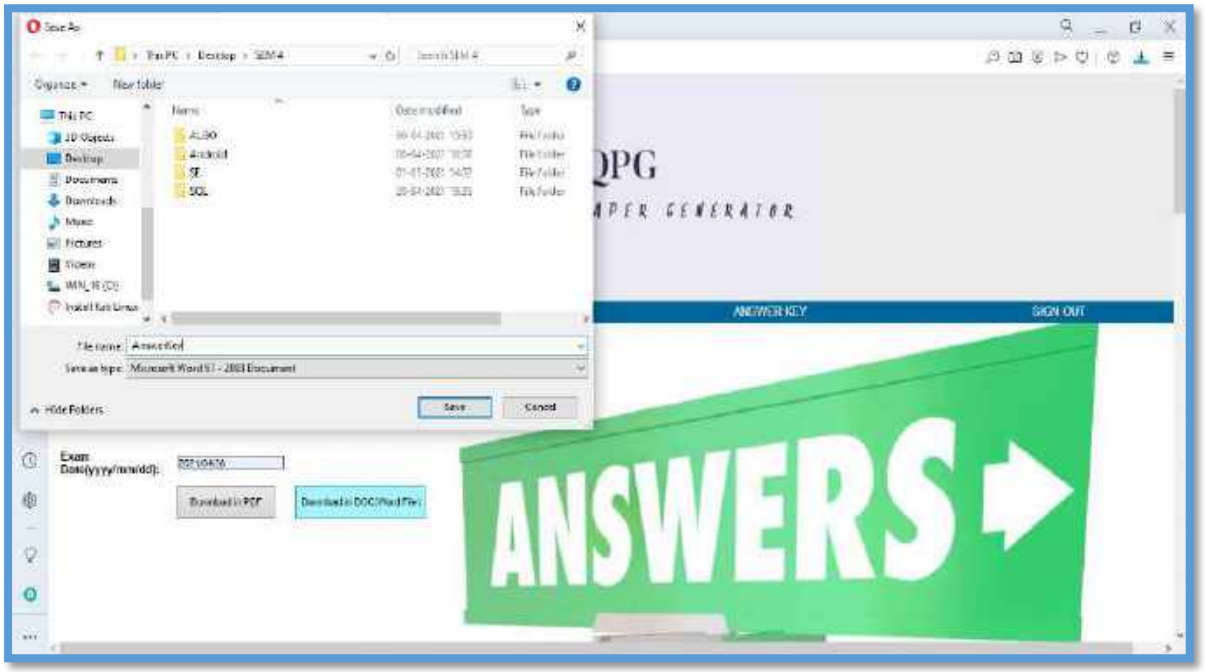
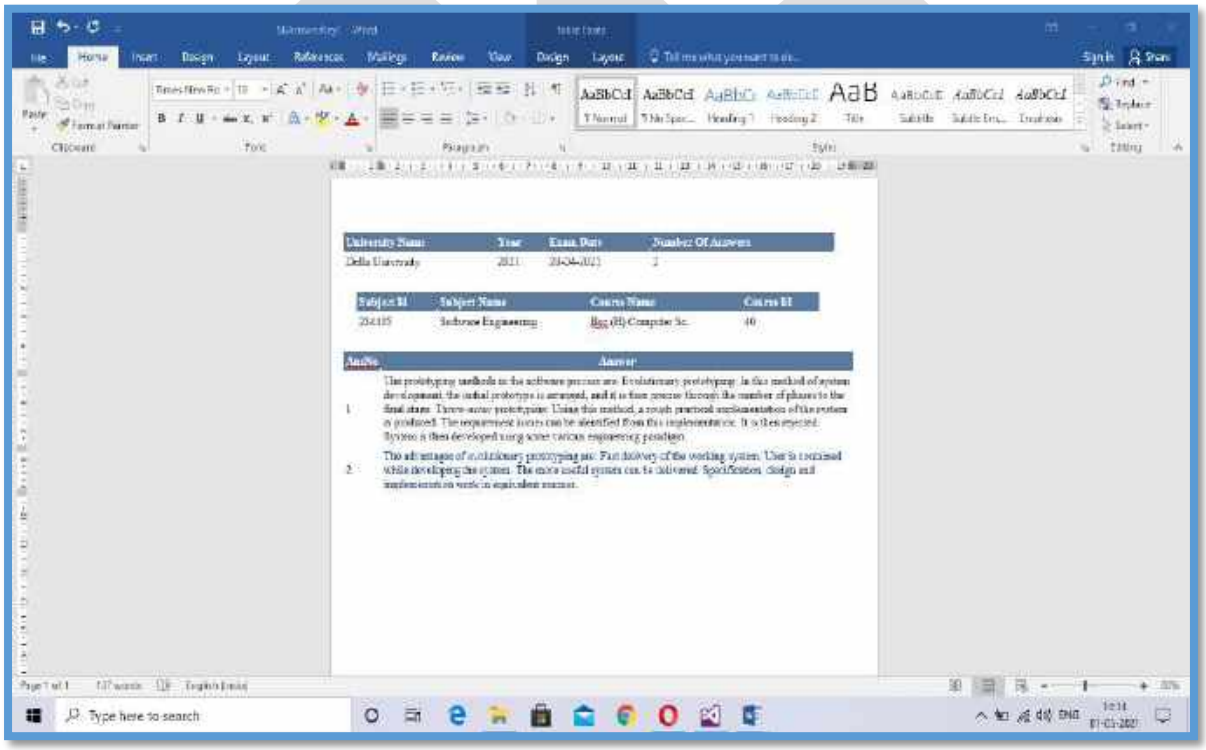


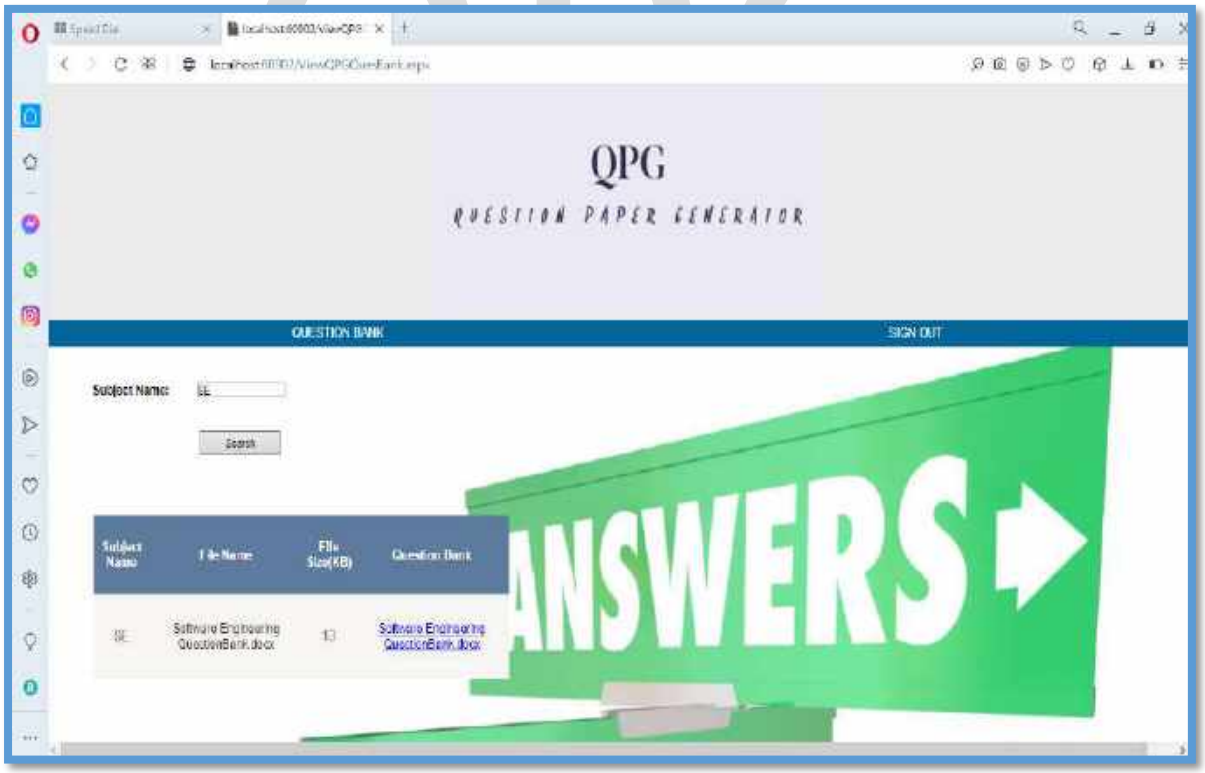


ADMIN LOGIN PAGE

AFTER ADMIN LOGIN

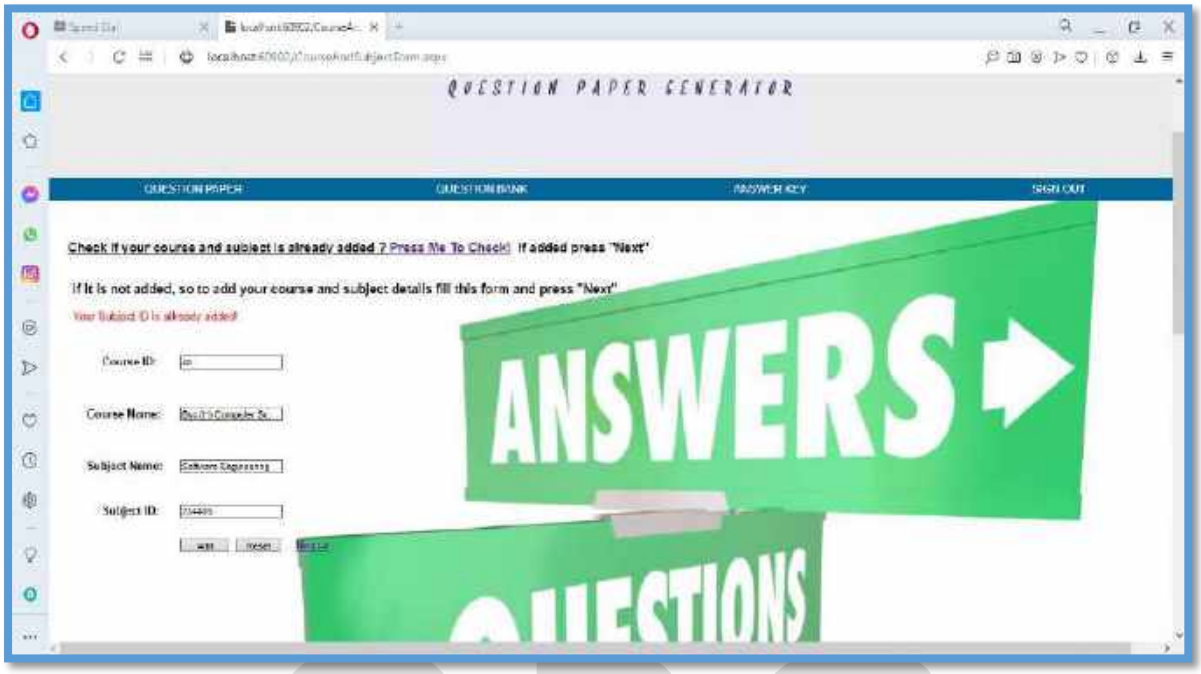
UPLOAD QPG QUESTION BANK

VIEW QPG QUESTION BANK



EXCEPTIONS IN MOST OF THE FORMS OF WEBSITE FOR EXAMPLE

COURSE AND SUBJECT FORM



QUESTION PAPER DETAILS FORM