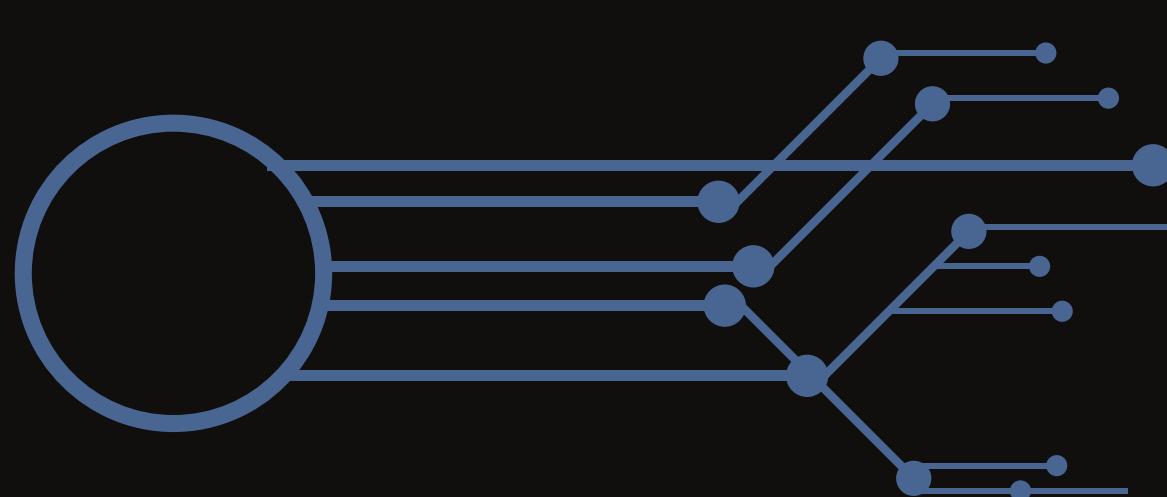


# SMARTQGEN



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# ABOUT OUR TEAM

**Team No** : 17

**Team members** : Sreyarag k(KSD22CS120)  
Nandana VM(KSD22CS098)  
Muhammed Minhaj VS(KSD22CS090)  
Sreelakshmi Sreedharan(KSD22CS117)

**class** : S6 CSA

**Guide** : Prof Krishnaprasad

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# Introduction

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The Question Paper Generator is a web-based system designed to automate the process of creating question papers for educational institutions. The system enables educators to:

- Upload syllabus, modules, and previous question papers
- Categorize questions based on difficulty levels (Easy, Medium, Hard)
- Automatically generate structured question papers in 3-mark and 7-mark formats
- Reduce manual effort and human errors in question selection
- Ensure randomized and balanced distribution of questions

# Literature Survey

Topic	Sub-topic	Details	Advantages	Disavantage
<b>Manual Question Paper Generation</b>	Traditional method	Teachers manually prepare question papers based on syllabus	Ensures human expertise, high accuracy in quality	Time-consuming, repetitive, difficult to scale
<b>Rule-Based Question Generation</b>	Uses predefined templates	Predefined rules select questions from a question bank	Faster than manual, structured approach	Lacks flexibility, repetitive questions
<b>Database-Driven Question Selection</b>	Uses SQL or <u>NoSQL</u> databases	Fetches questions based on topics,	Structured, allows categorized storage	Requires a well-maintained database, limited question

<b>AI-Based Question Generation</b>	Uses <u>NLP</u> & ML models	Extracts key concepts and generates new questions dynamically	Scalable, automatic, generates unique questions	Requires training data, accuracy depends on model
<b>OCR-Based Question Extraction</b>	Uses Optical Character Recognition (OCR)	Extracts text from scanned documents or images	Useful for digitizing old papers	Accuracy varies based on handwriting and image quality

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# MOTIVATION

- Manual Question Paper Creation is Time-Consuming
- Inconsistent Difficulty Levels in Exams
- Human Errors in Question Selection
- Challenges in Managing Large Question Banks
- Need for a More Secure and Adaptable System
- Demand for AI-Based Automation in Education

# PROBLEM STATEMENT

Manual question bank creation is time-consuming, prone to human errors, and results in inconsistent difficulty levels, imbalanced question selection, and challenges in managing large datasets, highlighting the need for an AI-based approach for future enhancements.



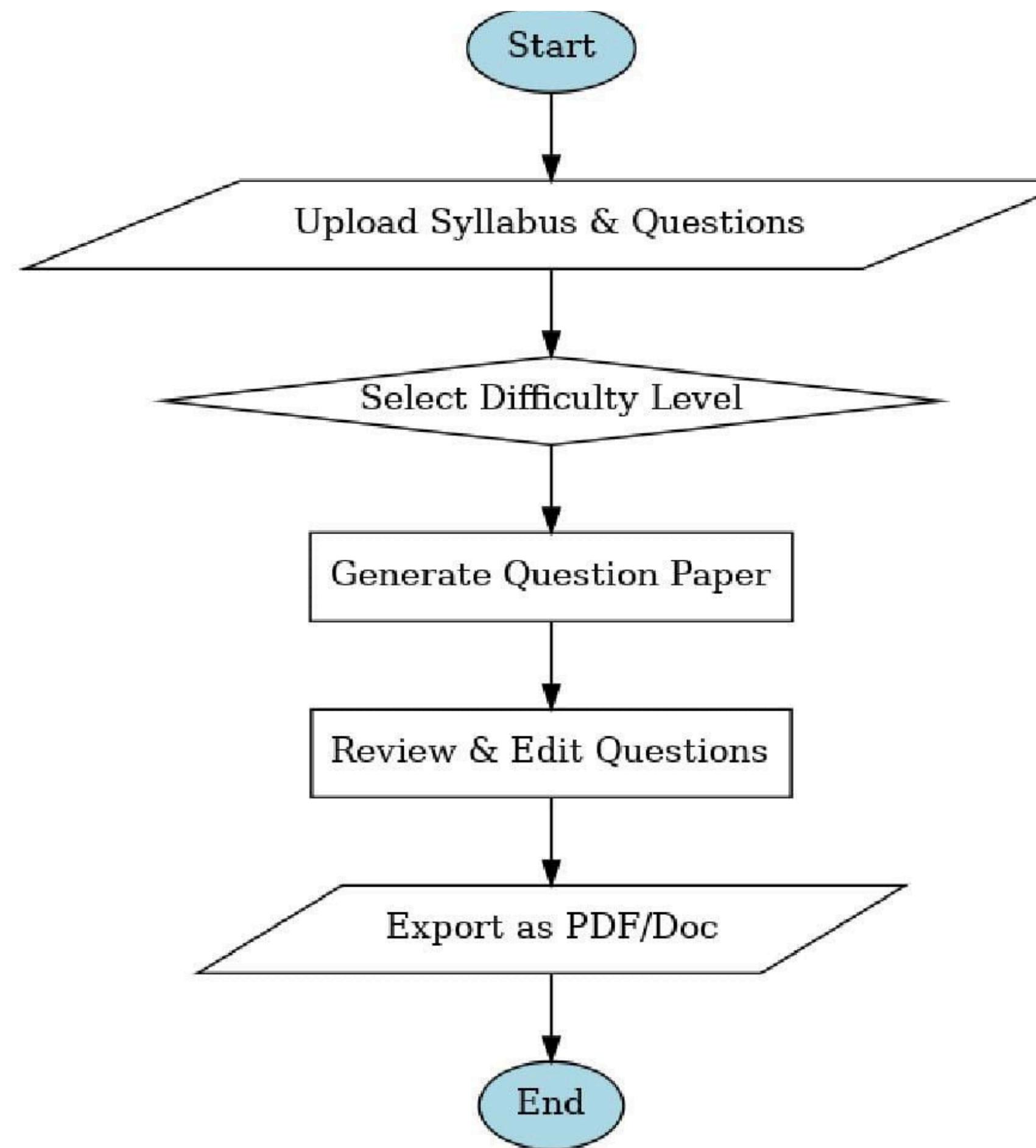
# System Architecture

- Frontend: HTML, CSS, JavaScript for UI/UX.
- Backend: PHP for server-side logic.
- Database: MySQL (XAMPP) for storing syllabus and questions.
- User flow: Upload syllabus -> Select difficulty -> Generate questions.
- AI Technology Used :-

Google gemini AI processes syllabus and past questions to generate relevant questions.

# FLOWCHART-Question generation

## process



# Project plan

## Week 1

- Identify user needs (educators, tutors, students).
- Research question generation techniques & AI models.
- Finalize tech stack & development tools.

## Week 2

- Design system architecture and data flow
- define database schema
- setup development environment & initial database setup

## Week 3

- Create wireframes & UI mockups.
- Design intuitive user flows for question creation & customization.
- Finalize front-end framework & basic UI structure.

## Week 4

- Set up authentication & user roles.
- Develop API endpoints for question generation.
- Implement database interactions for storing questions & subjects.

# Project plan

## Week 5

- Implement AI-based question classification (Easy, Medium, Hard). Develop syllabus/module parsing & question filtering.
- Integrate previous exam question input functionality.

## Week 6

- Implement core UI components (dashboard, forms, question filters).
  - Connect frontend with backend APIs.
- Test UI responsiveness & design consistency.**

## Week 7

- Implement customization features (difficulty levels, time constraints)
- Add real-time question preview & selection options.
- Refine user experience based on feedback.

## Week 8

- Conduct unit testing for frontend & backend.
- Test question generation accuracy & difficulty levels.
- Fix major bugs & optimize performance.

# Project plan

## Week 9

- Set up hosting & database deployment.
- Implement security measures & user authentication validation.
- Final testing on deployed version.

## Week 10

- Gather user feedback & make final improvements.
- Deploy the application & monitor performance.
- Document project & prepare for future enhancements.

# Register page:-

**Register**

First Name  
First Name

Last Name  
Last Name

Email  
Email

Password  
Password

**Sign Up**

Already Have an Account?  
[Sign In](#)

# Signup page:-

**SmartQGen**

[Sign Up](#)

Email  
Email

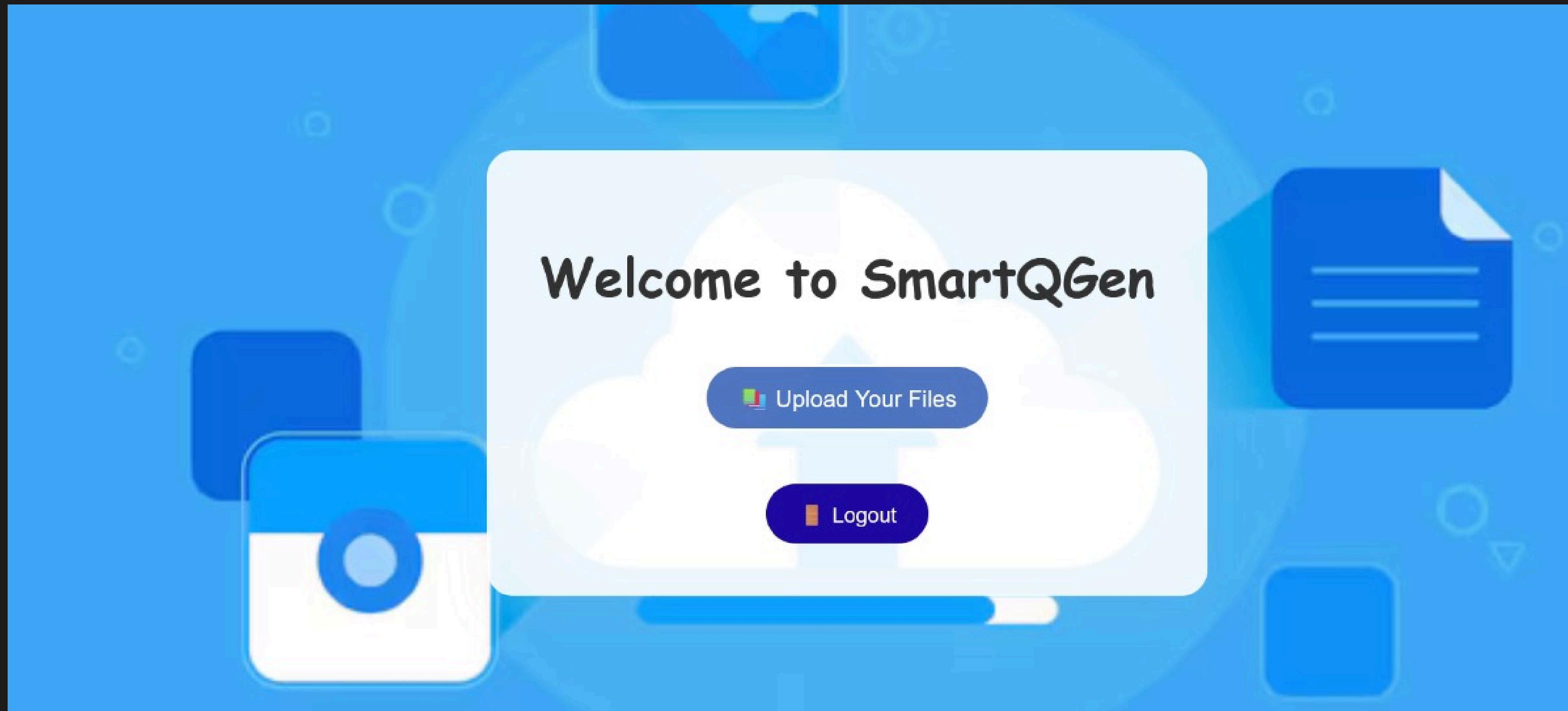
Password  
Password

**Sign In**

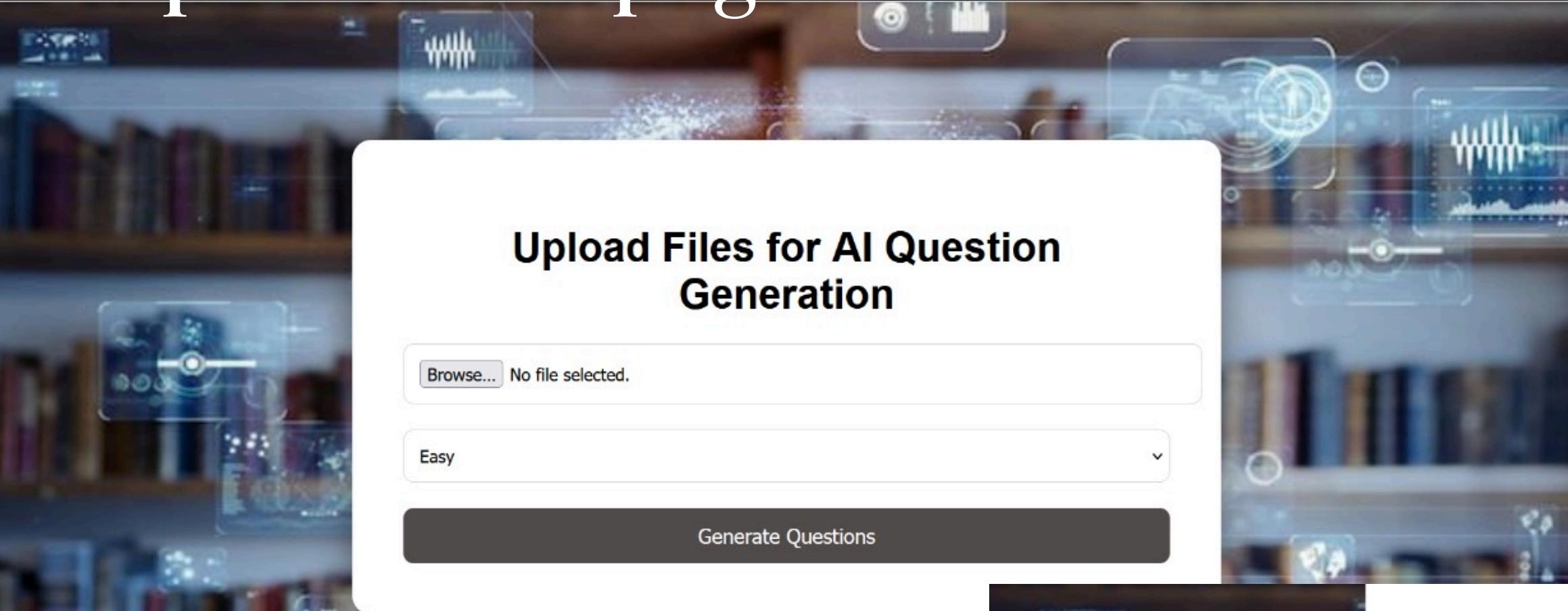
OR

Don't have an account yet?  
[Sign Up](#)

# Home Page:



# Upload files page :-



**Upload Files for AI Question Generation**

Browse... COMPUTER GRAPHICS.pdf

Easy

Generate Questions

**Generated Questions:**

1. Define raster and random scan display systems. What are their key differences?
2. What is the difference between 4-connected and 8-connected area filling algorithms?
3. Briefly explain the concept of homogeneous coordinates in 2D transformations.
4. Name three different line drawing algorithms.
5. What is the purpose of clipping in computer graphics?
6. What are the two main types of projections used in computer graphics?
7. Define spatial and gray-level resolution in digital image processing.
8. What is histogram equalization and why is it used?
9. Name three common spatial filtering techniques.
10. Briefly describe the region growing method for image segmentation.

**Copy**   **Download as PDF**



# Generated Question paper:-

## Generated Question Paper

Here are some easy three-mark and seven-mark questions based on the provided syllabus. Remember that "easy" is subjective, and the actual difficulty might vary depending on student background.

### \*\*10 Three-Mark Questions:\*\*

1. Define raster and random scan display systems. What are their key differences?
2. What is the difference between 4-connected and 8-connected area filling algorithms?
3. Briefly explain the concept of homogeneous coordinates in 2D transformations.
4. Name three different line drawing algorithms.
5. What is the purpose of clipping in computer graphics?
6. What are the two main types of projections used in computer graphics?
7. Define spatial and gray-level resolution in digital image processing.
8. What is histogram equalization and why is it used?
9. Name three common spatial filtering techniques.
10. Briefly describe the region growing method for image segmentation.

### \*\*Seven-Mark Questions (Two per module):\*\*

#### \*\*Module 1: Basics of Computer Graphics and Algorithms\*\*

1. Describe the working principles of a raster scan display system. Compare and contrast it with a random scan display system, giving examples of their respective applications.
2. Explain the DDA line drawing algorithm in detail. Illustrate with an example, highlighting the steps and the use of integer arithmetic for improved efficiency.

# User Table:

phpMyAdmin

Server: 127.0.0.1 » Database: login » Table: syllabus

Browse Structure SQL Search Insert Export Import Privileges Operations Triggers

Showing rows 0 - 0 (1 total, Query took 0.0006 seconds.)

SELECT \* FROM `syllabus`

Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

	id	subject	module	content
<input type="checkbox"/>	1	data	2	joopkjpojggjbk

Check all With selected: Edit Copy Delete Export

Show all Number of rows: 25 Filter rows: Search this table

Query results operations

Print Copy to clipboard Export Display chart Create view

The screenshot shows the phpMyAdmin interface for the 'login' database. The 'syllabus' table is selected. A single row is present with the following data: id=1, subject='data', module=2, and content='joopkjpojggjbk'. The interface includes standard navigation and search tools.

Table: users

Browse Structure SQL Search Insert Export Import Privileges Operations Triggers

Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Extra options

	id	firstName	lastName	email	password
<input type="checkbox"/>	1	nandana	v m	nandanavmvaliyapurakal@gmail.com	be9fb3110b3e1201505fdca26e00afc6
<input type="checkbox"/>	2	ammu	a	ammu@23	4956f3c24185a47326e147b29d8bd2a9
<input type="checkbox"/>	3	nandana@23	vm	nandana@23	aaa98c5f30f9d0f514af3aa679765904
<input type="checkbox"/>	5	ravi@23	vs	ravi@23	ab0a0fee7c5c0a846b1df44c4c054eea

Check all With selected: Edit Copy Delete Export

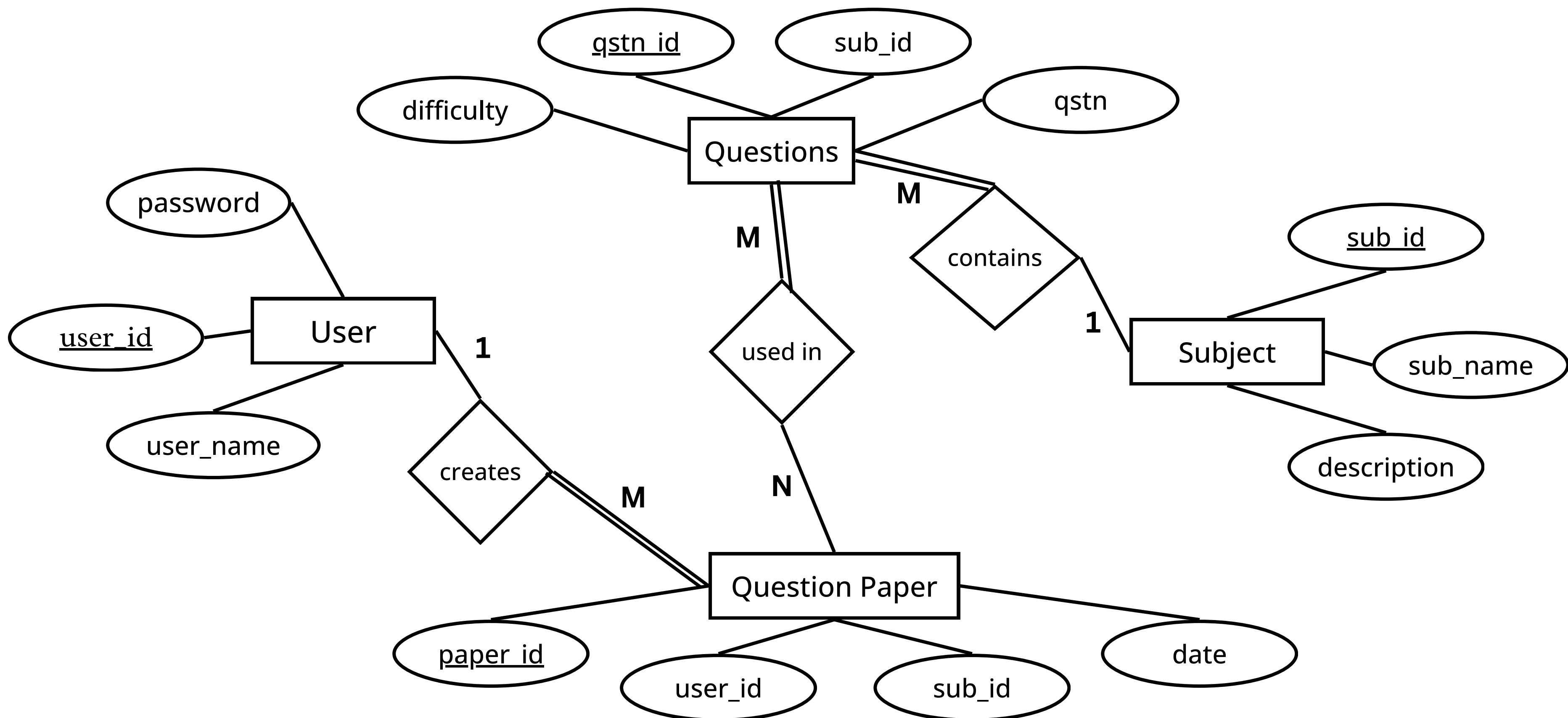
Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

The screenshot shows the phpMyAdmin interface for the 'login' database. The 'users' table is selected. Five rows are present with the following data:  
1. id=1, firstName='nandana', lastName='v m', email='nandanavmvaliyapurakal@gmail.com', password='be9fb3110b3e1201505fdca26e00afc6'  
2. id=2, firstName='ammu', lastName='a', email='ammu@23', password='4956f3c24185a47326e147b29d8bd2a9'  
3. id=3, firstName='nandana@23', lastName='vm', email='nandana@23', password='aaa98c5f30f9d0f514af3aa679765904'  
4. id=4, firstName='ravi@23', lastName='vs', email='ravi@23', password='ab0a0fee7c5c0a846b1df44c4c054eea'  
The interface includes standard navigation and search tools.

# ER DIAGRAM



# Challenges and Limitations

- Handling syllabus variations across institutions.
- Diverse question formats-supporting MCQs,descriptive,numerical
- Ensuring question diversity in auto-generation.
- Ensuring uniqueness-Avoiding redundant questions
- Database optimization for efficient querying.
- Potential inaccuracies in difficulty classification.

# Result

**Successfully developed an efficient question bank generation system.**

**Streamlined the creation of customized exam question sets for educators**

- Provided an intuitive platform for easy syllabus integration and question customization.



# Conclusion



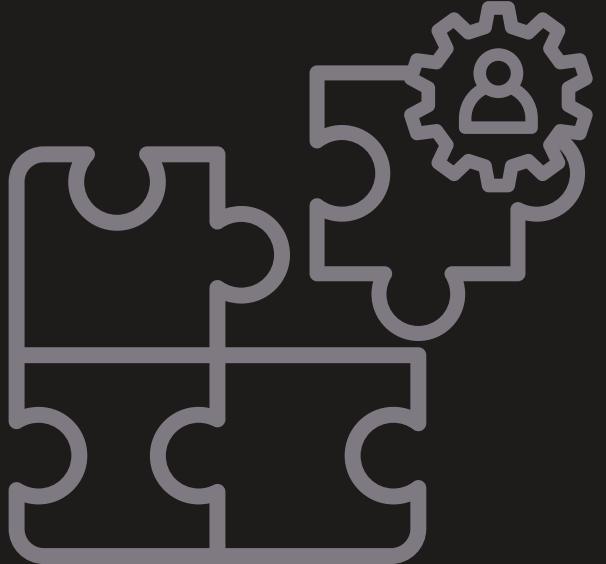
- The system streamlines question paper creation, reducing manual effort and ensuring accuracy.
- It categorizes questions by difficulty and enables easy storage and retrieval across subjects and semesters.
- Improves exam preparation and assessment efficiency while maintaining flexibility and scalability.
- AI-based question generation and multi-format support will further enhance its intelligence and usability.

# Future Work?

## Future Scope & Enhancements:

- AI-Powered Question Generation – Use NLP models to create unique, context-aware questions.
- Automated Answer Key & Explanations – Generate detailed solutions for questions.
- Adaptive Question Paper Generation – Personalize based on student performance & difficulty.
- Subjective Question Handling – AI-assisted evaluation for essay-type answers.
- Multilingual Support – Generate questions in regional languages.
- Integration with Learning Platforms – Connect with LMS (Moodle, Google Classroom).
- Real-Time Collaboration – Enable multiple educators to work together.
- Question Bank Expansion – Allow users to contribute & share questions.

# Gaps Identified



Contextual Accuracy Issues – AI may struggle with precise, syllabus-aligned questions.

Dependency on Input Quality – Poorly formatted syllabus or past papers affect question relevance.

No Real-Time AI Feedback – Lack of instant validation or quality checks on generated questions.

AI Bias & Question Repetition – The AI may generate similar or biased questions over time, reducing diversity in the question set

# References



Design Inspiration – Platforms like Google Forms, Quizizz, ExamSoft for question management.

Tech Stack Tutorials – MySQL (MySQL Tutorial), HTML & CSS basics-W3schools, AI integration(google gemini API)-gemini API generation and integration

## Books

Automated Question Paper Generation – S. K. Singh

Artificial Intelligence in Education – Bittencourt, Ig Ibert

Database Management Systems – Raghu Ramakrishnan

## Research Papers

AI-Based Question Generation Techniques – Studies on AI-driven question formulation.

Question Difficulty Classification Algorithms – Research on classifying questions into easy, medium, and hard.



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Thank you

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