



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJIRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 10, October 2021

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 7.569



# Android App for Automatic Question Paper Generation

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**ABSTRACT:** An Android Automatic Question Paper Generator system will allow college officials to automatically generate papers from an existing database of questionnaires. This system will have the ability to process different paper sets by default. It takes all the tedious work and makes the manual work quick and effective. The software is very useful for small and medium sized institutions. The Application will use the database to compile a questionnaire where the database can contain thousands of queries. The Application will generate random paper in such way that the question does not repeat itself

**KEYWORDS:** Android, Questionnaire, paper, generator, exam, automatic.

## I. INTRODUCTION

In a practical scenario, generating a question paper is very time consuming and it makes all the teachers tired of doing the same tasks over and over again. This project removes these issues and difficulties. In this project, we have used a system in which random questions will be selected from the database to generate the question paper. Using a randomization algorithm, questions are selected based on course, semester, subject, marks. The questionnaire is produced according to the above pattern by the administrator to avoid time-consuming activities, and also by the students to practice for their exams.

## II. LITERATURE REVIEW

### A. Existing Paper-based Systems

The existing system for Question Paper Generation requires human staff to chalk out questions that appear in the question paper. These teachers or professors select the questions according to the syllabus and pattern as prescribed by the curriculum. The question paper then may be referred to a higher authority who has the final say in these matters.

### B. Limitation of Paper-based Systems

As most human working processes, this system suffers due to bias. There might be some questions which are repeated in many question papers as the professor has a personal inclination towards them. So there is no guarantee of pure randomly generated question paper. Other problems that may plague this system are non-availability of staff and resources, natural calamities and accidents. Also, the security of the system can be easily compromised if leverage over the person responsible for generating question papers is obtained. Other limitations include: -

#### a. Lack of storage space

- a. Prone to damage
- b. Inefficient document transportation
- c. Supply costs
- d. Poor environmental credentials
- e. Limited collaboration

The paper on Android Automatic Question Paper Generation System using Randomization Algorithm describes a system which uses a shuffling algorithm (existing algorithm) as a randomization technique. The system defines

several modules such as user administration, subject selection, difficulty level specification, question entry, question management, paper generation, and paper management.

It supports multiple languages. Also, mathematical formulae and diagrams can be integrated in questions. The application has attractive User Interface. The system introduces a highly efficient shuffling algorithm which uses an array to store randomly generated numbers. The questions are then selected against these array elements, thereby ensuring completely random generated question papers. However, this system fails to utilize the highly efficient marking system. So, questions once selected may be repeated in subsequent papers. This is a limitation of this system.

The paper on „An Integrated Automated Paperless Academic Module for Education Institutes“ has stated the importance and working of switching from Paper based systems to Paperless Systems [2]. The importance of automation is very well documented in the context of Task Engineering [2]. The paper also clearly defines the importance of Information and Communication Technology (ICT) in academics and educational organizations [2]. The paper also describes many Access Control Methods such as MAC (Mandatory Access Control), DAC (Discretionary Access Control), RBAC (Role based Access Control) and DTE (Domain Type Enforcement) [2]. Role based Access Control is very helpful in automation due to the user hierarchy comprising of different roles [2].

### C. Analysis

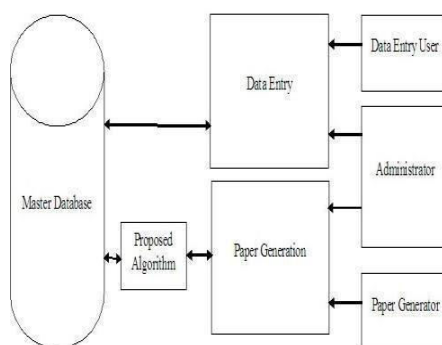
From above analysis we come to know that we need an Automatic Question Paper Generation System with improvements in terms of speed, efficiency, controlled access to the resources, randomization of questions and security

The system should perform tasks in the fastest way without violating the role-based hierarchy and their access rights policy, provide a central database for data storage, ensure security and optimize the overall performance of the System.

## III. SYSTEM DESIGN

### III.I. BLOCK DIAGRAM

Figure.1. Architecture of Android Question Paper Generator



### III.III. CONCEPT OF THE SYSTEM

To generate the question paper we can divide the proposed system into phases such as:

1. Selection of Parameters.
2. Question Bank Formation.
3. Question Paper Format Creation
4. Final Question Paper Generation.

Working of the Application:

1. Admin makes the skeleton of the question paper which consists of various questions and sub-questions.
2. Faculties are made to enter questions into the database along with their respective difficulty level and priorities.

3. This question bank is then sent for paper generation. Question paper is prepared on the basis of the difficulty level set by the admin. Question chosen will be unbiased and based on the algorithm.
  4. This question paper is then analysed by the admin.
- After analysis, the generated question paper can be mailed to different colleges by the university

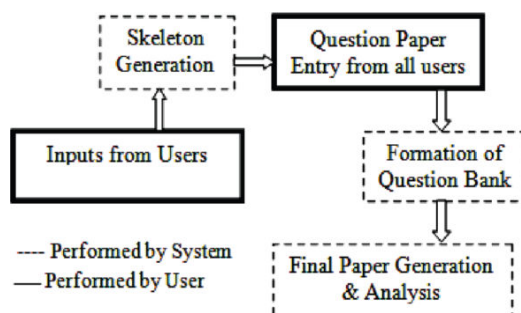


Figure.2. Architecture of Android Question Paper Generator

## IV. IMPLEMENTATION

The Automated Question Paper Generation System is implemented in Kotlin. The fully working system stores courses, questions and patterns of question papers. It then applies the algorithm on the stored question set and prints the question paper in pdf format.

### A. Presumptions of the System

The Question Paper Generator Application has been developed considering the following presumptions: -

- a. All courses provide a well-defined course content which would be taught or left for self-study.
- b. Each course has its specific code.
- c. All questions belonging to a particular course lie in some question type/category.
- d. The institute can have any number of courses and streams.

### B. Proposed Algorithm

For N questions available in database

- Step 1: Create a List „L“ of N elements
- Step 2: Generate a random number ‘n’ such that  $1 \leq n \leq N$
- Step 3: If  $n \in L$   
Go to Step 2  
else Store n in the List L
- Step 4: Select a question from database corresponding to n,  
whose flag==true
- Step 5: For the question, set flag=false

### C. Application

The Automatic Question Paper Generation Application is accessible on personal Smartphone with minimum Android version Required is lollipop.

### D. Features and Benefits of System

Following are some of the features of the Question Paper Generation System: -

- a. Simple interface which enhances the ease of updating data.
- b. Generates and prepares the Question Paper in a matter of seconds
- c. Question Type can be Knowledge-based, Logic-based, Memory-based and Application-based.
- d. Questions can be easily edited.

The Automated Question Paper Generation System provides various advantages to the user when compared to the traditional system.





**Listed below are some of the advantages of the system: -**

- a. User can generate test papers randomly and instantly, thus saving a lot of time.
- b. The algorithm enables randomization of questions.
- c. A new question can be added to the database at any instance and different sets of test papers could be generated without any limitation.

**E. Technologies Used for Development:**

- a. Android Studio - Arctic Fox | 2020.3. 1
- b. SQLite, Firebase Database
- c. XML for Designing UI of Application

## V. CONCLUSIONS

In this paper, an automated Question Paper Generator is proposed which is implemented as a real-time application in Barshi, Solapur. The proposed work describes an automated system that progresses from the traditional method of paper generation to an automated process, by providing controlled access to the resources. We have also considered the importance of randomization in the task of paper generation. Our system has deployed an efficient algorithm which is totally randomized and avoids repetition of questions in consequent question papers, making it impossible to derive any pattern in the papers. We distinguish between administrators and subordinates by their tasks. Therefore, the resultant automated system for Question Paper Generation provides improvement in terms of controlled access to the resources, random generation of question papers and a secure platform.

## ACKNOWLEDGMENT

Report is on the topic: **“Android app for the Automatic Question Paper Generator”** All the Relevant and essential details are included in the paper. At the beginning we have given the summarized details of the project which we are building and we have also proceed details about how the project is going to be implement and which technologies we are going to use to develop this project.

We are thankful to **Prof. Atul Yadav** who guides us and helps in preparing the paper. We thank him for providing us the confidence and most importantly giving us the track regarding the project topic whenever we needed it.

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**Impact Factor:  
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