

Quiz Application Development Using Android-Based Google Forms

Mohamed Najm Abdullah¹, Marwa Hussain Ali²

¹University of Technology/Computer Engineering Department

²Iraqi Communication for Computers and Informatics, Informatics Institute for Postgraduate Studies

Abstract: *The evolution of today's mobile devices increases the number of mobile applications developed, and among them the quiz applications. Android Mobile hardware and software platforms allow running of faster and richer applications. This paper presents the main steps in development of quiz application for Android using Google Forms.*

Keywords: IIPS(Informatics Institute For postgraduate studies)

1. Introduction

Development of Quiz application is required by the both learners and students to prepare themselves for various examinations through smart phones and tablets. The traditional systems do not save time and it need more observes to take exam of many students. The main goal of the application is mitigating administrative work, enable students to practice for subjective quizzes conducted for examine their ability to absorb the lecture. This research deals with the development of Android based Google Forms application.

This application is developed for educational purposes, allowing the staff to prepare the questions for different examinations conduct at Informatics Institute for Postgraduate Studies (IIPS). Our application has many sub categories. It provides many fields for students and learners about the computer science for the learning purpose. The categories are Data Structure, Web Security, Web Languages, Software engineering, Database, Multi Media, Web Design and Network. These are most of the subjects that are taught at the Informatics Institute For Postgraduate Studies (IIPS) to the students of higher diploma.

We have shuffled the display of the question order to lessen the likelihood of copying from another student's responses. Google Forms are one of the most important way to quiz students. This tool is especially handy because all of the students' answers automatically are gathered. We will instantly be able to see a summary of responses that make some charts and graphs to help us to take the necessary measures on the spot. We can choose to have the results go to a spreadsheet which makes grading easy because we do not have to flip through papers or links. We use Flubaroo to automatically grade the quiz or write a formula to grade the quizzes for us.

2. Google Forms

Using Google Forms is one way to quiz students. Using this way is especially handy because all the answers of the students automatically are gathered. We shall be able to see

a summary of responses. Google Forms make some very nice graphs and charts to help us to modify our instruction on the spot. We can choose to have the results go to a spreadsheet which makes grading easy and interesting since we do not have to flip through links or papers. We will use Flubaroo to automatically grade the quiz or write a formula to grade the quizzes for us.

3. Android Platform

Android is rapidly getting famous, and the number of its users are increasing day by day, because it is easy to access the necessary Android-based apps on tablets and smartphones. Therefore, we found the using of Android App is easier and more time efficient to facilitate the users in this way without any difficulty. Fig 1

Applications and widgets	
Application Programming Interface	
Libraries	Android runtime

Figure 1: Android Architecture

reduces the time of development and will reduce the amount of memory that are required by the application. In Future we can include redesigned a friendlier user interface because the application targets various levels of users ranging from sophisticated programmer to naive users.

4. Firebase Authentication

Quiz applications need to know the identity of the users (professors, students, dean). Knowing a user's identity allows a quiz application to securely save user data in the cloud and provide the same personalized experience across all of the user's devices. Fig 2

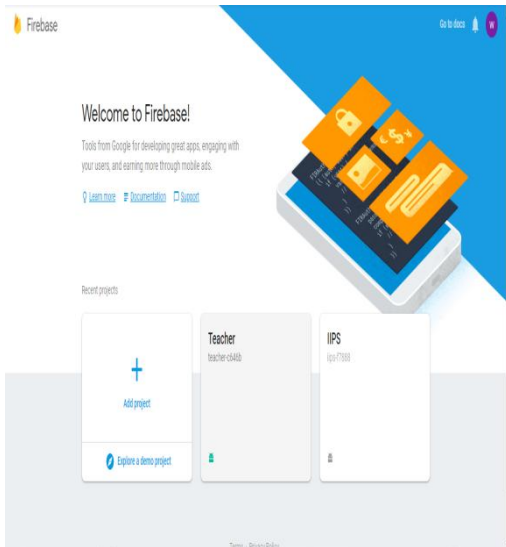


Figure 2: Firebase Authentication

Firebase Authentication provides backend service, and ready made UI libraries to authenticate users to quiz app. It supports authentication using passwords, phone numbers and more. We used **Email/Password** authentication in our Application.

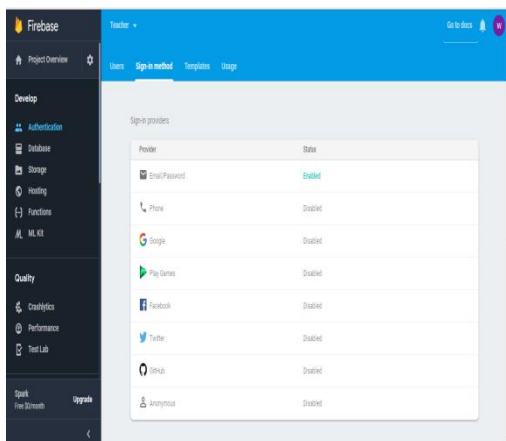


Figure 3: Email/Password authentication of Firebase
 It is so easy to add a new user . click on "Add user " icon.

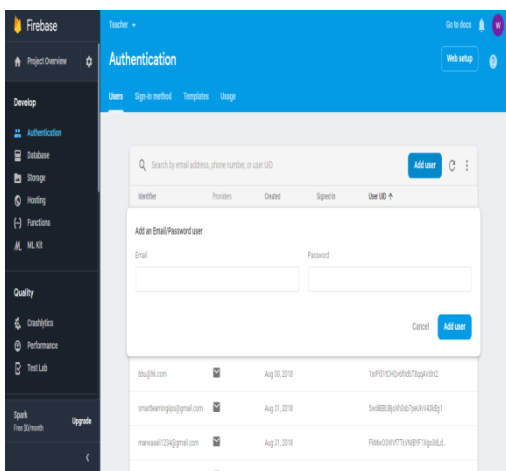


Figure 4: Adding users

it is also easy to disable an already exist account or delete it permanently .

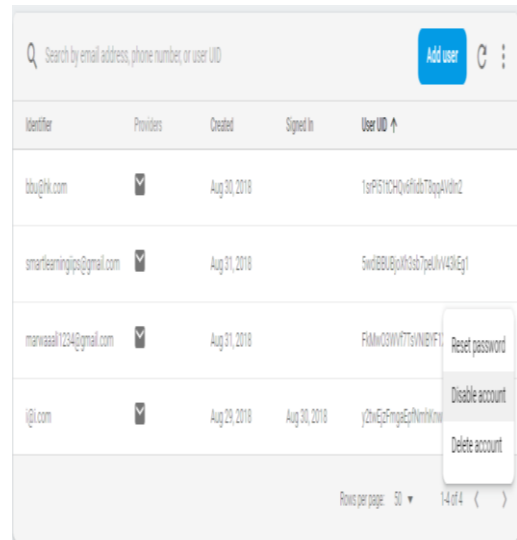


Figure 5: Disable or delete a user

5. Web Viewer

Web Viewers are powerful components for displaying websites (Google Forms in our App) , images and custom html . Displaying custom html within a Web Viewer can enable Material Design effects or displaying simple websites when an internet connection is not available.

6. GUI of student app

The main screen of the app includes items that allow the student to Login the application

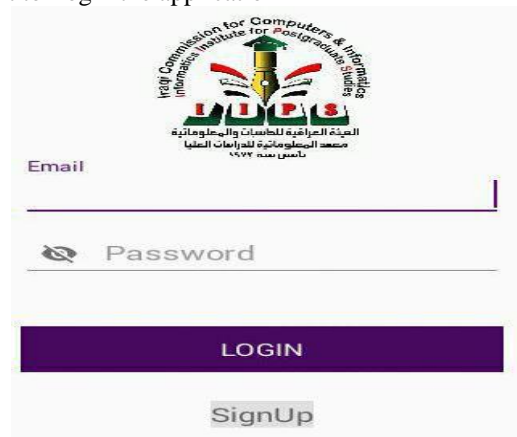


Figure 6: The main screen of the student app

After logging in the tests window will be shown.

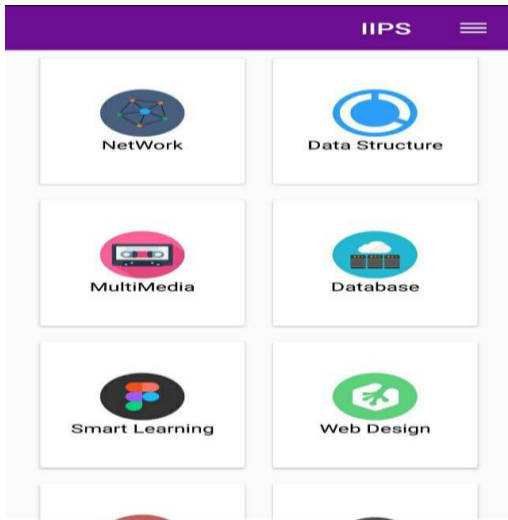


Figure 7: The graphical interface associated to the tests window

When the student selects a particular test , the associated Google Form will be shown

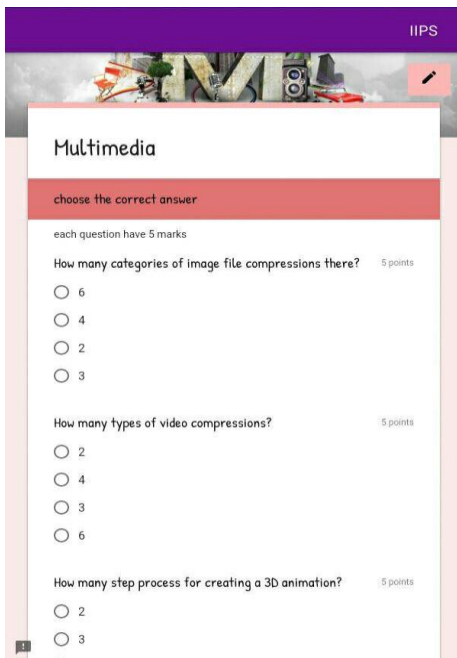


Figure 8: Question screen as shown on an Android device

7. GUI of professor app

The main screen of the app it includes items that allow the professor to Login the application .



Figure 9: The main screen of the Professor app

After logging in the window that is illustrated in Fig 10 will be shown . From this window the Professor can manage the quiz, show results and log out Our application has many sub categories It provides many fields for students and learners about the computer science for the learning purpose. The categories are Data Structure, Web Security , Web Languages , Software engineering, Database , Multi Media , Web Design and Networks . These are the subjects that are taught at the Informatics Institute For Postgraduate Studies (IIPS) to the students of higher diploma .



Figure 10: The professors screen

Now if the professor of a particular material , (for example the professor of a Database) want to edit the questions he/she can do that easily by insert the email and the password of the Google Form that we have already dedicated to this subject (we have dedicated an email and password for each subject) .



Figure 11: Questions management

8. Quiz Responses

The results for the quiz can be seen by Admins (professors) , Dean of IIPS and students who have just taken the exam .

The average quiz grade

The median quiz grade #

The range of quiz grades

A bar graph of grade distribution #

#A list of the most frequently missed questions

Scores for individual students .

Item analysis for each question showing how often each answer was chosen

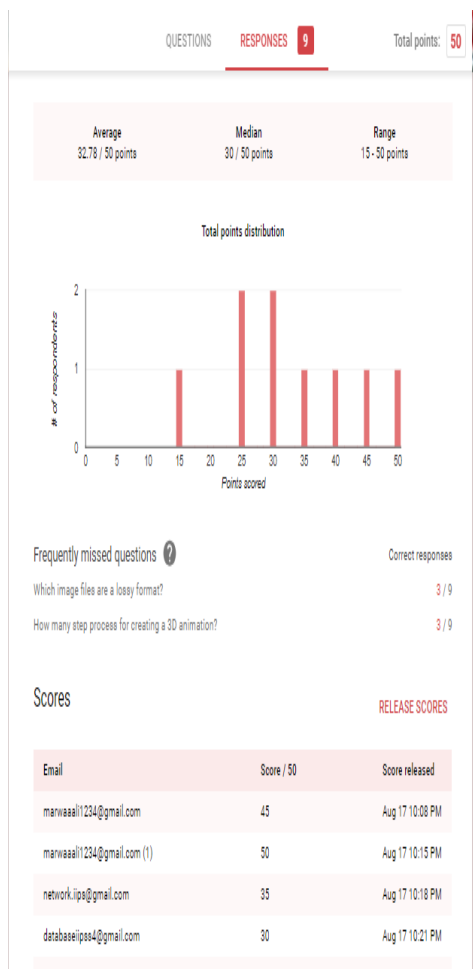


Figure 12: The graded quiz results

We can also Click “make a spreadsheet” icon

So we can view, sort and print scores using Google Sheets. We can share scores with students , and Print spreadsheet.

9. Flubaroo

The add-on Flubaroo (Google Sheets: add-ons --- get add-ons --- Flubaroo) . Flubaroo is another option for grading. The admin (professors) must “take” the quiz, entering the correct responses (for the “Name” question, type “answers”). When using Flubaroo, we will use this response as the answer key.

10. Conclusion

- The electronic examination framework is vital in future learning systems , can be effortlessly received by colleges and other educational institutions keeping in mind the end goal to influence the exam more flexible , more secure and more adaptable.
- Using Android studio gives us more flexibility, but it required more time .
- The Quiz App is important in future learning systems; it can be easily adopted by educational institutions and universities in order to make the exam more flexible and more secure .
- An administrator (professors) will represent the server side while the users (students) represent the client's side of the system. The system is subdivided into two main subsystems (student and administrator) that are designed to
- give the system maximum benefit by demonstrating carefully each subsystem service.
- The proposed system is easy and flexible for future maintenance and development because each subsystem can be handled separately without influence on other system.
- The introduced exam system gives the administrator a great amount of flexibility by making him able to create questions randomly for each student in an easy manner by Google Forms .
- The results will be shown instantly to students.

11. Future Work

Many useful ideas can be given to develop the proposed system in the future, these suggestions summarized as follows:

- 1) Develop approaches and practices to guarantee the security.
- 2) The use of Email/Password as a protection mean is not a sufficient way to protect the examination system, and there is a need to use an additional security programs and policies Such as adding pictures of student , face recognition and other authentication methods .
- 3) Having more than one exam sort in the meantime.
- 4) It is possible to build the messaging system. In order to enable interaction between systems users and to help the students to send questions to be answered by the administrator (professors) .

References

- [1] Sk. Imran HossainShoyeb " Android based Online Quiz Application" Department.of Computer Science and Engineering East West University, Dhaka-1212, Bangladesh May 2015 .
- [2] Ann E. Dulay, Katrina M. Pangan , Mary L. Requilman, Mark U. Te and Bryan L. Young " Automated Engineering Quiz Contest System Using Wi-Fi and Android App " , Electronics and Communications Engineering Department De La Salle University , March 7-9, 2016 .

- [3] Mustafa ThamirSalih , "Online Examination System " , Informatics Institute for Postgraduate Studies At Iraqi Communication for computers and informatics , 2017
- [4] MunaRasheedHameed, " Online Examination System" , Informatics Institute for Postgraduate Studies , 2016 .
- [5] Paul POCATILU , " Developing Mobile Learning Applications for Android using Web Services " , Economic Informatics Department Academy of Economic Studies, Bucharest, Romania , 3/2010 .
- [6] WALEED ANWAR , "Software Quality Characteristics Tested For Mobile Application Development " , Faculty of Computing Blekinge Institute of Technology SE-371 79 Karlskrona Sweden Thesis no: MGSE-2015-02
- [7] Muhammad ZubairAsghar , Iqra Sana ,KhushbooNasir , HinaIqbal , FazalMasudKundi , "Quizzes: Quiz Application Development Using Android-Based MIT APP Inventor Platform" Institute of Computing and Information Technology Gomal University, D.I.Khan, PakistaSadia Ismail6 , 5/2016 .
- [8] Mohammed Tawfeeq Ibrahim , " Google Educational Application for Baghdad University Avi-Cenna Center " , informatics Institute for Postgraduate Studies , October 2016 .
- [9] Kate Wilkinson , " The Integration of Mobile Learning App-based Quiz-Games in Higher Education Teaching of Anatomical Sciences", A thesis submitted to Middlesex University in partial fulfillment of the requirements for the degree of Doctorate in Professional Studies, School of Science and Technology , Middlesex University , October 2016 .
- [10] Ali Hussein Mahmoud , " DESIGN AND EXECUTE AN IIPS PLATFORM FOR e-LEARNING" ,A project Submitted to the informatics Institute for Postgraduate Studies at the Iraqi Commission for Computers and Informatics in Partial fulfillment of the Requirements for the degree of Higher Diploma in information E-Learning technology , September 2017 .
- [11] Ali Hussein Mahmoud," DESIGN AND EXECUTE AN IIPS PLATFORM FOR e-LEARNING " , for Postgraduate Studies at the Iraqi CommissionInformatics , September .
- [12] BedourMuhsinSabeeh, " Design and execute an Iraqi STEM Platform " informatics Institute for Postgraduate Studies IIPS, October /2016 .
- [13] Mohammed Ali Hussein, " Design and execution an e _ learning Web site system for high education" , A Project Submitted to the informatics Institute for Postgraduate Studies of the University of Information Technology and Communications in a partial fulfillment of the Requirements for the degree of Higher Diploma in information Technology/ Websites Technique" , 2017.
- [14] SaharJasimAbood," Web based Environment for Managing Postgraduate Projects ",A project Submitted to the informatics institute for postgraduate studies at the Iraq commission for computer and informatics as a partial fulfillment of the requirements for high diploma in information Technology / Web site technology , October 2015 .
- [15] Mustafa Mohammed Khudhair, " A Data Warehouse for Higher Education Student Information System to Support Decision Making " , A Thesis Submitted to the Informatics Institute for Postgraduate Studie at the Iraqi Commission for Computers and Informatics in a Partial
- Fulfillment of the Requirements for the Degree of Master of Science in Software Engineering , 2017