International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 07 | July - 2023 SJIF Rating: 8.176 ISSN: 2582-3930

Fully Automated Android Application Safeguarding for Online Quiz Using Fingerprint and Location Based Authentication

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Abstract: In present days conducting online exams is a very big challenge; most of the software, educational institutions, and other companies are selecting or recruiting their candidates by online mode. In this process, there is a chance of malpractice in their exams, so overcome this problem we are introducing this application(Alien World) it will provide more security features to conduct the exam, this application mainly works with the three security features like fingerprint authentication, location finding and capture the candidate image. Based on these features they can conduct online exams very securely. In this project, we are using a Global positioning system (GPS) to identify the candidate location; Biometric authentication to verify the correct candidate, Firebase (FB) is used to store the exams information and candidate images. In this examination process, it will ask the biometric authentication in the middle of the examination at any point of the time this feature provides more security to this application. Here we are proposing an MBAS (Multiple biometric authentication systems) algorithm for biometric authentication. AlienWorld is safer than compared with other applications.

Keywords: Firebase FB, Global positioning system GPS, Multiple biometric authentication system MBAS, Android operating system.

I.INTRODUCTION

Now a day's quiz tests are popular for selecting students on software organizations. This is a major task for selecting the qualified and knowledgeable students and conducting the selection procedure on their premises in present covid situations, to overcome this we are introducing this prototype, it provides a more secure environment for conducting the exams. Here we are using two securities first one is fingerprint and the second one is location. Nowadays every student is using smart phones for that we are developing one android prototype.

In previous prototype only it will provide an unsecured environment for writing the exam, with that prototype anyone can write the exam with others credentials this is the main drawback of the prototype. For that, we are providing a trustworthy environment and authentication, here we are using fingerprint authentication for user login and we get the current location of the user. As pressing your fingertip to a touch sensor is quicker and more convenient than typing a password and carrying a security key, and as biometrics like fingerprints is more difficult to steal or guess than other forms of authentication like passwords, biometric authentication is growing in popularity. This prototype gets the current location of a user by using GPS (Global Positioning System) for that we have to enable the GPS on the mobile device, can monitor the student performance of every exam, and get the score. For this prototype, The Big O notation is employed to indicate the maximum runtime of an algorithm and hence calculate its worst-case time complexity. It examines and figures out how much memory and how much time an algorithm needs to run on an input value. There are more biometric authentication methods besides fingerprints. Theoretically, you could use any physically distinctive aspect of yourself to verify your identity with the correct scanners and algorithms. The Biometric Prompt API adopts a more biometric agnostic stance than just concentrating on fingerprint authentication.

When you use the Biometric Prompt API, Android evaluates the biometric authentication options that are currently available on the device and chooses the best option—which may not always be fingerprint authentication—from those options. The Biometric Prompt API at the time of writing enabled facial recognition, iris scanning, and fingerprint scanning. This biometric agonistic API is positioned to assist developers in utilizing more authentication techniques as biometric technology continues to advance and new types of authentication find their way onto Android devices.

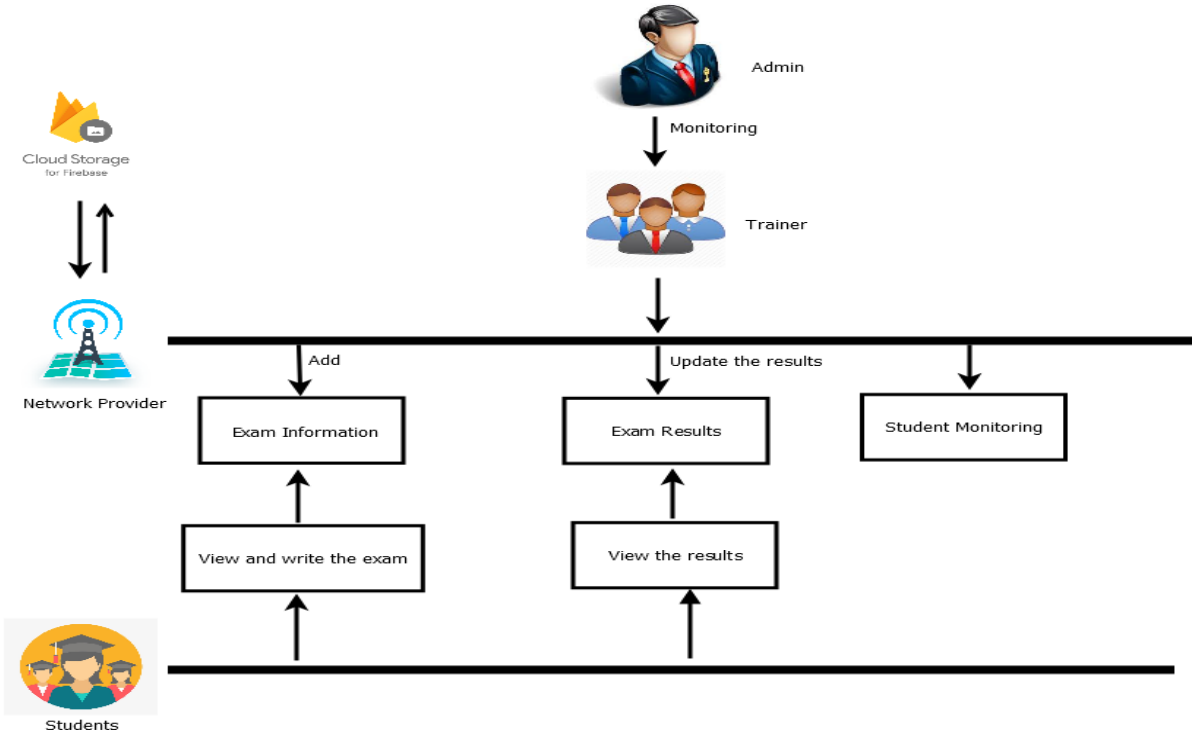

FIGURE 1: System architecture of AlienWorld

II.LITERATURE REVIEW

A. Exam Conduction and Proctoring System Using Face Detection

According to Prof. Hemant B.Shinde this application mainly work on personal computers with this applications they can monitor the face, if the student open any another tab we can't find that system information. This application mainly communicates with the online exams.

B. Construction of University Online Examination System Based on Cloud Computing Technology

With distributed computing strong registering power, many end clients can make an assortment of successful organization applications utilizing the cloud's administrations without agonizing over figuring innovation or access techniques. In view of CC innovation's on-request administration attributes and limitless unique development ability, this article plans and carries out a common organization assessment framework. In the Web mode, the elements of getting and dispersing assessment information, character check, online assessment, and assessment result assortment can be acknowledged utilizing the SaaS organization structure, MVC three-level engineering, Java demonstrating language, XFIE, JSON, web administration, DES, and different innovations joined with MySQL data set. Simultaneously, the better equal hereditary strengthening calculation (IPGAA) is proposed as a CC asset booking procedure.

III.METHADOLOGY

In this prototypewe are created three modules 1. Student, 2.Trainer, 3. Admin
Step 1: In this step we are created user registration and login options, first user has to register then he/she will get the login authentication, at the time of registration user has to give the login credentials like id, password, name, mobile number and fingerprint. For Trainer login admin can provide the login credentials. These all details are stored in firebase.
Step 2: In this step Trainer can add the exam details, type of exam and timings for each exam.
Step 3: In this step student can login with their user id and password after successful login he/she has to verify the fingerprint after

successful verification they can see their respected home page, is there any issue they can return to login page. **Step 4:** after successful login this prototype get the current position of a student and they can eligible for write the exam, after selection of exam student can view the time limit for writing the exam. After writing the exam all the details are stored the firebase the backend platform Firebase is used to create Web, Android, and IOS prototypes. It provides a real-time database, many APIs, numerous methods of authentication, and a hosting platform. They can also view the exam results and is there any doubt in the exam they can ask question to the Trainer.
Step 5 : In this prototype we are provided more services for writing the trust worth online exams like fingerprint and location based authentication. Moreover we are building a good communication with the Trainer to solve their issues.
Step 6: This entire prototype was managed by the admin department and they can solve what are the issues are raised by the student and trainer.

IV.IMPLEMENTATION

AlienWorld: is the application name, this application is very useful to write the online exams. It will create the trust worthy environment to identify the knowledgeable students for recruitment. For that we are using fingerprint authentication. Here we are using two algorithms for user verification and trainer. In this prototype user and trainer, these two roles play a major role.

In this Trainer, first, they can open the application and they have to select the login option and they can enter the login credentials (These login details are provided by the admin). After login trainer will get their home screen in that they have to select exam type, question and answers then it will display to the students. And trainer also gives suggestions to the students. The second algorithm mainly deals with the user/student side. When the student opens the application they will get the home screen, In that first, they have to select registration and they have to fill the registration (credentials like User id, password, email id, Mobile no, fingerprint) form then they will get the login details. After registration select the login option and enters the login details press the submit button then they will get the authentication page in that they have to verify their fingerprint. After successful login, he/she may enter the home screen then start to write the exam, before that they have to verify the fingerprint authentication and location (they have to enable the GPS option). At the time of writing the exam at any time, user/student will get the verification page in that they have to verify the trustworthiness by using fingerprint authentication otherwise exams will be closed, this verification may come at any time and multiple times at the exam, this may create the trustworthy environment for both student and recruiters. After submitting the exam they can check their exam and if there are any doubts trainers are available to solve their issues.

V.DISCUSSION

A. Existing system

In the existing system, there is less security for conducting online exams. They will conduct the exams by using a web application [1]. Most of the students can't view the exam paper properly because of the resolution problem. Most of the students don't have personal computers. There is no fingerprint authentication for each student, conducting the exams by this method there is a chance to malpractice.

B. Proposed system

In this proposed system we are developing our Mobile application in the android operating system. This environment provides more security to the application. Here we are adding three features those are biometric authentication, Global positioning system, cameras.

- Biometric authentication to verify the correct student at the time of login and writing the exam.
- Global positioning system is to identify the position of the student.
- Face capturing at the time of exam it will take the student images multiple times. These features add more security and a friendly environment to conduct and write the online exams.

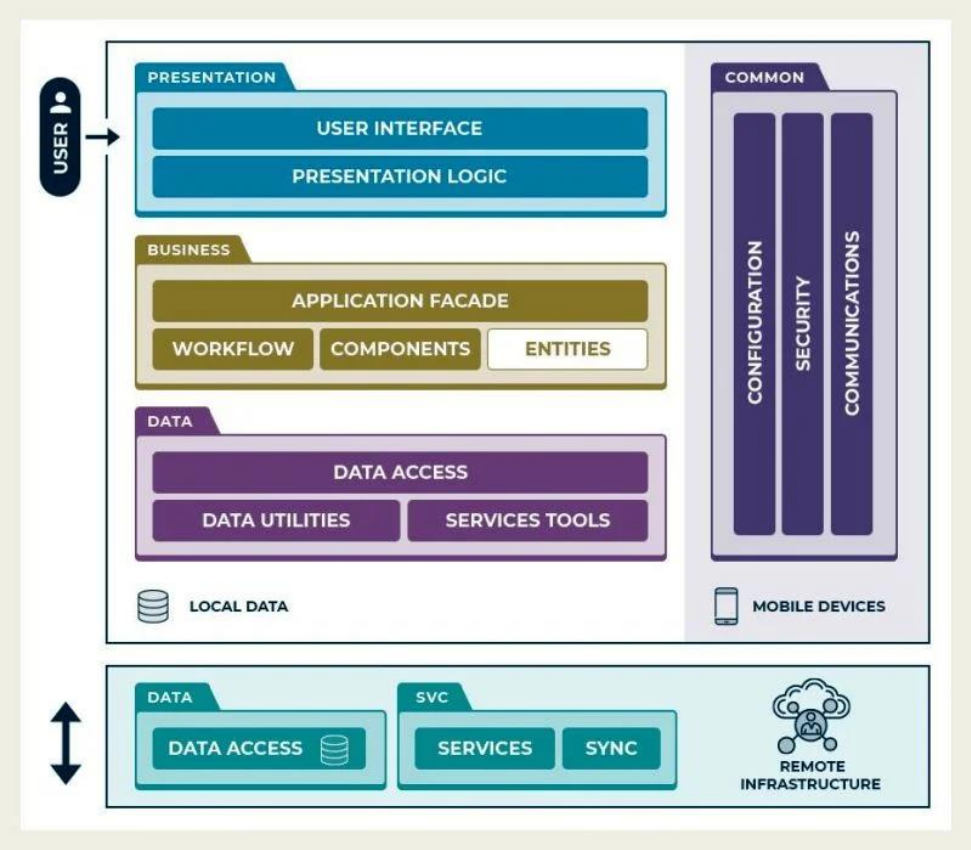

FIGURE 2: Android Mobile application architecture

Results :

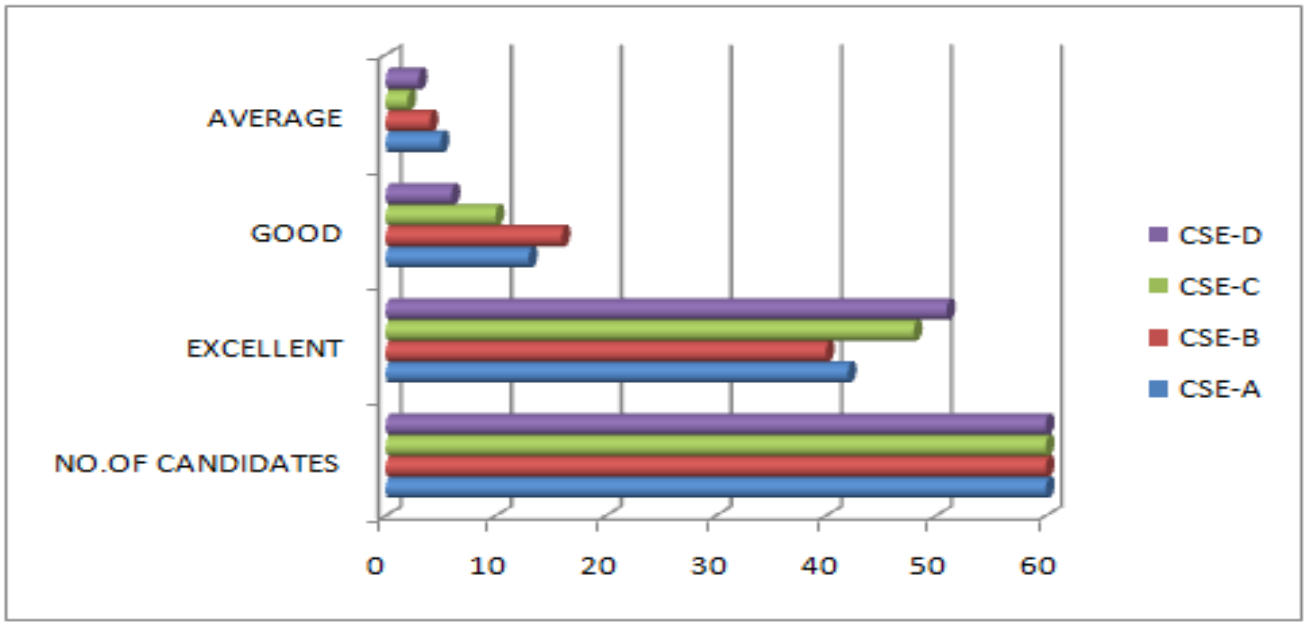

FIGURE 3: feedback of android application testing results

VI.CONCLUSION

This application provides more security for online exams, for developing this application we are using the android platform, java programming language, and XML designing language. Here java provides easy writing code and provides security features. For server and database, we are using firebase cloud storage it's a real-time database. And moreover, firebase is a no SQL and middleware, by using these technologies we can develop easily.

VII.FUTURE EXTENSION

Most of the online exam application works as an optional selection and text writing, in the future we can update this application by adding the program evaluation method the system can verify and execute the code or answer. With help of this method, the system can reduce the manual process on that type of problems.

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