Secured Academic Testimonials Repository System using Cloud Storage and Cloud Security

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Abstract:- Generally, the documents like academic certificates, Aadhar Card, PAN card and so on are very important in everyday life. For example, if the person is going for interview or admission; we have to carry these paper documents for verification and other purposes. As we are living in digital world, it can be replaced with the help of some software technologies. Now days, almost all the students are using smart mobiles. It is inevitable in this pandemic situation across the world. It becomes part and parcel of student's community, especially college going students. Paper documents can be replaced with digital documents which is the main motto of this project. Also, if anyone loses the paper documents or drop them somewhere by mistake, they can be misused. Uploading them on servers is risky as it can be hacked. On the other hand, keeping them openly on our phones is not good either. Thus, this research is going to develop this app that will save the uploaded document in an encrypted form and store them in the Internal Memory, to avoid any kind of hacking. The data will be stored in the device using SQLite and for the front end and functioning; you can use the platform of Android Studio. The best thing about this system is that it is secured with Pin. This PIN is created by the users to access the file while registering them on the application. Secure pin will ensure the safety of the document even if the phone is with someone else. The files are secured in such a way that no intruder can access them in any case. The same work is developed as windows application which will be installed in some cloud server. The staff in-charge of certificate verification, He or she gets the PIN from the student and verifies the certificates with certificates which are saved in his or her smart mobile phone. At the same time, this research can check the authenticity of the students by using bio-metric system, that is, fingerprint system can be used. If everything is verified, then we can issue the certificates. Moreover, this research promotes authenticated person only can access this server.

Keywords:- *Cloud Computing, Cloud Security, Cloud Storage, Student Management System, Authentication.*

I. INTRODUCTION

A network is a collection of computers, servers, mainframes, network devices, peripherals, or other devices connected over the network to exchange their data, documents and applications of various types of domains. An example of a network is the Internet, which connects millions of people all over the world [1]. The Internet is a vast network that connects computers all over the world. Through the Internet, people can share information and communicate from anywhere around the clock with an Internet connection. Mobile computing as a generic term describing ability to use the technology to wirelessly connect to and use centrally located information and application software through the application of small, portable, and wireless computing and communication devices. Mobile technology is technology that goes where the user goes. It consists of portable two- way communications devices, computing devices and the networking technology that connects them. Currently, mobile technology is typified by internet-enabled devices like smart phones, tablets and watches [2]. A mobile operating system (OS) is software that allows smart phones, tablet PCs (personal computers) and other devices to run applications and programs. A mobile OS typically starts up when a device powers on, presenting a screen with icons or tiles that present information and provide application access. Mobile application development is the process of creating software applications that run on a mobile device, and a typical mobile application utilizes a network connection to work with remote computing resources [3]. The types of Popular Mobile Operating System are Android OS which is the most common operating system among the mobile operating system, Bada, Blackberry,Apple iOS, Windows mobile OS, Symbian OS, Harmony OS,Palm OS and so on.

Web technologies refer to the way computers/devices communicate with each other using markup languages. It is communication across the web and creates, deliver or manage web content using hypertext mark-up language (HTML). Web application development is the creation of application programs that reside on remote servers and are delivered to the user's device over the Internet. Client refers to a computer application such as a web browser [4]. Client-side programming will typically utilize HTML, CSS and JavaScript. Network security is a broad term that covers a multitude of technologies, devices and processes. In its simplest term, it is a set of rules and configurations designed to protect the integrity, confidentiality and accessibility of computer networks and data using both software and hardware technologies [5]. Biometrics scanners are hardware used to capture the biometric for verification of identity. These scans match against the saved database to approve or deny access to the system. In other words, biometric security means your body becomes the “key” to unlock your access. Fingerprint Authentication is the act of verifying an individual’s identity based on one or more of their fingerprints. Fingerprint authentication or scanning is a form of biometric technology enables users to access online services using images of their fingerprint.

II. LITERATURE SURVEY

A block chain enabled value driven deep secure framework is used in the study by Iezzi, M. et al., published in 2020 [6]. Deep chain improves data security and guarantees tested data privacy with a live dataset of different scenarios. The proposed approach has been tried in a dynamic cloud environment, but processing large amounts of data in such a setting requires more precise techniques.

The author of X. Zhu et al., (2021) provided a paradigm for service allocation based on locations that protects privacy [7]. The system gathers data from various sources to give dynamically highlighted semantic security for demands. The algorithm used a dataset from OpenStreetMap that contains data from several different angles. By minimizing numerous accesses in nodes, the presented system was also enhanced.

A partitioning technique was put out by H. Zhang et al. (2018) to separate the storage contents into separate records of cloud-based things [8]. The cloud system receives the integrated privacy formatting to recall the data during the data query phase. When compared to alternative storage models, the distributed storage approach may exhibit greater performance. Real-time datasets are used to experimentally validate the test bed.

A lightweight privacy-preserving architecture for automotive cloud computing methods was realized by Y. Yao et al. in 2020 [9]. The suggested simulators and current vehicular network models are thoroughly compared.

A Proxy Re-ciphering as a Service was presented by S. Ramesh et al. in 2020 to offer a long- term privacy-preserving method for diverse IoT devices [10]. According to the proxy approach described in the current paper, medical data like an ECG is saved in an IoT environment. The author contrasted the current systems with the state-of-the-art methodology.

A system that evaluates dynamic data encryption technique in a mobile cloud computing context was presented by Gai, K. et al. in 2017 [11]. To maximize the privacy-preserving strategy, dynamic data encryption scheme (DDES) is applied. Dynamic DES offers improved security in addition to the advantages of AES.

III. PROPOSED WORK

A. Android Application Development

Mobile applications have taken over the world by storm because of their smooth performance and easy accessibility. The android app development has been a massive part of making mobile applications popular. It does not even surprise to know that they are almost 3 million android applications in the play store, which are used by the people. As we can all agree, there are more android users in this world than iOS users because android mobile phones are cost-efficient and come with all features and also very easy to use. It is best to have mobile applications in both android and iOS platforms. Still, if you have a budget constraint and have to choose one, then experts could recommend going with android application because of its affordability and ability to reach a broader audience all over the world. Moreover, most of the android applications are free to download and get their revenue through in-app purchases or selling their products and services. Therefore, more people are attracted to download the applications. If you are still not convinced why android apps are essential, then here are some reasons why android application development is essential to your business.

- Global Market
- Android is open Source
- User Interface and Graphic Interface
- Purpose For Innovation
- Lesser Investment In Android Apps
- Enhanced Security With Android Apps
- Reliable and Secure
- Easy Integration And customization
- Rapid Development Process
- Improves Brand Reputation
- Benefits of Android Application in Business

Here are the some benefits of developing android applications. Information and branding application provides more information for business assistance. They help to increase credibility and also help spread your work expertise. It also wheels in such a way to increase the user base for your application. The mobile market is increasing day by day and the key to unleashing it if through the android allocations. More number of customers are contacted to business with these android apps. Customers are updated by the notifications on discounts, offers, upcoming sales and other benefits of the business people. To capture the strength of the customers, provoking pictures and tags are used to persuade them into buying products. Android enhanced a good bond between the business people and the consumers. It helps the consumers stay connected with the business for their orders, queries and feedback. These are readily available in android. This makes the business people get to know about the interest and needs of their consumers, and they could alter accordingly. It helps to gather information on the consumer’s purchase patterns and to track their behaviour.

B. *Methodology*

Information from the students can be collected by using this mobile app. The proposal involves the following categories of methodology

- Requirement Analysis: It is also known as requirement engineering. It is the process of defining user expectations for a new application being built
- Interaction: Binding an application together in a way that supports conceptual model which provides common vision for an application
- Design: It is the process of envisioning and defining software solutions to the real-time problems
- Testing: Software testing is the process of evaluating and verifying that a software product or application does what it is supposed to do. The benefits of testing include preventing bugs, reducing development costs and improving performance.
- Implementation: The software implementation stage involves the transformation of the software technical data package (TDP) into one or more fabricated, integrated, and tested software configuration items that are ready for software acceptance testing.

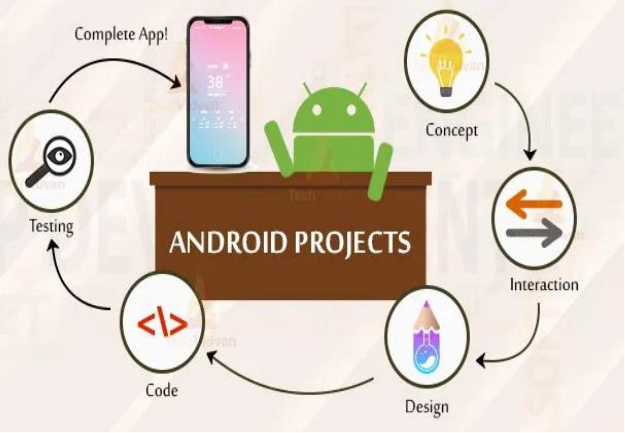


Fig 1: Methodology of Android Applications

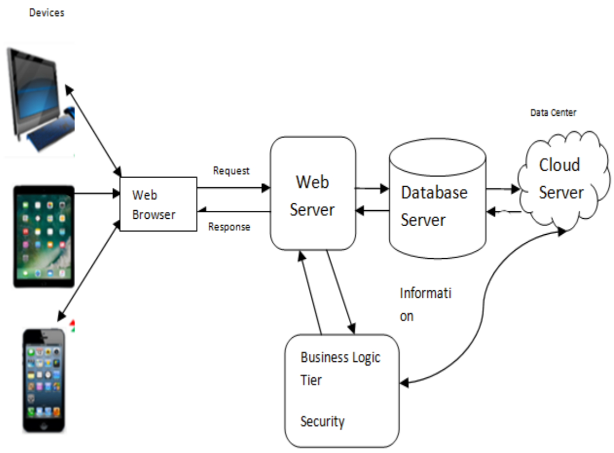


Fig 2: Proposed Architecture

C. *Cloud and Cloud Security*

Cloud computing provides IT resources to the users across the world according to their demand through internet with pay-to-use charges. It is not necessary to buy and maintain computer products and services. Time, effort and cost can be saved by using cloud computing. The three major cloud service modes are software as a service (SaaS), platform as a service(PaaS) and infrastructure as service(IaaS). Cloud provides these services to the users across the world at affordable cost. In cloud, the methods such as backups, cloud storage and disaster recovery are being used in order to protect data. These methods ensure that organization data remains secured in the event of data leakage, data loss, and malware breach and so on. We have also some methods for data security over the cloud such as authentication, access control and secure deletion. Normally, organizations used to protect data from malicious users or negligent users and employees away from data over the cloud. Standard security policies are playing very important role over the cloud to prevent data breaches. Organizations and the cloud providers need to understand the implications of partnership to minimize over all data risk as cloud workloads are vulnerable.

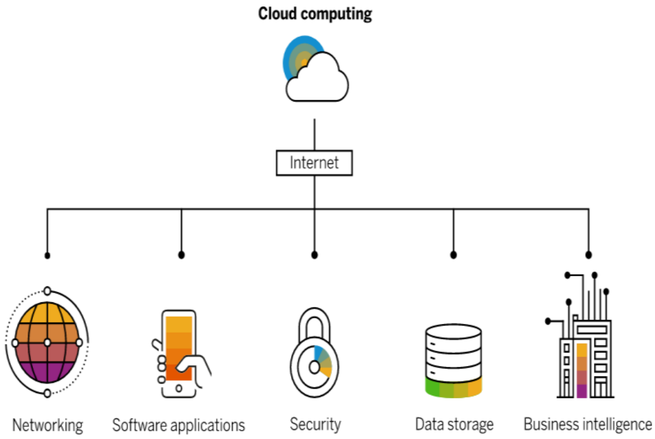


Fig 3: Cloud Security

IV. RESULT AND DISCUSSION

In this paper, student's testimonials will be stored in the cloud instead of storing the testimonials into the local server. Authenticated staff of the college will be able to retrieve the student's records from the cloud server whenever it is required by giving user name and password. If students wants to retrieve his records from the cloud server, his finger print will be checked by the server. If it matches, then he will be able to retrieve only his testimonials from the cloud server around the clock from any part of the world. The following is the user interface through which a student is able to access his testimonials from the cloud server.

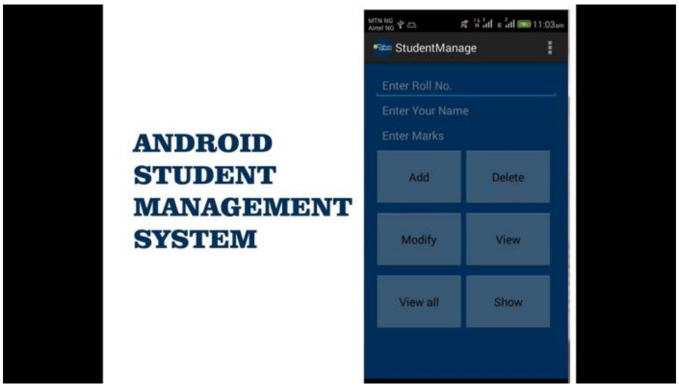
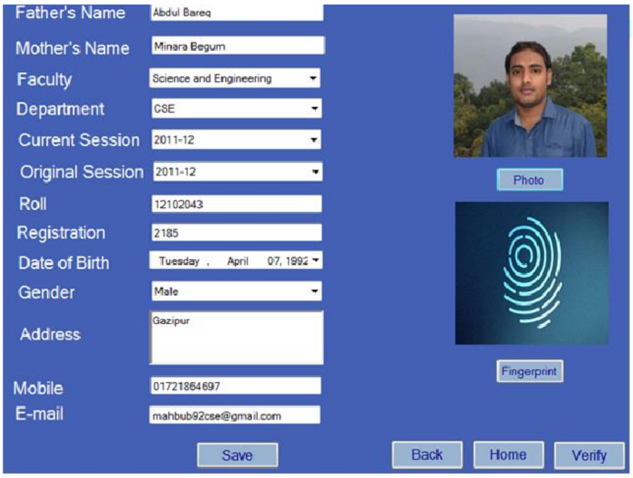


Fig 4. User Interface

Student has to register his personal data such as name, class, gender, department, year of passing and so on into the cloud server. For authentication, student finger print will be stored in the server along with personal data. Then, all his testimonials such as higher secondary transfer certificate, SSLC mark sheet, HSC mark sheet, community certificate and so on can be uploaded into the cloud server. If students wants to retrieve his testimonials, the system will his fingerprint and personal data. If it is matched with server, then he will be able to retrieve his records from the server. Then, whatever operations that he wants to do with his testimonials, he or she is able to do it.



Father's Name	Abdul Bareq
Mother's Name	Minara Begum
Faculty	Science and Engineering
Department	CSE
Current Session	2011-12
Original Session	2011-12
Roll	12102043
Registration	2185
Date of Birth	Tuesday , April 07, 1992
Gender	Male
Address	Gazipur
Mobile	01721864697
E-mail	mahbub92cse@gmail.com

Fig 5. Student Registration using Fingerprint

V. CONCLUSION

In this paper, students academic testimonials such as transfer certificate, mark statements, community certificate and so on are stored in the cloud server instead of storing into the local servers. Students will be able to retrieve their academic testimonials without much difficulty from any part of the world around the clock provided they should have internet enabled devices which may be smart phone or tablet and etc.. If college is getting any inconsistency with their testimonials, they are able to check with ease without getting much difficulty. Moreover, no need to carry all the certificates when students are going for interview. It saves time and money. Cloud vendors are charging very affordable cost according to the use of resources. Moreover, the confidential data will be kept in the cloud servers with more security. In the future, we can install cloud servers into the college or university campus in which all the college or university information can be stored in the cloud. It will reduce manual work and time reasonably.

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