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# An Android based Application for Housing Society Maintenance and Billing System using Two-Factor Authentication

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**Abstract:** *In present day technological generation still, maximum of the housing societies use the old-age conventional technique for the administration work of the society. The bill generation is still done manually for each society member, and there can be hundreds of them, which is time-consuming. Keeping records of those bills and keeping track of their status is a harrowing process. All the information of the members and society's accounts is not safe on the papers.*

*The proposed application is android based, which makes it easier for all the members to adopt it. This is enforced with Two-Factor Authentication making it fairly secure. The Admin can easily generate and view bills and monitor the billing status of all the members. The members will get notified of their pending bills. Other facilities provided in this app are a platform for scheduling events and meetings, making announcements and providing a summary of the meeting. So this app takes care of the overall needs of a housing society.*

**Keywords:** *Two-Factor Authentication, OTP Generation, Cloud Storage, Real time Database*

## I. INTRODUCTION

In today's technological era still, most of the housing societies use the old-age traditional method for the administration work of the society. The bill generation is still done manually for each society member, and there can be hundreds of them, which is time-consuming. Keeping records of those bills and keeping track of their status is a harrowing process. All the information of the members and society's accounts is not safe on the papers.

So, the idea is to build an application which is android based, which makes it easier for all the members to adopt it. This will be enforced with Two-Factor Authentication making it fairly secure. The Admin can easily generate and view bills and monitor the billing status of all the members. The members will get notified of their pending bills. Other facility provided in this app is a platform for scheduling events and meetings, making announcements and providing a summary of the meeting. So this app takes care of the overall needs of a housing society.

## II. LITERATURE REVIEW

Yun Huang [1] proposed Once Passwords (OTP) that can give total security of the login-time validation instrument against replay assaults. He, it is proposed TSOTP: another successful basic OTP strategy that produces a one of a kind password for each utilization. It utilizes both time stamps and grouping numbers. Initially ascertain an OTP dependent on time stamps to stay away from high calculation cost on the inquirer side as in Lamport's plan i.e. a single direction capacity to characterize secret key succession and to distinguish constrained defer assaults. Because of message travel time, preparing time and clock float, an acknowledgment window is utilized by the verifier. Non-uniqueness of OTP's inside the acknowledgment window is dealt with. Subsequently the OTP's uniqueness is ensured, even with two checks inside 60 seconds.

Fadi Aloul [2] proposed a framework includes utilizing a cell phone as a product token for One Time Password age. The produced One Time Password is legitimate for just a short client characterized time frame and is created by factors that are remarkable to both, the client and the cell phone itself. Moreover, a SMS-based instrument is actualized as both a reinforcement component for recovering the secret phrase and as a potential mean of synchronization. The proposed framework is secure and comprises of three sections: (1) programming introduced on the customer's cell phone, (2) server programming, and (3) a GSM modem associated with the server.

Short Message Service (SMS) based One-Time Passwords (OTP) was acquainted with counter phishing and different assaults against verification and approval of Internet services. To conquer this issue Collin Mulliner [3] acquainted a component with secure SMS OTP's.

First thought is to utilize start to finish encryption to ensure OTP messages when the SMS message gets caught or listened in on. The thought depends on an idea called application private stockpiling. Furthermore, the second is to make a virtual committed channel inside the cell phone OS by expelling certain SMS messages from the general conveyance process on the telephone and diverting them to an uncommon OTP application to ensure against Trojan assaults.

In this investigation, Nilay Yıldırım [4] used unique mark examining and acknowledgment innovation, a well-known biometric security including, building up a web login verification versatile application. This application utilizes the Samsung Galaxy S5 unique mark acknowledgment highlight and International Mobile Equipment Identity (IMEI) number to create single time passwords.

Inside a restricted time period, the protected passwords can be utilized to sign in/sign in to online client accounts identified with government, banking, instruction, and so on.

Prachi Pakhale [5] explained that the Society executives framework think of the real working of a general public , by working "in the cloud," where lodging society the executives suppliers can quickly actualize and work applications that are secure and not costly, while getting a charge out of lower support and redesign costs all through the relationship. Message and Email alarms for different happenings in the general public can be added to the framework with the goal that clients don't miss the updates and happenings of the general public.

Web based charging system, Administration, working, internet casting a ballot, and so forth are the key highlights of this undertaking. Xiong Zhan [6] gave framework which is proposed of T/key, another plan created from S/key, is promising for its special capacity to stay discreet to server .

T/key the telephone produces a hash chain seed utilizes this seed to build a long hash chain .T/key there is only single direction correspondence from telephone to laptop, so it is conceivable to get to offline. A Smart matrix design with edge processing is use to examine verification systems.

Kumar Abhishek [7] and others proposed this theory. Solid Multi-factor Authentication is completely important to give a safe and dependable method for distinguishing clients who need access to a framework. Multifaceted validation utilizes blends of something the client knows: Knowledge Factor (e.g., secret word, PIN), something the client has: Inference Factor (e.g., ATM card, shrewd card), something the client is: Ownership factor (e.g., biometric trademark) and the fourth factor is "Somebody you know": Social Factor.

Chandrasekhar Thirumalai [8] stated the fact that the one-time password has been utilized generally for appropriately approving the individual's character there have numerous approaches to take one time secret word from the individual and utilizing the one time secret word by the aggressor.

Henceforth, this circumstance prompts advancement of scrambling OTP. There are numerous methods for scrambling one time secret phrase by because of numerous imperatives on necessity, for example, control utilization, safely moving of one time secret phrase etc. The proposed calculation is the linear RS algorithm, the private key size or the multifaceted nature can be expanded by expanding the intensity of R in the condition  $b=R2A + p$ .

L. Moroney [9] explained in The Definitive Guide to Firebase, The Firebase Realtime Database is a NoSQL cloud-based database that synchronizes information over all customers in Realtime, and gives disconnected usefulness. Information is put away in the Realtime database as JSON, and every associated customer share one example, naturally getting updates with the most current data. Using the Firebase Realtime Database from a programming point of view is altogether different from what you may be utilized to with conventional social databases like MySQL or SQL Server. Essentially you'll structure your information in an in a general sense distinctive way – utilizing JSON rather than the conventional tables and joins.

Chunnu Khawas [10] stated that Firebase is one of the stages which give a constant database and cloud administrations which enable the designer to make these applications easily.

This paper canters around the utilization of Firebase with Android and targets acclimating its ideas, related phrasings, points of interest and constraints. The paper likewise attempts to exhibit a portion of the highlights of Firebase by building up an Android app. The firebase gives different sort of administrations as firebase authentication, firebase cloud, real-time firebase and crash announcing.

### III. EXISTING SYSTEM

Current Housing Society Management System is handled manually. The information is put away within the records and calculations of the bills are done physically. It's an awfully frenzied prepare and indeed moderate. The software system generates maintenance bill automatically and manually.

It produces bill for all individuals at single tap. In this framework bills can be produced as per multiple of months i.e. monthly or yearly, due day of bills can be doled out. This Framework isn't a generalized Framework; it can as it were be utilized for a particular society.

The framework isn't user-friendly and this framework doesn't give any confirmation or security for the users. The user gets the notification related to the bills or the society only when they are inside the software system. This software concentrates primarily on era of bills while our framework comprises of different other highlights of society which are correct reproduction of the genuine happenings in the society.

### IV. PROPOSED SYSTEM

Two-factor authentication provides the next level of security. This method is completed to superior guarantee each the user's credentials and also the assets the user will get to. Authentication strategies that depend upon single-factor authentication (SFA), provides just one issue -- generally, an Arcanum or pass-code.

Two-factor verification includes an additional layer of security to the verification handle by creating it tougher for aggressors to choose up get to a person's gadgets or on-line accounts since knowing the victim's pass-code alone isn't comfortable to pass the confirmation check. Two-factor verification ways embrace info calculate associate degree either a possession issue or a logical thinking issue.

- 1) A knowledge factor is something the user is aware of, like an Arcanum, a PIN (personal identification number) or another sort of shared secret.
- 2) A possession factor is something the user has, like associate degree ID card, a security token, a cell-phone, a mobile device or a Smartphone app, to approve authentication requests.
- 3) An inference factor, additional usually referred to as biometric issue, are some things inherent within the user's physical self. These could also be personal attributes mapped from physical characteristics, like fingerprints attested through a fingerprint reader. Different usually used logical thinking factors embrace facial and voice recognition. They additionally embrace behavioral biometric, like keystroke dynamics, gait or speech patterns.

#### A. How will Two-factor Authentication Work?

- 1) The user is incited to log in by the appliance or the website.
- 2) The user enters what they recognize – as a rule, username and countersign. At that time, the site's server finds a coordinate and acknowledges the user.
- 3) For forms that don't need passwords, the positioning creates a one of a form security key for the user. The authentication tool processes the key, and therefore the site's server approves it.
- 4) The positioning then prompts the user to initiate the second login step. Though this step will take variety of forms, users got to prove that they need one thing solely they'd have, like a security token, ID card, Smartphone or different mobile device. This is often the possession issue.
- 5) Then, the user enters a one-time code that was created amid step four.
- 6) When providing each factor, the user is attested and granted access to the appliance or website.

An application that is android based, that makes it easier for all the members to adopt it. This can be enforced with Two-Factor Authentication creating it fairly secure. The Admin will simply generate and consider bills and monitor the billing status of all the members.

The members can get notified of their unfinished bills. Different facilities provided during this app square measure a for planning events and conferences, creating announcements and providing an outline of the meeting. Thus this app takes care of the desires of a housing society.

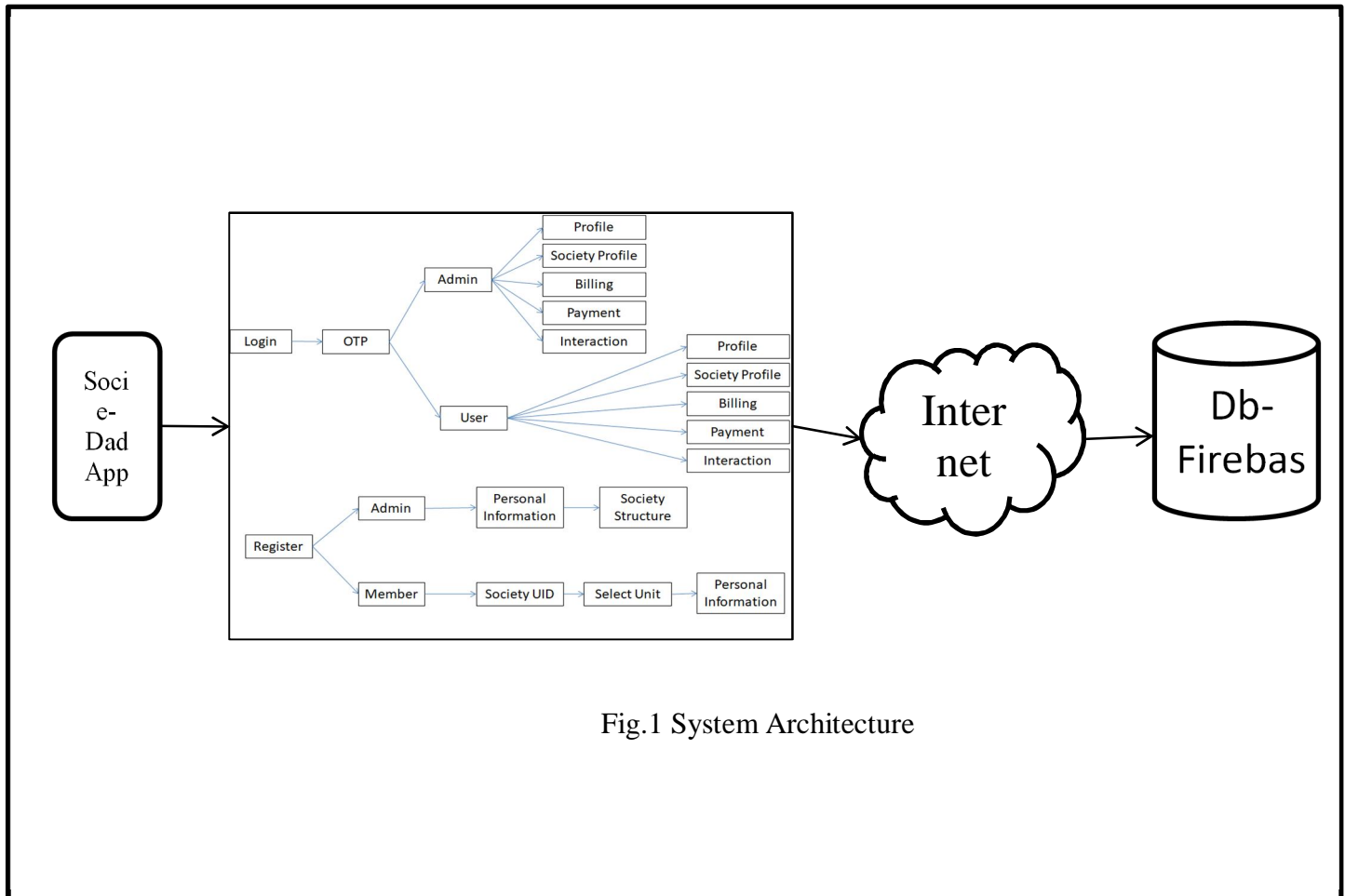


Fig.1 System Architecture

*B. The Application Provides*

- 1) Creating a profile initially login to the system.
- 2) Login / Logout interaction with application.
- 3) Secure Login with Two-Factor Authentication.
- 4) Updating the profile.
- 5) Auto Generating Monthly Bills
- 6) Paying Bills
- 7) Tracking Payment Standing
- 8) Raising Complaints / Service Request
- 9) Admin’s response to complaints / requests.
- 10) Admin commercial enterprise events / announcements and minutes of the meeting for all members.

Any of these options are often dead by mistreatment bit screen a wise phone.

**V. CONCLUSION**

This thesis has been examined for various security measures for authentication. The strategy of two-factor authentication has been chosen for the rationale of providing higher stability to the user identification technique.

Alternative applications within the market are thought-about and a style for brand new system has been created to beat the restrictions of alternative apps. This app can offer a unified platform for each the administration and members and can be handling the real time, dynamic database.

## VI. FUTURE SCOPE

This proposed prototype can be upgraded further by including online payment facility for the users to reduce the additional work of the administrator. This application is adaptable enough to altered and actualized according to future necessities. Messages alerts for different occurring in the society can be added to the framework with the goal that the users don't miss the updates and happenings of the society.

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