

Mobile Banking(m-Bank)

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ABSTRACT

Mobile banking is an application of mobile computing which provides customers with the support needed to be able to bank anywhere, anytime using a mobile handheld device and a mobile service such as Android mobile application. Mobile banking facility removes the space and time limitations from banking activities such as checking account balances or transferring money from one account to another and time saving when we go to bank and doing some banking activities. A large multi-location bank wanted to extend mobile banking to its customer. It already had robust Internet banking system in place. It was decided to roll out a mobile banking system (named m-Bank) in a phased manner. The first version will include basic features like displaying a) account balance, b) last few transactions, c) sending push notifications for the transactions above a predetermined value (to be decided by the customer), and d) ATM locator. The integration with the banking system will be done using REST API over the internal secured LAN. The solution has to be developed using IBM Work-light Studio and will be deployed on IBM WAS, DB2, and Work-light Server. The target device will be an Android Phone. The development will follow the IBMs Rational Unified Process.

Keyword: - Password, Authentication, OTP, Mobile Computing, Online Web Services, Geolocation, Rest API, Adapters, Push Notification.

1. INTRODUCTION

A large multi-location bank wanted to extend mobile banking to its customer. It already had a robust Internet banking system in place. It was decided to roll out a mobile banking system (named mBank) in a phased manner. The first version will include basic features like displaying a) account balance, b) last few transactions, c) sending push notifications for the transactions above a pre-determined value (to be decided by the customer), and d) ATM locator. The integration with the banking system will be done using REST API over the internal secured LAN. The solution has to be developed using IBM Worklight Studio and will be deployed on IBM WAS, DB2, and Worklight Server. The target device will be an Android Phone. The development will follow the IBMs Rational Unified Process. This document is the primary input to the development team to architect a solution for this project.

The development of bank focused applications such as mobile banking and Internet banking services are considered as important applications and that could benefit both customers and bank by improving banks performance. Internet banking service is available to the customers only when customers are connected with devices that have Internet connection. So it is not possible to the customer to be in touch with the bank throughout the day. To overcome this problem in an efficient way that involves low-cost and offers maximum benefit to the bank that implements the mobile banking application. As Internet banking has various security and privacy related issues same problems are considered as another important problems associated with current existing system (Internet banking). So, the problem statement of this project is to develop an alternative technology (mobile banking solution)

to overcome the problems associated with traditional Internet banking services. Mobile Banking refers to provision of banking and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank transactions, to administer accounts and to access customized information. After the launch of mobile banking, transactions have seen some growth. Still mobile banking has a long way to go as, majority of customers prefer banking in traditional ways. Most of the customer's problem is that they are not well educated and not aware of the technological innovations.

The focuses on the development of a mobile application that will support the following functionalities to enhance the banking:

- *Ubiquitous Banking*: Customers having full access to their accounts anytime, anywhere.
- *Funds Transfer*: Paying or receiving payments using the cellular phone.
- *Person to Person or business payments*: Paying from the mobile phone for business or individual services.
- *Utility Bills payments*: Get various bill amounts and pay them from the mobile phone.
- *Money transfer*: Send money to recipients from the mobile phone wherever they are at the customers convenience in a cost effective, secure and real time manner.
- *Mobile Top-Up*: Airtime recharge on mobile phones.
- *ATM Locations*: It locates the nearest ATM locations.
- *Push Notifications*: It sends the notifications to the User about the transactons done and new available services in the bank.

System Users: Customers i.e. the savings and current account holders of bank will primarily us the Mobile Banking Application, m-Bank.

Bank Manager i.e. the bank manager validates the account, provide UserID and Password. Also validates all transactions done.

2. MOTIVATION OF THE PROJECT

The advancements in the web technologies and their use at different levels initially made us to consider this project. The Analysis phase mostly motivates to carry this project, because it shows the problems being currently faced by all the Indian public sector banks mobile websites. So in order to solve listed issues and contribute to the betterment of the Indian banks, it was necessary to provide a common framework for banks mobile websites, which can give a boom to mobile banking in India and thus creating a healthy customer-bank relationship.

3. LITERATURE REVIEW

Zahra Rahmani, Atusa Tahvildari, Hamideh Honarmand, Hoda Yousefi, Marjan Sadegh Daghighi, "MOBILE BANKING AND ITS BENEFITS", M.A. Student of Business Management, Islamic Azad University, Rasht, Iran, 2012. Mobile banking is one of the areas mobile commerce that has extensive communications with other areas of mobile commerce. The one hand, mobile banking is associated with customers and on the other hand, is capable of other firms that are active in the field of electronic commerce, provide effective financial services. In this paper we describe the definition of mobile banking, Evolution and finally to describe number of benefits for users of these services.

- *Miss C.Lucia Vanitha, "A STUDY ON MOBILE BANKING", IJSRM |Special Issue On e-Marketing Road Ahead Of India, 2013.* Mobile banking is an electronic system that provides most of the basic

services available in daily, traditional banking, but does so using a mobile communication device, usually a smart phone. In some cases, a well developed mobile banking system can actually provide point-of-sale ability similar to an ATM or credit card, except the purchaser buys by using their phone instead. With the ease of mobile smart phones and their wide variety of applications today, it's not surprising the mobile banking is now coming into full vogue. However, the concept and ability is not a new concept.

- **Renju Chandran, " Pros and cons of Mobile banking ", *International Journal of Scientific and Research Publications, Volume 4, Issue 10, October 2014 I ISSN 2250-3153* .** Mobile Banking refers to provision of banking and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank transactions, to administer accounts and to access customized information. After the launch of mobile banking in India, mobile banking transactions have seen some growth. Still mobile banking has a long way to go as, majority of customers prefer banking in traditional ways. The basic objective is to identify the advantages and limitations of mobile banking and the problems faced by customers in mobile banking. The banking sector reforms and introduction of e-banking has made very structural changes in service quality, managerial decisions, operational performance, profitability and productivity of the banks. There are various factors which have played vital role in the Indian banking sector for adoption of technology. So in order to run the mobile banking effectively, proper care has been taken care of and take adequate steps to improve the quality services.

4. EXISTING SYSTEM

- **Inter Bank Mobile Payment Service(IMPS):** Inter-bank mobile payment service (IMPS), which is a fund transfer service through National Payment Council of India (NPCI). This service lets you transfer funds from one account to another across banks within the country using your mobile phone. You can use the IMPS via your banks' app, USSD'S dial-in number, encrypted SMS banking or net banking.
- **Bank Apps:** Here you need to download your bank's application or software on your mobile phone via internet. This works on both GSM and CDMA handsets for Android and iPhone platforms.
- **USSD-based Banking:** For this type, all you have to do is dial the bank's service code and you can ask for information on your bank account. You don't need a Smartphone or high end phone to use the USSD platform.
- **SMS Based Banking:** It is the most popular method of mobile banking. In which Notifications sends via SMS on users mobile number.
- **Internet Based Mobile Banking:** This way of banking is where you use your mobile screen like a computer monitor. In this service you required Internet connection whenever you are using this service.

4.1 Drawbacks of Existing System

- In Bank apps, it need specific bank application software on mobile phone via internet.
- In SMS banking when mobile swith off, it fails to receive the message.
- In internet banking, regular access of internet is must.
- In internet banking, due to internet access it consumes more cost.

5. PROPOSED SYSTEM

To overcome the drawbacks of the existing system, we implements this new system named as Mobile Banking (m-bank) App. System Architecture for this system is as shown in bellow fig.1.

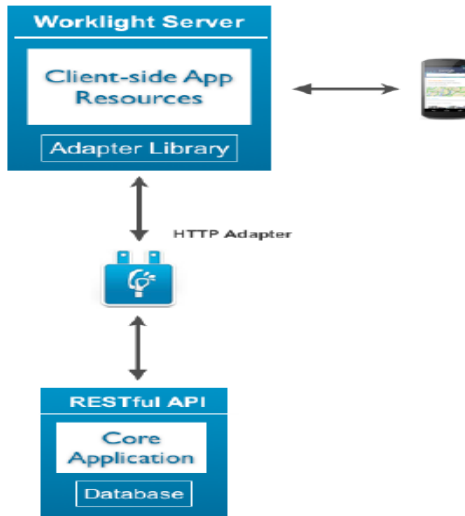


Fig.1 System Architecture of Mobile Banking App

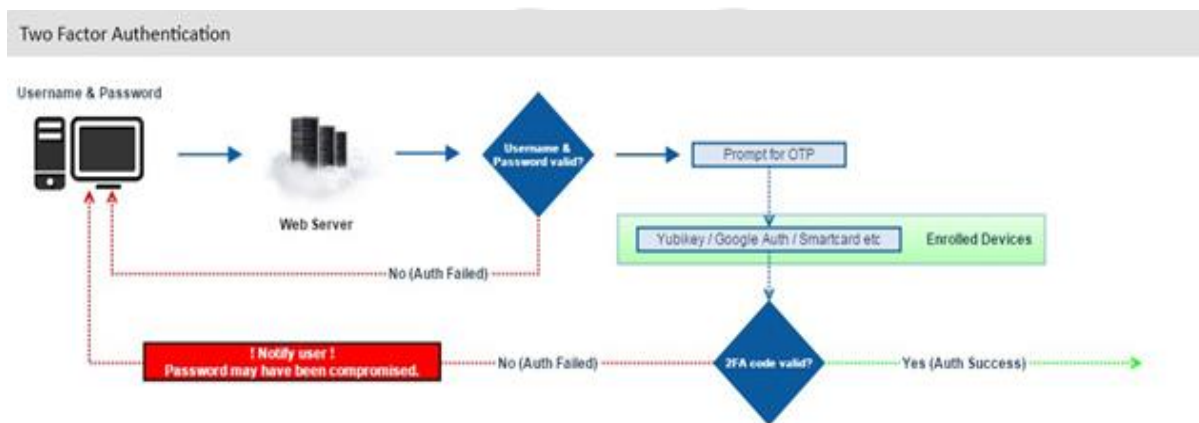
In given architecture, we use some key concepts that are shown in below table. Used key concepts are as Password, Authentication, OTP, Geolocation, etc.

SR.No.	Keyword	Description
1	Authentication:	Authentication is a process in which bank provide the UserID and Password to the user and whenever any transaction is done, it is authenticated by specific bank.
2	Password:	A password is a word or string of characters used for user authentication to prove identity or access approval to gain access to a resource which should be kept secret from those not allowed access.
3	Mobile Computing:	Mobile computing is HCI by which a computer is expected to be transported during normal usage..
4	Service composition:	A service composition is an aggregate of services collectively composed to automate a particular task or business process.
5	Online Web Services:	Web services describes a standardized way of integrating Web-based application.
6	Geolocation:	Geolocation is used for showing the nearest ATM Locations.
7	Rest API:	The integration with the banking system will be done using REST API over the internal secured LAN.
8	Adapter:	The adapter framework mediates between the mobile apps & the back end services.

9	Push Notifications:	It is used to display the notifications about the transaction done on the user account.
10	OTP	It is used to validate the user only for one session or transaction. OTP is generated on users mo. Number.

Table 1. Key Concepts used in Project

5.1 Algorithm For OTP



1. A **seed** (starting value) s is chosen.
2. A **hash function** $f(s)$ is applied repeatedly (for example, 1000 times) to the seed, giving a value of: $f(f(f(\dots f(s) \dots)))$. This value, which we will call $f^{1000}(s)$ is stored on the target system.
3. The user's first login uses a password p derived by applying f 999 times to the seed, that is, $f^{999}(s)$. The target system can authenticate that this is the correct password, because $f(p)$ is $f^{1000}(s)$, which is the value stored. The value stored is then replaced by p and the user is allowed to login.
4. The next login, must be accompanied by $f^{998}(s)$. Again, this can be validated because hashing it gives $f^{999}(s)$ which is p , the value stored after the previous login. Again, the new value replaces p and the user is authenticated.
5. This can be repeated another 997 times, each time the password will be f applied one fewer times, and is validated by checking that when hashed, it gives the value stored during the previous login. Hash functions are designed to be extremely hard to reverse, therefore an attacker would need to know the initial seed s to calculate the possible passwords, while the computer system can confirm the password on any given occasion is valid by checking that, when hashed, it gives the value previously used for login. If an indefinite series of passwords is wanted, a new seed value can be chosen after the set for s is exhausted.

6. ADVANTAGES OF MOBILE BANKING

- **Time saving** : Instead of allocating time to walk into a bank, you can check account balances, schedule and receive payments, transfer money and organise your accounts when you're on the go.
- **Convenient** : The ability to access bank accounts, make payments, and even track investments regardless of where you are can be a big advantage Do your banking at a time and place that suits you, instead of waiting in queues.
- **Secure** : Generally, good mobile banking apps have a security guarantee or send you a SMS verification code you need to input to authorise a payment for added security. Mobile banking is said to be even more secure than online/internet banking.

- *Easy access to your finances:* with the introduction of mobile banking, you are able to access your financial information even beyond the working hours. It helps to avail banking services even by making a call to the bank.
- *Increased efficiency:* mobile banking functions are functional, efficient and competitive. It also helps in decongesting the banking halls and reduces the amount of paperwork for both the banker and the customer
- *Fraud reduction:* one very real advantage to implementing mobile banking. "Customers are being deputized in real time to watch their accounts.
- It utilizes the *mobile connectivity of telecom* operators and therefore does not require an internet connection.
- You can check your account balance, review recent transaction, transfer funds, pay bills, locate ATMs, deposit cheques, manage investments, etc.
- Mobile banking is available round the clock 24/7/365, it is easy and convenient and an ideal choice for accessing financial services for most mobile phone owners in the rural areas.

7. CONCLUSIONS

In this project, We implemented Mobile banking App (m-bank), which provides different facilities like the display account current status, Transfere the money from one account to another, Receive notifications of transactions which are done on users account, display the nearest ATM location, Mobile topup recharges, utility bill payments. The existing techniques does not have that much capability to secure password from hackers or third party location .because in this techniques only one password is used for each and every session and password is transfer for authentications of users. So these passwords are easily hacked by hackers. We proposed a system called Session password, in this it provides a new password for each session and need not to transfer password form server each time for authentication purpose that's why Session password scheme provides more security than the other existed systems.

8. REFERENCES

- [1]. Zahra Rahmani, Atusa Tahvildari, Hamideh Honarmand, Hoda Yousefi, Marjan Sadegh Daghighi," MOBILE BANKING AND ITS BENEFITS".
- I. Miss C.Lucia Vanitha, "A STUDY ON MOBILE BANKING", IJSRM |Special Issue On e-Marketing Road Ahead Of India, 2013.
 - II. Renju Chandran, " Pros and cons of Mobile banking", International Journal of Scientific and Research Publications, Volume 4, Issue 10, October 2014 1 ISSN 2250-3153 .
 - III. Farnood,H.(2008).Sultanate. Soheila, "mobile banking", Journal of Information Technology Era, No. 38.
 - IV. Laukkanen, T. & Pasanen(2000). M. "Mobile banking innovators and early adopters". Journal of Financial Services.18,85-91.
 - V. Rao, G. R.,&Prathima, K. (2003). Online banking in India.Mondaq Business Briefing, 11 April 2003.
 - VI. S. Wiedenbeck, J. Waters, J.C. Birget, A. Brodskiy, N. Memon, "Design and longitudinal evaluation of a graphical password system". International J. of Human-Computer Studies 63 (2005) 102-127.