# Looting Your Bank Savings Using Digital India



Indrajeet Bhuyan

#### Dedicated to my parents

<sup>66</sup> My parents gave me the courage and freedom to follow my heart.<sup>99</sup>

# **Shameless self Promotion**

- Just a common guy interested in security
- Contributed security to Samsung, HCL, Whatsapp, Photobucket, Digit, TVF and many more.
- Developed smallest possible ( 2kb ) code which could crash Whatsapp
- Created wannasmile which was used to protect users from wannacry
- Helped Bollywood singer Papon recover his social accounts.
- Invited to speak at ToorCon, AndSec, GOS, BPM etc.
- Helped 2000+ people get started with cryptocurrency



All the flaws demonstrated in the presentation are already reported by me or other security researchers and it got it.

No unfixed / unreported flaws will be discussed in this presentation

This presentation is only for educational purpose

# 8<sup>th</sup> November 2016

#### Two major announcements







#### PM announces Demonitization

# **Demonetization Effect**



Long Queue in Banks



#### Cashless Economy

# **Pre-Demonitization**



Easy bank account for all

#### Flaw 1 : Flaw in passbook printing machines

# **Passbook** and its Use



- A Bank passbook is a small notebook.
- Contains your name, account number and certain other personal information about you
- Contains all the transactions both credit & debit that happened in your account right from the day of opening the account.

# Passbook and its Use

They are gradually becoming obsolete with the rise of online and mobile banking

 Internet connections and mobile networks are scarce or too expensive in India, hence passbook is still used successfully

Keeps record of Entire Transactions

#### Government's step to increase bank users

Indian government launched mega scheme 'Jan Dhan Yojana'

On the inaugural day, 1.5 crore bank accounts were opened across the country

Scheme launched at multiple places by 20 Chief Ministers

# The Outcome

- 91 Crore+ or 310 million+ savings bank account till date
- More number of people opened bank accounts
- Transactions increased



# How passbooks are updated ?

Manually : By going to a bank

Very slow and time consuming process



## Introduction of Self Printing Machine



- The state bank of India launched an automatic passbook printer called 'Swayam'
- Soon all major banks followed the same
- Updates passbook with all transaction details automatically

#### Numbers of banks using Self printing machine

• The service was rolled out to more than 30,000 branches

Other neighboring countries too use it now

• Some of the banks which rolled out their own versions of the Swayam service are

- Bank of Baroda
- Union Bank
- Bank of India
- HDFC
- Canara Bank
- UCO
- Central Bank of India etc.

#### Mechanism of Self printing machine

- Banks Paste barcodes in passbook
- When the user inserts the passbook, the barcode scanner inside the machine scans the barcode
- Printer prints the entire transaction details in the passbook

# The flaw

- Only barcodes are used as authentication
- Account number is used as barcode data
- Account numbers are public and easy to get
- Barcodes can be easily spoofed
- Transaction and bank balance of any user can be viewed by making a barcode with the account number as its data

### State Bank of India's approach



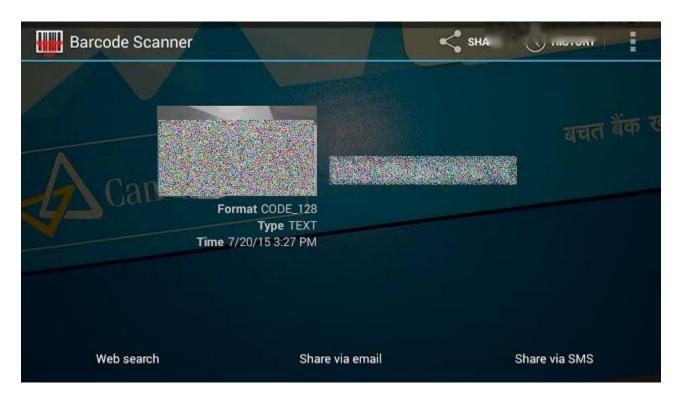
#### Barcode data is different from the account number

### **Other Banks' Approach**



Account number used as barcode data

### **Other Banks' Approach**



Account number used as barcode data

### The Risk



#### **Tool Demo**

#### **Practical**

Date	TO CA <b>श्वित्तिग</b> Particulars	चेक संख्या Cheque No.	चेक तारीख Cheque Date	निकासी0रीषी00 रकम Withdrawals	जमा की गयी रक्सुम No ; 5 Deposits	Balances	अधिकारी के Officers Initials
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### The Solution

Banks should add another level of authentication

Which includes :

- ATM Pin number
- Biometrics
- Swaping of ATM cards
- SMS based OTP
- Use of Separate Cards







#### Flaw 2 : Government Based wallet Flaw

#### **Demonetization solution – Cashless Economy**

#### Wallets by State Government







#### Toka Poisa E-Wallet Flaw

#### DEMO

#### Flaw 3 : BHIM Flaw



Users were able to send Money to themselves

# Risk : By creating a Tool which send money to itself in loop an attacker can take down the whole system,



Attacker Can see the name of User using their registered phone number

Risk : A tool with random number can make a list of all users with their name and phone number



#### Flaw 4 : Credit / Debit Card Flaw



# What makes online transaction in India much secure than other countries ?

### Answer!



### **Online transaction Security In india**

Customers needs these information to carry out transaction

- 😑 16 digit card number ( Static )
- Card expiry date (Static)
- 🗕 CVV ( Static )
- OTP ( Dynamic )



Step 1: Login to your SBI account

Step 2: After successfully login to your account go to "Payments/Transfers".

Step 3: Then in "Other Payments / Receipt" click on "Quick Transfer".

Step 4: After that choose account from which you have to transfer money.

Step 5: Click on OTP and confirm

Step 6 : Change the parameter **"Smartotpflag=Y**" to **"Smartotpflag=N**"



#### DEMO

#### Flaw 5 : Fetch Personal Information

#### Information which can be retrieved are :

- Account Username
- Account holder's Full Name
- Account Number
- IFSC Code
- 😑 Date of Birth

#### 😑 Email ID

🗕 Full Address

- In SBI, whenever an User forgets his password, he needs to submit a reset password form in the branch.
- The form is pre generated with details which an user can download in PDF form



I have forgotten the profile password and I request you to reset the same.

Date of Birth:16	Email Address:nail.co		
Address ( as per bank's records)	Telephone No(s).		
Pin:700047	Office: Residence: <u>00000000</u>		

I confirm having read and understood the document containing the "Terms of Service (Terms & Conditions) " governing the S

Download Link :

https://retail.onlinesbi.com/retail/resetProfilePwdFormDownloadPdf.ht m?<mark>refNo=</mark>Pxxxxxx

#### Flaw 6 : Adhaar Based e-KYC Flaw

 Using this loophole anybody can use Aadhaar demographic authentication API by sending requests through NSDL servers and bypass the checks at place by UIDAI.

What is aadhaar API ?

UIDAI provides different APIs which can be used to perform various actions like authentication (demographic and biometric), e-KYC (know your customer), e-sign etc.

#### Authentication User Agencies (AUA)

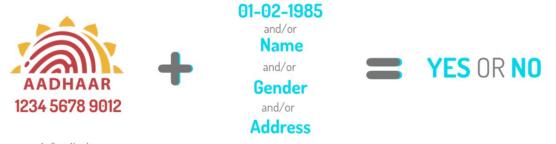
Sub – Authentication User Agencies ( SUA )



HOME PRODUCTS DOCS FAO'S CONTACT US SUPPORT INOUIRY

#### DEMOGRAPHIC AUTHENTICATION

Agency can use Aadhaar Authentication system for verifying resident's demographics like Name, Gender, Address, Date of Birth etc. for a given Aadhaar number.



Aadhaar Number

#### The Flaw

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### Connecting the Dots...

# Connect with me



Facebook.com/indrajeet.bhuyan



Twitter.com/indrajeet\_b



www.hackatrick.com

#### **Thank You**

\*Special thanks to Hrishikesh Barman and Sai Krishna for their help and support