

Enhancing Security of Contactless Payment Using RFID and GSM

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Abstract: The debit card is a plastic payment card which is made up of the integrated chip, magnetic strip, an RFID tag. It is used for money transaction and eliminates the need of carrying cash. It directly deducts money from consumer's account to pay and transaction. RFID (radio frequency identification) is considered as an advanced technology for automatic identification of objects. RFID and NFC (near field communication) technology is considered as the future technology for contactless payment. NFC allows two devices placed within few centimeters to exchange data. One of the biggest problems of RFID and NFC card is that RFID reader can easily read and get the data when RFID tags come in the range of RFID reader. In our paper, we have proposed a system using GSM (global system for mobile communication) module providing extra security to contactless payment.

Keywords: RFID, GSM, NFC, POS.

1. INTRODUCTION

Contactless payments help to make transaction faster and make customers life easier. It works simply by holding or placing the RFID card next to the POS (point of sale) device enabled for this type of transaction or near the RFID reader which is placed in the ATM machine. RFID is a core technology for our debit card, together with GSM technology. RFID consists of three key elements: RFID tags, RFID readers and backend database server to identify information with the help of radio waves. In our proposed system GSM module is used for authentication. GSM modem will send a message to an account holder that please enter four digits one-time password. Now the user will enter security password through SMS if password will correct then the transaction will proceed.

2. EXISTING SYSTEM AND ITS PROBLEM

NFC technology the make contactless payment possible. Referred as 'tap and go' consumers can then either wave or tap their debit cards counters with contactless terminals without the need of keying a PIN or signing a receipt.

1. Wireless identity theft is a widely used technique of gathering an individuals personal information from RF-enabled or RFID cards carried on a person in their access control, credit, debit, or government-issued identification cards.
2. Upon harvesting the important data, one is then able to program other cards to respond in an identical fashion (cloning). Many websites are dedicated to teaching people how to do this, as well as supplying the necessary equipment and software which is required for cloning.
3. Floor Limit of contactless payment in various countries

Economic Space	Limit	Comment
India	Rs2000	above Rs.2000 contact chip transaction need to be done.
Ireland	euro30	previously euro15 until 1 october 2015
Japan	JPY 20000	JCB QUICpay and QUICpay +

3. PROPOSED SYSTEM

3.1. In prior system:

3.1.1 Neither the tag nor reader can identify illegal signal sent from a rogue reader or a rogue tag, due to the lack of authentication..

3.1.2 Data in the tag is easy to be eavesdropped and intercepted and this information can be used to steal money from the user's account.

3.2. In our proposed system:

3.2.1 After initiating the transaction the POS and RFID reader reads the data verifies that card detail form bank database if

the card is valid is valid or not. If the user is authenticated then an OTP is sent to the register mobile number of the cardholder. Now has to enter the received OTP, if the entered OTP and generated OTP is same then the transaction is successful and money is transfer to the merchant account. Our proposed system enhances the security for contactless payment using RFID card which increases the floor limit for contactless payment.

3.2.2 System architecture of proposed system is shown in below figure:

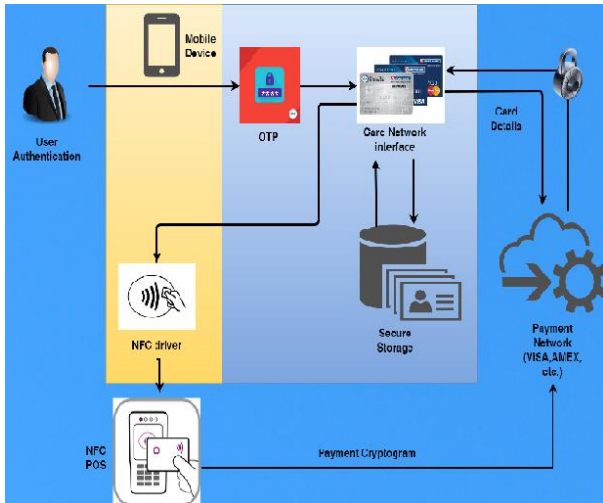


Figure. 1 System Architecture

When the user or the cardholder tap the card or wave it in front of POS, it gets the data and that data including some transactional data will be stored in encrypted form then that data sent to the bank for card authentication via card network then bank decrypt the data and then matches that data with its database ,Once the data will be matched bank approved or declined the transaction depending on the amount present in the account, if the bank approved the transaction it sends the approval to the processor and then processor generate the OTP and send the OTP on the register mobile number of the user ,the user enters the four digit password ,if the generated OTP and entered OTP will match the transaction will proceed otherwise card get rejected. When generated OTP or entered OTP will not be matched three times then that card is blocked for sometimes.

3.2.3 Flow chart of proposed system is shown in below figure:

Step 1:Start

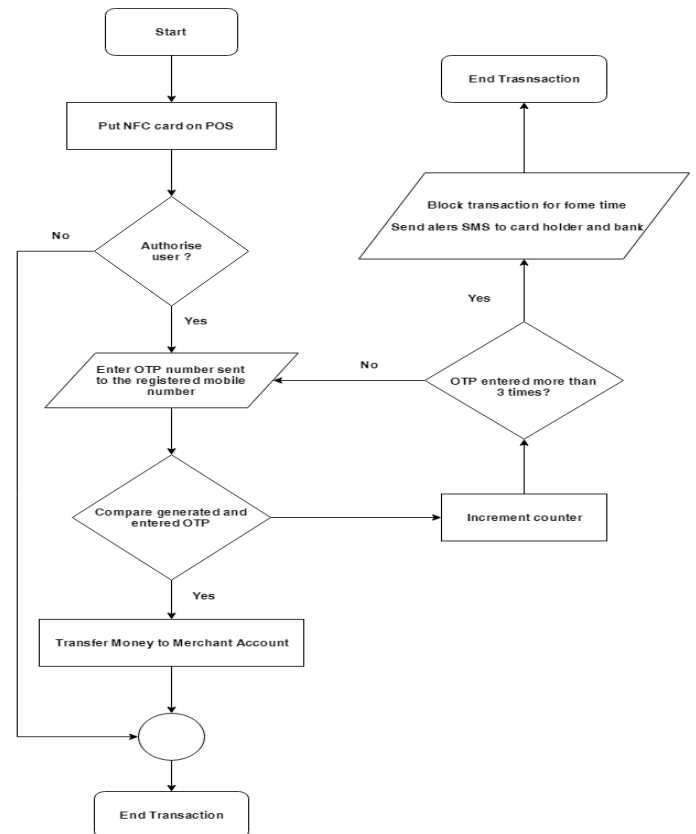
Step 2:Tap the card on POS.

Step 3:Authorise user.

Step 4:Authenticate Using OTP.

Step 5:OTP Sent to register mobile number.

Step 6:Match generated OTP and entered OTP.

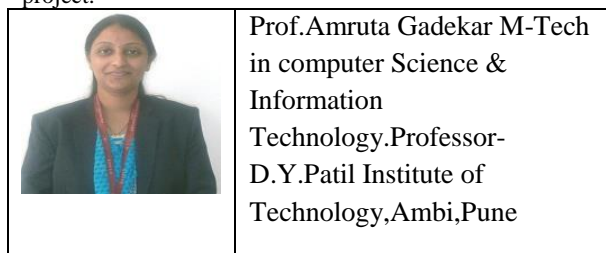


Step 7:If OTP is correct then success otherwise re-enter the OTP for three times or resend the OTP.

Step 8: If the entered OTP is still wrong for three times then card is block for some times.

4. ACKNOWLEDGMENTS

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5. REFERENCES

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