Name(s)	Project Number
Kunal Agarwal	**S1301**

Project Title

Making Plastic Stronger: Innovating Credit Card Security

Abstract

Objectives/Goals

The objective of Project Zier is the design and construction of a new security system to prevent identity theft and credit card fraud by employing a dynamic credit card system guarded by an accurate fingerprint verification process, timestamped card number and a SMS verification process.

Methods/Materials

Materials used during the creation of this project include the Futronic FS80, one laptop, and one desktop. Exact specifications of the computers are arbitrary as it scarcely affects the project#s running. This project employs IBM Cloudscape SQL database and Griaule Fingerprint SDK. All code was created on Sun JDK 1.6 in the Eclipse Java IDE running on both Windows and Ubuntu platforms. All of this software and hardware is required. The timestamp mechanism utilizes MD5 technology to properly crypt the raw timestamped serial.

Results

The program Zier was successful in providing safer transactions compared to that of a standard verification. After thorough testing and trying to break the fingerprint verification, SMS verification, and the timestamped hash, there were no weaknesses that could be found in the system. The fingerprint algorithm holds the lowest false acceptance rate in the world and has won an award for its ingenuity. The only possible way of breaking the system to make unverified purchases in any scenario with Zier is to gain access to the card's owner, most likely under duress. Another way to exploit the system would be to inject packets into network streams to and from the station. This has not yet been tested, but a simple encryption mechanism can be added on later to deter any possible break-ins.

Conclusions/Discussion

After thorough development and execution it is clear that the Zier is a robust security system that can't be broken into unless the secure servers housed by the bank are compromised in which case there would be very little point of security on anything as attackers would have free reign on all sorts of accounts and funds. In an ideal scenario the Zier would be able to generate a hash on call and an e-paper type interface would display the hash to speed up the process of timestamp generation. Nevertheless, the basics of the system in place would be unaltered with some basic modifications and the introduction of a more intuitive GUI.

Summary Statement

Project Zier is the foundation of a brand new credit card security system that deters fraud by incorporating dynamic credit card numbers, biometrics, and cellular text notification.

Help Received