Magnetic Strip and Barcode Decoding
Project Requirements

Version 1.1
### Revision History

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<td>February 3, 2007</td>
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1. Introduction

This document specifies the requirements of the project Magnetic strip and Barcode decoding. The Capstone Project - CSCI 6838 is an opportunity for graduate students of the school of science and computer engineering at the University of Houston-Clear Lake to work on real world projects / problems. The instructor for the course is Dr. Kwok-Bun Yue

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The goal for this document is to specify all project goals that are to be accomplished in the semester’s time.

1.1 Purpose

The purpose of the document is to state all requirements, so there does not exist any difference of opinion on the goals among the team members, the professor and the mentor.

1.2 Scope

The project is a part of the MiniCheck MGR™ [MG01] developed by MiniCheck-OCR [MR01]. The project focuses on magnetic strip IDs.

1.3 Definitions, Acronyms and Abbreviations

A magnetic strip card is a plastic / PVC card with a medium that can be used to save stream of alpha numeric information that can be read when needed. This magnetic medium is very similar to that in audio and VHS tapes. This medium is prone to loose data if exposed to a magnet and this is the major concern for this technology.

A magnetic strip reader is a piece of hardware that can read information stored on the magnetic strip of the card by sliding the card through the equipment. This reader can be interfaced to a computer via a USB (Universal Serial Bus) port and the data on the card can be transferred to a computer.

Once the data is in the computer the software [MG01] can make all types of data manipulations.
1.4 References

[MG01] MiniCheck MGR™
http://www.minicheckocr.com/

[MR01] MiniCheck-OCR
http://www.minicheckocr.com/

[AM01] American Association of Motor Vehicle Administrators (AAMVA)
http://www.aamva.org/

[MS01] Visual C++
Development tool used, a product of Microsoft Corporation
http://www.microsoft.com/

1.5 Overview

MiniCheck MGR™ [MG01] aims to minimize the losses due to fraudulent transactions in case of bad checks or credit/debit cards. The system [MG01] empowers the sales representative at the counter by providing features for Check and ID verification.

2. Project Description

The system comprises of two sub systems that complement each other to validate a customer and reduce the chances of fraud. These sub system include Check Validation and ID Validation.

- **Check Validation:** The check validation process extracts the information stored in the magnetic ink at the bottom of the check using a process called MICR (Magnetic Imaging Character Recognition) this magnetic ink contains the account, routing and check number. In addition the text on the check is captured using the Optical Character Recognition progress; this information can later be compared to the information on the ID for authentication.

- **ID Validation:** The information stored in the barcode or the magnetic strip can be extracted, parsed and can be used to validate the ID itself and the check. In addition to the information stored on the ID the MagnePrint enabled magnetic readers can extract extra unique patterns / signature of the magnetic strip that is embedded in strip during the manufacturing process and cannot be duplicated; thus this provides an extra level of protection, this also requires storing and validation of extra information.

3. Project Requirements

3.1 AAMVA [AM01] Standards

Study the AAMVA [AM01] standards for Drivers Licenses and State IDs and document each piece of information stored. This study may be extended to exploring the credit / debits card if some standard specifications and resources are available.

3.2 Parsing Information

Once the study is completed, the card reader is interfaced to the computer and the information is extracted off the magnetic strip. Software will be developed to parse that data into their respective fields. The information stored on the magnetic strip can be divided into categories.

- Card holder’s information (Name, address, number, date of birth, etc) encoded.
- MagnePrint signature of the magnetic strip only.
3.3 Storage and Verification
The card holder’s information is to be displayed on the graphical user interface and stored to the database. Some extra pieces of information such as the card holder’s date of birth can be used to compute age. The MagnePrint signature can be displayed on the interface and send for validation.
Before storing the card holder’s information, the database will be checked if a similar record already exists; a new record will only be inserted in case of a new non-existing card holder and if the record exists the information will be compared and updated with the most recent one in case of mismatching tuple(s).

3.4 Database Design
Study the existing database design and propose improvements if required.

3.5 System Integration
Integration of the barcode and the magnetic strip modules in the MiniCheck MGR™ [MG01] these modules will also be available as standalone applications. The previous parsing algorithms on barcodes will be studies and modification will be made (if necessary) so as to have a solution that complies with the AAMVA [AM01] standards and caters IDs from as many states as possible.

4. Constraints
- The State IDs that do not follow the AAMVA [AM01] standard may cause hurdles in implementing a solution that can be used nation wide. The Texas IDs follow the standard currently no other State IDs (for magnetic IDs) are available for study, every effort will be made to study as many states as possible and broaden our study.
- The validation and acknowledgement of the MagnePrint signature may require correspondence and assistance from MagTek thus will be time consuming.
- Non-functional hardware, with access to limited (just online or via phone) technical support is also one of the biggest obstacles at the moment.
- Integration of the work done into MiniCheck MGR™ [MG01] may also cause delays as the size and complexity of the code is still unknown and none of the team members have any prior experience using Visual C++ [MS01].