Faculty Information Card Database
Software Requirements Specification

Team Name: Win-Competence Inc.
Team: Michael Adams and Christopher Blake Matis

CSC-170 Software Requirements
Department of Computer Science
California State University, Sacramento

Table of Contents

1. Introduction

1.1 Purpose

This SRS explains all of the known requirements for the initial release of the Faculty Information Card Database Management Program (FICD). The requirements will be used by the team designing and building the FICD, and will follow strictly to this document for the initial release unless changes are requested by the customer during development. All of the requirements listed will be used to verify that the FICD functions correctly and meets the customer's needs.

1.2 Document Conventions

This document has several significant conventions in regards to sub sections. Each section is broken into a series of 1.1-1.x or alphabetically organized i.e.(1.A, 1.A.1, 1.X.x) where if required further breakdown will be used for greater detail. Otherwise, no specific typing conventions are used such as bold or italicized fonts.

1.3 Project Scope

The FICD will allow the Computer Science Administrator to generate Faculty Information Cards. Furthermore, the database will be able to store this data in an organized fashion to allow for cards to be generated all together or individually upon request. After generating the Faculty Information Cards they will be printed depending upon the request received by the Computer Science administrator. The office clerk will have limited ability to edit and view faculty office hours. The initial release will include all of these features and keep all other tasks and data private and inaccessible to anyone else.

1.4 References

Weigers, Karl and Beatty, Joy. Sample Requirements Documents: Software Requirements Specification, Software Requirements Third Edition, 2013.

2. Overall Description

2.1 Product Perspective

The FICD is a system meant to streamline the creation, formatting, and printing of Computer Science Department faculty information cards from the raw data currently manually assembled by the department. It replaces the current system of manually transferring the data from a spreadsheet to a Word document and printing from what can be transferred. The FICD will interact exclusively with FICD components and the printer of the systems it is installed on. If the FICD sees multiple releases its evolution is expected to better allow concurrent work, as well as create compatibility for multiple departments' use.

2.2 User Classes and Characteristics

Technical Administrator	Technical Administrator is not expected to be a category recognized internally in the FICD, and will share all privileges with Administrators. These accounts are for technical support purposes.
Administrator	An Administrator is a department secretary and designated other users that have full privileges in the FICD. An administration account will be capable of editing all fields in an information card, account management of all users including administrators, import of spreadsheet files of semester office hours, printing one or all faculty information cards, viewing information cards. They may continue a failed save process of any kind.
Clerk	A clerk is an assistant to the department secretary that does not require administrator level privileges. A clerk level account is capable of account management of itself, editing the office hour fields of information cards, viewing information cards, and printing one or all information cards. They may continue a failed save process of another clerk level user.

2.3 Operating Environment

The FICD will be capable of operating on modern Windows systems with their minimum hardware requirements. The minimum hardware requirement is delivered below.

- Windows 7, Windows 8, Windows 8.1, Windows 10
- 1 gigahertz (GHz) or faster 64-bit (x64) processor

- 2 GB RAM
- 100MB available hard disk space
- DirectX 9 graphics device with WDDM 1.0 or higher driver
- Printing requires: Windows compatible printing device

2.4 Design and implementation constraints

The primary design and implementation constraint in the FICD is the expected budget of zero dollars for both tasks. Development, installation, and use must require a skill level no greater than that of an untrained student. The FICD must be self-contained such that it impacts no other programs in installation or uninstallation. The FICD must not slow down other programs more than 5% while running.

The FICD will utilize an SQL-like database system for its back end. The database will not be interacted with directly by the front facing part of the FICD, but will require an intermediary program to receive and format information as appropriate. The FICD will be location restricted in access in accordance with current CSUS IT security policies.

2.5 Assumptions and Dependencies

The FICD is not expected to export information except as printing faculty information cards, and will not be capable of exporting data in any other format. It is expected that should there be a need for the FICD's information that it will be available by other means to authorized personnel, and that the FICD is not required to store its data in a format readable by other programs.

The FICD is dependent on the consistent formatting of the data to be imported. The initial release will be dependent solely on the Computer Science Department's current spreadsheet based data. For later releases intended for the use of other departments, the FICD will be dependent on other departments' formatting as well for proper use of the import function.

The FICD will be dependent on a Windows based operating system. A change in operating system will require conversion of the program.

3. System Features

A. Printing All Information Cards

3.A.1

Given a populated database of information, the FICD will be capable of printing all faculty information cards in the data on request.

3.A.2

Print.All:	**Prints all the Faculty Information Cards**
.Date:	The administrator for the Computer Science Department will decide if they want to print the current Faculty information card by entering either the current date or a previous semester.
.Invalid.Date:	If the administrator is attempting to print a date that does not have any Faculty Information Cards generated for that date it will respond with a notification saying invalid date range no Faculty Information Cards found that could be printed and after the administrator exits this dialog window it will again ask them to enter a date press cancel.

B. Printing One Information Card

3.B.1

Given a faculty information card's information in the main window, the FICD will be capable of printing that individual card.

3.B.2

Print.One:	**Prints an individual Faculty Information Card**
.Date:	The administrator for the Computer Science Department will decide if they want to print the current Faculty information card by entering either the current date or a previous semester.
.Invalid.Date:	If the administrator is attempting to print a date that does not have any Faculty Information Cards generated for that date it will respond with a notification saying invalid date range no Faculty Information Cards found that could be printed and after the administrator exits this dialog window it will again ask them to enter a date or press cancel.
.Faculty:	Allows the particular faculty member to be selected or chosen for the given Faculty Information Card through a drop down menu listing the available Faculty or all Faculty as an option.
.Print	Prints what is currently selected for the date and faculty. This could be one individual member or all faculty if that is selected on the dropdown which it is selected by default.

C. Importing a spreadsheet with the FICD information

3.C.1

Given a properly formatted spreadsheet, the FICD will be capable of reading and parsing the data within it into faculty information cards.

3.C.2

Import.Data:	**Imports one semester of FICD data**
.Import:	Administrator level user will decide to import a spreadsheet of FICD information in lieu of creating new cards or carrying forward a semester's information. The imported information will be reflected in the main window. By default the displayed information in the file select screen will be plain text .csv files.
.Invalid.Data:	If the data to be imported is incomplete or in an invalid format, the FICD program will display an error window informing the user of the nature of the error before returning to the main window.
.Save.Failed	If the FICD fails to save the imported information to the database, a copy of the information will be, system permissions allowing, stored in the FICD program's folder. An error window explaining the failure will be displayed to the user prior to returning to the main menu. Every few minutes, the FICD will re-attempt to save the data in question. If the FICD is closed it will desist attempts to save the data.
.Save.Failed.Start	When the FICD is started and an administration level user logs in, the program will check for saved data to be exported to the database. If the FICD finds any, it will display a text box to the user asking if it should continue attempting to save the imported data. If the answer is yes, attempts to save will resume. Else, the operating system is called to delete the temporary data.

D. Administrative Users Edit Faculty Information Card information

3.D.1

Administrative level users of the FICD will be capable of editing faculty information cards within the database, and saving that edited information to the database.

3.D.2

Edit.Card.Administrator	**Administrator users will be capable of editing all data in a faculty information card**
Edit.Text.Admin	An administrator user will, in the edit window, be shown all data in editable text boxes. The data may be edited as the user desires, but will only be saved if the user clicks one of the save buttons. Upon saving the data will be stored in the FICD database.
Save.Failed.Admin:	If the save to the database fails, the program will notify the user of the error and the nature of the failure if possible in an error window. The data to be saved will be, systems privileges allowing, in the program's main folder temporarily. The FICD will continue to attempt to save the data every few minutes, desisting on program close.
Save.Failed.Start.Admin	As the FICD starts, it will check the main folder for failed save data, and if an administrator level user logs in will display a prompt asking if the FICD should continue to attempt saving the data, or discard the failed save data.

E. Clerk Users Edit Office Hours Only

3.E.1

Clerk level users must be able to edit the office hour sections of faculty information cards.

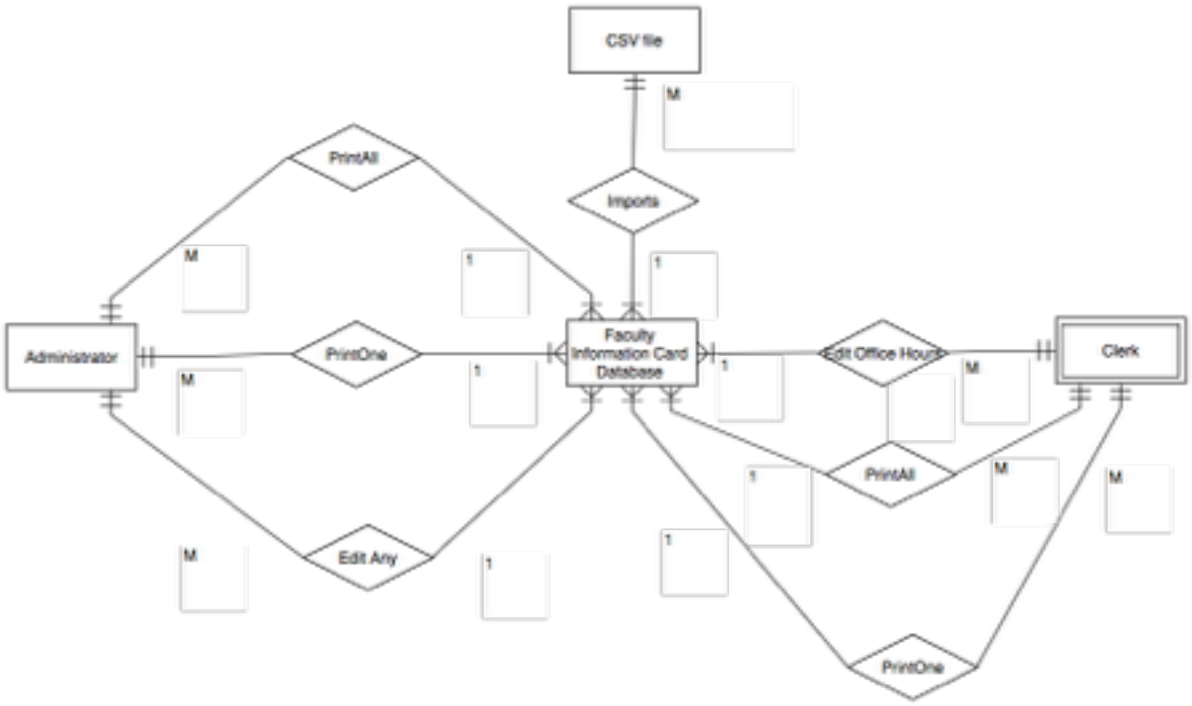
3.E.2

Edit.Card.Clerk	**A clerk level user will be capable of editing faculty office hour information only**
Edit.Text.Clerk	The clerk level text editing will function identically to the administrator level, with the exception of which fields are editable. Only faculty office hour text boxes will be editable for clerks.
Save.Failed.Clerk	The clerk level save fail state will function identically to the administrator level.
Save.Failed.Start.Clerk	The clerk level save fail will function identically to the administrator level, except that a clerk level signing in will only be asked about continuing to save clerk level edits.

4. Data requirements

4.1 Logical data model

Entity-Relationship Diagram of Faculty Information Card Database Figure 1



4.2 Data dictionary

Data Element	Description	Composition or data type	Length	Values
Faculty Member	Faculty Member of the Computer Science Department.	String	50	Alphanumeric
Building	Building name	String	16	Alphanumeric
Room	Number of the room	Integer	4	Positive Numbers
Department	Computer Science	String	25	Alphanumeric
Class	Class in Computer Science Department	String	25	Alphanumeric
Office hours	Office hours for faculty members	String	100	Alphanumeric + ‘:’
Username	Log in username	String	255	Alphanumeric
Password	Log in password	String	255	Alphanumeric
Semester	The semester of the record	String	9	Alphanumeric
Administrator	Identifier if a user is an administrator or has administrator privileges	boolean	1	True/False
Clerk	Identifier if a user is a clerk or has clerk privileges	boolean	1	True/False

4.3 Reports

Report Element	Element Description
Report Title	Faculty Information Card
Report Purpose	Computer Science (CSC) Department
Priority	High
Report Users	Computer Science (CSC) Department, CSC Administrator, CSC Clerk, CSC Faculty/Staff, CSC Students.
Data Sources	CSV file containing class time and instructors, written .
Frequency and Disposition	Report is generated by the CSC Administrator on a semester basis and the data is mostly static with some exceptions.
Latency	Less than 2 seconds.
Visual Layout	Landscape mode.
Header and Footer	Header includes Semester and Computer Science Department and Instructor. Footer shows office hours.
Report Body	Information container classes, days, hours, and room information for the particular faculty member.
End-of-Report Indicator	None.
Interactivity	Once generated only readable.
Security Access Restrictions	Once generated accessible by all.

4.4 Data acquisition, integrity, retention, and disposal

The FICD will have a database to be hosted on a school server, conforming to current security practices mandated by the technical department. This database will be accessible only by the FICD client, and will be populated and changed from that client. The database is not required to be legible by any other program or system, and data may be stored in any format.

There will be minimal data integrity checks solely to ensure a lack of data corruption, due to the updating nature of information cards. It is possible that the cards will be completely reformatted in time, and the sequence of data to be stored will shift accordingly. The client program will be wholly responsible for properly formatting the data to be transferred to the database.

The FICD will have one backup database, updated on a weekly basis. This database will be stored on a different physical server to prevent a single hardware failure from destroying the data. It is expected that the backup database will be checked monthly to ensure that backups are occurring as expected, and that the backup software will bring errors to the attention of relevant technical staff.

The FICD will follow industry best practices with regard to password security. Passwords will be salted and hashed by SHA-3 multiple times before being stored. No other data is considered sensitive at this time, as such there is no call for the data to be encrypted by any means.

The FICD will only keep local copies of information cards that failed to be saved in the previous session, and only until the cards are either saved or attempts to save them are halted by the user of the program. The operating system will then be called to delete the file, though it is unnecessary to use a formatting tool to do so as the stored information is non-sensitive.

The FICD will retain the information that is saved until an administrative user chooses to delete some or all of the data. The data will be deletable by semester and optionally professor only, though any card can of course be manually blanked. Password fields in plaintext in system memory will be deleted at the earliest possible point. Temporary data may be left to the operating system to delete. There is no reason to use more than a database software's internal deletion tool with regards to stored data, as none of the information stored in the FICD is both sensitive and insecure.

5. External interface requirements

The FICD is a three part system. The first part is the client-interaction side that users will see, where information is edited and formatted by the end users. The second part is a database to store the data generated by users. The third part is a server-side interface between the end-user program and the database itself, to minimize exposure of the database credentials.

5.1 User interfaces

UI-1: The initial release for the FICD does not follow a specific user standard style guide, but is to be interrupted and designed by the developers and modified based on client feedback.

UI-2: The system shall provide help information for each of the user-interactive buttons and components to explain how that particular component functions for the user.

UI-3: The FICD shall output within the application when features have been successfully used and executed or an error with a description of the problem at the bottom of the application screen for the user to interpret.

UI-4: The FICD interface will be fully navigable via the mouse and keyboard inputs. Some of the keyboard inputs are limited to signing in and making modifying existing database information.

UI-5: Manual data modification System

5.2 Software interfaces

SI-1: CSV file Import to Database System

SI-1.1: The FICD shall allow a CSV file with labeled fields to be read and then written to the corresponding fields in the database.

SI-1.2: The FICD will indicate whether the import was successful meaning all of the corresponding fields in the database were correctly written to or if it failed and not all the correct data was met which would allow for manual input if required.

SI-2: Generate Card System

SI-2.1: The FICD will immediately access the tables in the database performing a select for each faculty member and place each corresponding attribute

SI-3: Export/Print System

SI-3.1: The FICD will format its data to be printed such that it may call upon the operating system's print drivers to print one or more cards per page as is size-appropriate for the cards.

SI-3.2: The FICD will expect 8.5"x11" paper to be available for printing and software interfaces as appropriate for same and will format its data accordingly. No support must be provided for alternative paper sizes, but future versions may add such.

SI-4: FICD Front End to Database receiver interaction

SI-4.1: The FICD shall transmit the usernames and passwords for login through secure protocols only, and only accept information relating to log in information through similarly secure protocols.

SI-4.2: The FICD may transmit faculty information card data securely or insecurely, and no restriction on data format is mandated as this is not considered sensitive or unique information.

SI-4.3: Relating to 4.3: The FICD will accept faculty card information from the database in a format identical to that which it delivers with.

SI-5: FICD Intermediary to database interaction

SI-5.1: The FICD intermediary and database will utilize secure protocols to transmit and process login information.

SI-5.2: The FICD intermediary and database may transmit and process faculty information card data securely or insecurely, as this data is not considered sensitive.

SI-5.3: The FICD front end client program will be responsible for any and all data formatting to render information compatible for the program it is transmitting to.

5.3 Hardware interface

HI-1: Supported Device types and platforms

Personal Computer or server running: Windows 7, Windows 8, Windows 8.1, or Windows 10

Hardware Specifications include:

1 gigahertz (GHz) or faster 64-bit (x64) processor

2 GB RAM
100MB available hard disk space
DirectX 9 graphics device with WDDM 1.0 or higher driver
Printing requires: Windows compatible printing device

5.4 Communications interfaces

5.4.1: Security: The FICD will utilize industry standard secure message protocols for transmission of sensitive information, which is anticipated to be username and password related data. No such requirement exists for secure transmission of nonsensitive data, which is anticipated to be all faculty information card data fields.

5.4.2: Data Transfer Rate: Data transfer rate must be within the maximum the CSUS network allows, and be at minimum sufficient to load or save any possible valid set of data within two seconds.

5.4.3: Synchronization: FICD is not expected to maintain real time updates with other copies concurrently running. Conflicting requests to save will be resolved in the order they are received, with the last request to overwrite previous data without notification.

5.4.4: Network Printing Protocol: FICD is expected to utilize the Windows printer configuration present on the system it runs on. Communications with networked printers will be handled by the operating system as default, as no sensitive information is expected to be printed or printable.

5.4.5: Miscellaneous Communications: The FICD is not expected to communicate with any other interfaces in any foreseen version.

6. Quality attributes

6.1 Usability

6.1.1: Ease of Learning: The FICD is expected to be usable by nine in ten users within ten minutes of opening and inspection. Explanatory comments will be available by clicking a question mark on the toolbar, and clicking the element requiring explanation.

6.1.2: Error Recovery: The FICD is expected to recover from all errors not causing the operating system to end the program by displaying a warning box explaining the nature of the error in terms understandable by a department IT support employee before returning to the main window minus the data or intended operation that caused the error. In the case of the database and intermediary program, the FICD is expected to automatically restart them should their server operating system shut them down.

6.1.3: Accessibility: The FICD is not expected to provide accessibility for handicapped persons beyond what the operating system can provide.

6.2 Performance

6.2.1: Concurrent Users: The FICD backend must be capable of accommodating up to three administrator level users and nine clerk users at once at any time outside of scheduled maintenance in the initial version. Updated versions will have user numbers changed in accordance with the wishes of the added departments.

6.2.2: Performance: The FICD is expected to be able to save or load all possible import and export requests within two seconds of user action. As the FICD is expected to interact solely within CSUS internal networks, data compression is mandated as per the expected capacity of that network.

6.2.3: Error response: The FICD is expected to generate error messages within half a second of any internal error, and within half a second of such an error being reported by one of its external interfaces.

6.2.4: Backend Restart: The FICD's back end programs are expected to be capable of functioning within two minutes of initial executable execution in the event of a crash. There are no requirements for restart performance with regard to maintenance.

6.3 Security

6.3.1: All network transmissions of sensitive data will be done via secure protocol. Any sensitive data kept in plain text in system memory or on a hard drive is to be deleted and formatted at the earliest possible stage.

6.3.2: No information on the faculty information cards is considered sensitive.

6.4 Safety

6.4.1: All permanent changes to information will display an ordinary Windows confirmation box before changes are committed to the database. Deletion requests will display an altered version with a bold, red colored text warning.

6.4.2: The FICD will be self-contained, and have effects on no other system files.

6.4.3: The FICD is expected to pose no physical risk to users, and as such will contain no flashing elements that cause health issues with regards to epilepsy.

6.5 Availability

6.5.1: The FICD is expected to be available at all times it is not undergoing scheduled maintenance. The maintenance will be scheduled for early morning hours since that is when it will not be used.

6.x [others]

7. Internationalization and Localization Requirements

The FICD's scope is solely confined to the California State University of Sacramento, and is to be used at its largest possible extent by the departments therein. The FICD is not required to be internationalized or even localized to any other campus.

Appendix A. Glossary

FICD: Faculty Information Card Database
CSUS: California State University, Sacramento
CSC: Computer Science, or Computer Science Department