System Architecture and System Design

Architectural Styles:

The Law Enforcement Evidence Database system is a client-server architecture style. The client front-end that the user will be interacting with is Microsoft Access and will communicate with the MySQL database that holds all records of evidence. All alterations to the database will be handled using forms and additional functions that are built inside of Microsoft Access and will allow users to interact with the database very easily and user friendly, due to familiar UI and mechanics that they are already used to using when it comes to Microsoft products. The MySQL server runs on Apache server that will allow them to be imported into Microsoft Access, which will allow it to operate without a connection to the world-wide web and this has been done in the interest of security due to the sensitive nature of the database that could very easily result in legal cases suffering complications that could lead to them being thrown out in court. The complications that would arise from external tampering could very easily result in mistrials. The actual records will be displayed and stored in tables that are represented in the left-hand ribbon when accessed along with the pre-formatted forms. This system is intended to only require a single desktop that would be located inside of the evidence lockup, and as such will mainly rely on the physical security measures that are already in place when it comes to a police station/precinct.

Identifying Subsystems:

The main subsystems for the Law Enforcement Evidence Database will be the Microsoft Access broken up into the respective tables containing the necessary fields that are hosted on the MySQL database, and the custom Microsoft Access forms that will serve the purpose of altering and searching the database.

Persistent Data Storage:

The Law Enforcement Evidence Database utilizes persistent storage for all records that will be contained in the respective tables, such as Officers, Cases, Evidence, District, and District Supervisor. The MySQL database back-end is the storage management strategy for storing these objects and records, and by the nature of being a relational database system offers strong capabilities in altering data correctly, along with effective querys whenever needed.

Global Control Flow:

Execution Orders:

The Law Enforcement Evidence Database System is reliant upon the use of the customized forms in Microsoft access that will convert the requests of the user into SQL commands

that will then be communicated with the MySQL database to alter/update the records. Microsoft Access allows the system to automatically refresh for the user after one of the forms has been submitted and is not reliant upon them to be completed in any specific order which allows the user to pick and choose what they would like to do anytime they access the system.

Time Dependencies:

The Law Enforcement Evidence Database System does not have any timers, due to having an above average physical security in comparison to traditional facilities where almost no-one without proper access or being a sworn officer is even permitted past the lobby. All actions in Microsoft Access to manipulate the database are performed immediately along with returning the updated database in terms of tables for the user to access after any action via form submission. With the intended design choice of only requiring a single desktop system there is no need to be concerned with real-time communication lag, due to only running on a single local desktop that will be handling the software.

Hardware Requirements:

The Law Enforcement Database System is reliant upon the traditional expectation for a professional workstation, such as a desktop capable of carrying out normal computer operations, mouse and keyboard, monitor, and a large enough hard-drive disk storage that can have Microsoft Access and MySQL along with the operating system and all relevant files needed for it to operate.

- Color Display with a minimum resolution of 640 pixels x 480 pixels.
- Computer: Desktop/PC
- Memory: 8GB RAM
- Hard Drive: 1GB minimum, but can be upscaled for larger data needs.