**CMIS-4900-400**

**Fall 2025**

**Team 2 Project Scope Definition**

**Problem Description:**

Production data is currently only tracked by three out of four departments at Kiczan Manufacturing. This data is tracked using a Microsoft Access database and Microsoft Excel workbook. For management at Kiczan Manufacturing to accurately track work orders through the fabrication process after a purchase order is received from a customer, the fourth department’s data must be included to guarantee accuracy across all data for the entire shop. To achieve this, an information system must be implemented and deployed to four user terminals, consisting of an intuitive and easy to navigate front end interface, a database to store and query production data, and a programmed back end to facilitate data exchange and manipulation.

**Anticipated Business Benefits:**

* Work order production data input by fabrication department managers at their terminals.
* Accurate record storage with identifiable attributes.
* Record retrieval and sort mechanisms to present department managers with accurate production data.
* Query by specific date and ranges, as well as part numbers, customer, and operator to observe volume.
* Reduce the occurrence of work orders completed past their scheduled delivery date.
* Retrieve data in the event of lost physical work order to prevent the occurrence of redundant production.
* Multiuser access will provide those with access the ability to find sought after information in a self-reliant manner.

**System Capabilities:**

* Database table structure written in SQL and host on MySQL DBMS.
* SQL queries written as stored procedures that serve the needs of department managers.
* A simple and intuitive front end written in Windows Forms (.NET) that provides ease of use.
* A backend written in C# to facilitate the database connection, data transfer, and data manipulation.
* A backend written with modularity and customization, to allow for the possibility of additional functionality as needed in the future.
* Returned query results presented to the user in a row and column table structure.

**Data Model:**

**Entity Relationship Diagram**

A computer screen shot of a diagram

AI-generated content may be incorrect.

**Data Migration:**

* All existing records on each of the four tables will be exported as .csv (comma separated values) from the Microsoft Excel Workbook that currently serves as a data entry method. There will be one .csv file per table containing the stored records on each table.
* MySQL import wizard will be utilized through the MySQL DBMS, importing each .csv file to its corresponding table to store the records in the new database.
* No attributes in records will contain null values.
* The bridging table PARTS\_HISTORY uses a combination of two primary keys, CUSTOMER\_ID, and OPERATOR\_ID, in combination with the attributes PART\_NUMBER and PURCHASE\_ORDER\_NUMBER to uniquely identify a record on the table to prevent the occurrence of duplicate records.

**Field Mapping**

|  |  |
| --- | --- |
| **Source: CUSTOMERS Table** | **Target: CUSTOMERS Table** |
| **CUSTOMER\_ID (Integer)** | **CUSTOMER\_ID (Integer)** |
| **CUSTOMER\_NAME (Text)** | **CUSTOMER\_NAME (Text)** |

|  |  |
| --- | --- |
| **Source: OPERATORS Table** | **Target: OPERATORS Table** |
| **OPERATOR\_ID (Integer)** | **OPERATOR\_ID (Integer)** |
| **OPERATOR\_NAME (Text)** | **OPERATOR\_NAME (Text)** |
| **JOB\_ID (Integer)** | **JOB\_ID (Integer)** |

|  |  |
| --- | --- |
| **Source: JOBS Table** | **Target: JOBS Table** |
| **JOB\_ID (Integer)** | **JOB\_ID (Integer)** |
| **JOB\_DESC (Text)** | **JOB\_DESC (Text)** |

|  |  |
| --- | --- |
| **Source: PARTS\_HISTORY Table** | **Target: PARTS\_HISTORY Table** |
| **CUSTOMER\_ID (Integer)** | **CUSTOMER\_ID (Integer)** |
| **OPERATOR\_ID (Integer)** | **OPERATOR\_ID (Integer)** |
| **PART\_NUMBER (Text)** | **PART\_NUMBER (Text)** |
| **DATE\_DUE (Date)** | **DATE\_DUE (Date)** |
| **PURCHASE\_ORDER\_NUMBER (Text)** | **PURCHASE\_ORDER\_NUMBER (Text)** |
| **QTY (Integer)** | **QTY (Integer)** |
| **OPERATIONS (Text)** | **OPERATIONS (Text)** |
| **DATE\_RECEIVED (Date)** | **DATE\_RECEIVED (Date)** |

**Non-Functional Requirements:**

* **Performance:**
  + Queries that return records with search criteria such as date ranges, operators, department & part number will return results to the user in less than ten seconds if the returned data set is large (greater than 1000 records).
  + An average query time of less than five seconds for small to medium sized query results.
* **Availability:**
  + The system will be available to department managers during the operating hours of 7:00 AM to 3:30PM Monday through Friday.
  + The system will be available to department managers during the overtime operating hours 7:00 AM to 12:00 PM on Saturday.

**System Backup and Restore:**

* The MySQL database will have a scheduled nightly backup procedure to reflect any changes made during the operating hours the precede the backup procedure. This backup file will be stored on the server hosting the database.
* On the last Friday of every month, a copy of the most recent backup file will be saved on a USB flash drive and stored in the Fabrication Managers office, inside of a locked filing cabinet.

**Security:**

* Department managers each have login credentials for their respective work terminals where the application will be installed.
* Security policies are assigned and enforced with Microsoft Active Directory for all terminals on the Kiczan Windows domain network.

**Transaction Audit:**

* The audit function will be enabled on the MySQL database using the general log to track events and transactions that take place.
* If the general log does not provide sufficient information, the MariaDB Audit Plugin will be installed and configured on the database to meet information requirements.

**Risk Analysis:**

* **Feasibility Evaluation:**
  + **Organizational/Culture:** Kiczan Manufacturing follows a horizontal organization structure comprised of four departments, sales, quality, machining, and fabrication. Each department manager has expressed an interest in the need for a centralized information source to ensure that the jobs received have been entered into the businesses’ production process.
  + **Technological:** C#, MySQL, and Windows Forms (.NET) will be the technology stack utilized during the implementation of the information system. Hardware necessities will be fulfilled by existing onsite hardware which consists of preexisting work terminals for the application to be installed on, and an onsite Windows OS server to host the database itself through MySQL DBMS.
  + **Schedule:**
  + **Resources:**
* **Constraints and Limitations:**
  + No funds are allocated towards the purchasing of software licenses; all software needs are met by the services provided from community edition software.
  + No funds are allocated towards the purchasing of hardware; all hardware needs are met by the existence of onsite hardware, which includes the server itself, and the terminals in each department manager’s work area.
  + All onsite hardware operates on Windows OS.
  + In the event of a lost connection to the WAN, the server and terminals will still maintain connectivity on the local network.
  + In the event of a loss of connection to an intermediary network device downstream from the server, the terminal(s) connected to the intermediary network device will lose connectivity to the server and database.