Overview

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1. Project Statement:

* The following report and the accompanying database are a mock response to a hypothetical need for a database to document and track all hardware assets owned by the company. This was done to mitigate the risk of theft or undocumented damage to hardware.

1. Project Background:

* GMFS is the largest mortgage lender in Baton Rouge, and the second-largest lender in Louisiana. It has offices in many states throughout the South and employs approximately 250 employees. Many of these employees are remote, and often hardware may be loaned to them to interact with customers and the GMFS Network. This project fulfills the hypothetical need to log those devices and enable employees to query the database to “track” equipment that is loaned.

1. Project Scope:

* Contained within this document is an architectural layout of the logical database design, as well as source code for generating this database. Various other forms of documentation for compliance and enterprise alignment are included.

1. High-Level Requirements:

Business Requirements:

* Must track employee details like address and work position.
* Must include managers and executive markers for higher-level employees.
* Must track hardware details like function, model number, and cost.
* Must integrate storage facilities, offices, and other physical locations.

1. Deliverables:

* Source Code:
* MySQL 8.0.31(MySQL Community Server GDL)
* File: HardwareTracker\_Final.sql
* ERD Diagram:
* LucidChart modeler is utilized to generate a graphical model of the database to log asset distribution at GMFS.
* File: ERD\_GMFS.jpg
* Load Testing and Function Validation:
* Python’s ‘Faker’ is utilized in tandem with Pandas to generate large amounts of sample data at a quick rate. This tests the database for efficiency under load and for general logical integrity.

1. In Scope:

Business Requirements:

* Cost Accuracy: To ensure accurate cost estimates for each device, product listings were used.

Architectural Requirements:

* Efficiency:
* This database is relatively low-traffic, only processing a few requests every couple of days at most. Regardless of this, best practices for optimization and efficiency should be followed.
* Indexing:
* The most important part of this database is quickly seeing who has hardware checked out in their name and who does not. As a result of this, an index was created with the ‘checked’ column as the focus of the scan.

1. Out of Scope:

Business Requirements:

* There is not much to consider from a business perspective for this project.

Architectural Requirements:

* It is not explicitly decided what the front end of this database would be, and how it would integrate, the most likely solution is a deployment to either a cloud or on-premises server on a VM.

1. Data Model:

* The following model represents the logical ordering of this database’s entities and attributes:
* *Hardware(****hardwareID****,itemType, machineName, active status,cost, /employeeID,/locationID)*
* *Employee(****employeeID****, position, department,firstName,lastName,rentedDate, /locationID )*
* *Location(****locationID,*** *facilityName, employeeCount,city,state,officeType)*

1. Data Dictionary:

Hardware:

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Attributes | Definition | Data Type | Possible Values |
| ***hardwareID*** | HardwareID number | VARCHAR(5) | H001, H002, H003 |
| *itemType* | Hardware type | NCHAR(20) | Radiology, Cardiology, Neurology |
| *machineName* | Name of machine/device | VARCHAR(3) | 87, 49, 102 |
| *activeStatus* | Status indicating whether loaned or not | VARCHAR(8) | Active/Inactive |
| *cost* | Cost of item | INT | 225, 800, 15000 |

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Attributes | Definition | Data Type | Possible Values |
| ***locationID*** | Location’s number | NCHAR(20) | L001, L002, L003 |
| *facilityName* | Locations’s name | VARCHAR(250) | Corporate HQ, Biloxi Office |
| *employeeCount* | Staff count at Location | VARCHAR(250) | 9, 65, 120 |
| *City* | City of Location | VARCHAR(250) | Biloxi, Baton Rouge, Fort Lauderdale |
| *State* | State of Location | VARCHAR(3) | LA, MI, TX |
| *officeType* | Type of Office | VARCHAR(20) | Single Floor Suite,  Double Floor Plaza |

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Attributes | Definition | Data Type | Possible Values |
| ***employeeID*** | Employee’s number | VARCHAR(10) | E101, E097, E002 |
| *position* | Employee’s work title | NUMERIC(5) | CEO, IT Intern, Closing Officer |
| department | Employee’s work department | NCHAR(10) | Closing, Executive |
| *firstName* | Employee’s first name | VARCHAR(50) | Richard, William |
| *lastName* | Employee’s last name | VARCHAR(50) | Harrison, Martin |
| *rentedDate* | Date item was rented | VARCHAR(15) | 05-26-2001, 01-01-2023 |

Location:

Employee:

1. Visual Data Model:

A diagram of a computer

Description automatically generated