DBS211 ZGG Final Project - Group 8

- Henry Lau             121235238    
- Hiu Fung Chan      106184237    
- Trung Kien Phan   123266231    
Date: 14 April 2024

**Topic: Database for Rental Property Management System**

## Introduction

The real estate industry is one of common topic nowadays. It is dynamic and multifaceted, encompassing property sales, rentals, leasing, maintenance, and financial transactions. Purchasing real estate has a lot of advantages. Investors can benefit from good returns, tax benefits, diversity, and regular cash flow with carefully selected assets. Real estate can also be used to create wealth. Thus, our team’s involvement in this domain stems from recognizing the need for efficient property management solutions. As property portfolios grow, managing them manually becomes cumbersome. Hence, we’ve chosen to develop a robust software application to streamline property management processes.

## Problem Statement

The property management sector in real estate is currently facing challenges due to application of outdated systems with the growing market size. Our software delivers a centralized solution that utilizes a database to efficiently handle complicated tasks like tracking leases, maintaining records, handling requests, and ensuring regulatory compliance.

## Solution

Our team will build a database to support the real estate property management software. The database will cover the housing critical information such as property details, tenant records, financial transactions, and maintenance history. By structuring data tables, establishing relationships. The database could be uses to gain insight into business.

## Requirements

* Property Information Storage:
  + Store property details (address, type, size, amenities, etc.).
  + Maintain historical data (previous owners, purchase/sale dates).
* Tenant Management:
  + Record tenant information (contact details, lease terms).
  + Track rent payments, lease renewals, and move-in/move-out dates.
* Landlord Management:
  + Record landlord information (contact details, ownership)
  + Track the property status weather it is sold or rented.
* Maintenance Tracking:
  + Log maintenance requests (repairs, inspections, cleaning).
  + Assign tasks to maintenance staff and track progress.
* Financial Transactions:
  + Manage rent collection, security deposits, and expenses.
  + Generate financial reports (income statements, cash flow).

## References

Ristoff, J. (2024, January). Property Management in Canada. Retrieved March 15, 2024, from

<https://my.ibisworld.com/ca/en/industry/53131ca/at-a-glance>

Statistics Canada. (2023, July 5). Real estate rental and leasing and property management. Statistics

Canada. Retrieved March 15, 2024, from

<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2110022101>

**ERD Diagram**

**A computer screen with many white text

Description automatically generated**

**Data Dictionary (Revised: Replaced STRING to VARCHAR)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table: Owner** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size, Precision** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **ownerID** | NUMBER | 1,1 |  | PK | Y | 1234 | Primary Key |
| FirstName | VARCHAR | 50 |  |  | Y | "James" | NOT NULL |
| LastName | VARCHAR | 50 |  |  | Y | “Chan” | NOT NULL |
| Phone | VARCHAR | 15 |  |  | Y | 1234567890 | North American phone number format |
| Email | VARCHAR | 100 |  |  | Y | "jameschan@myseneca.ca" | NOT NULL |
|  |  |  |  |  |  |  |  |
| **Table: Property** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size, Precision** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **propertyID** | NUMBER | 4 |  | PK | Y | 1234 | Primary Key |
| Address | VARCHAR | 260 |  |  | Y | "123 Seneca Way" | NOT NULL |
| Type | VARCHAR | 50 |  |  | Y | "Residential" | NOT NULL |
| Property\_Status | VARCHAR | 100 |  |  | Y | "Occupied" | NOT NULL |
| ownerID | NUMBER | 4 |  | FK | Y | 1234 | Foreign Key to the Primary Key of the Owner table, NOT NULL |
| Rent\_Price | NUMBER | 7,2 |  |  | Y | 2500.00 |  |
|  |  |  |  |  |  |  |  |
| **Table: Payment** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size, Precision** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **PaymentID** | NUMBER | **1,1** |  | PK | Y | 1 | Primary Key |
| LeaseID | NUMBER | 4 |  | FK | Y | 1234 | Foreign Key to the Primary Key of the Lease\_Tenant table, NOT NULL |
| PaymentDate | DATE |  |  |  | Y | 2024/04/01 | Date of making the payment, NOT NULL |
| AmountToPay | NUMBER | 8,2 |  |  | Y | 2500.00 | Amount paid by the tenant, NOT NULL |
| Status | VARCHAR | 50 |  |  | Y | "Completed" | Status of payment |
| PayMethod | VARCHAR | 50 |  |  | Y | "Cheque" | Payment method used by the tenant |
| Purpose | VARCHAR | 50 |  |  |  | "Rent for March 2024" | Purpose of payment |
|  |  |  |  |  |  |  |  |
| **Table: Employees** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **employeeID** | NUMBER | 4 |  | PK | Y | 1234 | Primary Key |
| firstName | VARCHAR | 50 |  |  | Y | "James” |  |
| lastName | VARCHAR | 50 |  |  | Y | “Chan” |  |
| Phone | VARCHAR | 10 |  |  | Y | 1234567890 | North American phone number format |
| Email | VARCHAR | 100 |  |  | Y | "jameschan@myseneca.ca" |  |
| departmentID | NUMBER | 4 |  | FK | Y | 1234 | Foreign Key to the Primary Key of the Department table |
|  |  |  |  |  |  |  |  |
| **Table: Unit** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **unitID** | NUMBER | 4 |  | PK | Y | 1234 | Primary Key |
| propertyID | NUMBER | 4 |  | FK | Y | 1234 | Unique identifier of each unit |
| UnitType | VARCHAR | 20 |  |  | Y | "Residential" | Unit type (Residential or Commercial), NOT NULL |
| area | NUMBER | 8,2 |  |  | Y | 2500.00 | Total area of the unit, NOT NULL |
| code | VARCHAR | 10 |  |  | Y | A123 | Code of the unit, NOT NULL |
|  |  |  |  |  |  |  |  |
| **Table: Tenants** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **tenantID** | NUMBER | 1,1 |  | PK | Y | 1 | Primary Key |
| Firstname | VARCHAR | 50 |  |  | Y | "James" | NOT NULL |
| Lastname | VARCHAR | 50 |  |  | Y | "Chan" | NOT NULL |
| ContactNumber | VARCHAR | 15 |  |  | Y | 1234567890 | North American phone number format |
| Email | VARCHAR | 100 |  |  | Y | “hfchan3@myseneca.ca” | NOT NULL |
| CreditScore | NUMBER | 3 |  |  | Y | 820 | NOT NULL |
|  |  |  |  |  |  |  |  |
| **Table: Lease\_Agreement** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **leaseID** | NUMBER | 4 |  | PK | Y | 1234 | Primary Key |
| unitID | NUMBER | 4 |  | FK | Y | 1234 | Unique Identifier to the unit being rented, NOT NULL |
| StartDate | DATE |  |  |  | Y | 2024/04/01 | NOT NULL |
| EndDate | DATE |  |  |  | Y | 2024/04/01 | NOT NULL |
| agentID | NUMBER | 4 |  | FK | Y | 1234 | Refers to the specific tenant, NOT NULL |
|  |  |  |  |  |  |  |  |
| **Table: Maintain\_Request** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **requestID** | NUMBER | 4 |  | PK | Y | 1234 | Primary Key |
| unitID | NUMBER | 4 |  | FK | Y | 1234 | Foreign Key to the Primary Key of the Unit table |
| IssueDescription | VARCHAR | MAX |  |  | Y | "Broken HVAC" | description of the maintenance request, NOT NULL |
| requestDate | DATE |  |  |  | Y | 2024/04/01 | NOT NULL |
| status | VARCHAR | 100 |  |  | Y | "Pending" | maintenance request status, NOT NULL |
| cost | NUMBER | 8 |  |  |  | 2500 | cost of the maintenance request, NOT NULL |
| vendorID | NUMBER | 4 |  | FK | Y | 1234 | Foreign Key to the Primary Key of the Vendor table, NOT NULL |
| Superintendent | NUMBER | 4 |  | FK | Y | 1234 | Foreign Key to the Primary Key of the Employee table, NOT NULL |
|  |  |  |  |  |  |  |  |
| **Table: Vendors** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **vendorID** | NUMBER | 4 |  | PK | Y | 1234 | Primary Key |
| serviceType | VARCHAR | 25 | “Cleaning” |  | Y | "Cleaning" | Service type |
| phone | VARCHAR | 11 |  |  | Y | 1234567890 | North American phone number format, NOT NULL |
| email | VARCHAR | 50 |  |  | Y | "jameschan@myseneca.ca" | Email address of the vendor, NOT NULL |
|  |  |  |  |  |  |  |  |
| **Table: Department** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **departmentID** | NUMBER | 4 |  | PK | Y | 1234 | Primary Key |
| name | VARCHAR | 255 |  |  | Y | "Marketing" | Department name |
| phone | VARCHAR | 15 |  |  | Y | 1234567890 | North American phone number format |
| location | VARCHAR | 255 |  |  | Y | "Headquarters 11A" | Location of the department |
|  |  |  |  |  |  |  |  |
| **Table: Lease\_Tenant** |  |  |  |  |  |  |  |
| **Column** | **Data Type** | **Size** | **Default** | **PK/FK** | **Required** | **Sample Data** | **Notes** |
| **leaseID** | NUMBER | 4 |  | PK, FK | Y | 1234 | Primary Key |
| **tenantID** | NUMBER | 4 |  | PK, FK | Y | 1234 | Primary Key |
| rentAmount | NUMBER | 8,2 |  |  |  | 2500.00 | Monetary value, NOT NULL |
| downPayment | NUMBER | 8,2 |  |  |  | 2500.00 | Monetary value,　 NOT NULL |