Data Source :

King’s Printer for Ontario. (2016, October 2016). Ontario Environment Business Directory (OEBD) [Data file]. Retrieved Retrieved January 28, 2024, from https://data.ontario.ca/dataset/ontario-environment-business-directory/resource/2cd9558a-b73a-4858-be33-935c3ea3b8d8)

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Tables & Attributes Information :

The database consists of four tables: ‘companies’, ‘compliance_records’, ‘location’ and ‘project’. The ‘companies’ table consists of the following 5 attributes: ‘company_name’, ‘sectors’, ‘website’, ‘description’ and ‘company_id’, with the latter being the primary key. This table functions as the primary table and establishes connections with the other three tables through a foreign key constraint on the ‘company_id’ attribute.

Secondly, the ‘compliance_records’ table consists of the seven attributes: 'compliance_id’, ‘regulation_name’, ‘certification_type’, ‘certification_number’, ‘expiry_date’, ‘description’ and ‘company_id’. ‘compliance_id’ is the primary key for the table ‘compliance_records’ and ‘company_id’ acts as the foreign key.

Thirdly, the table ‘location’ is comprised of the following five attributes: ‘location_id’, ‘location_name’, ‘postal_code’, ‘company_id’, ‘area_sq_ft’ where ‘location_id’ is the primary key for the table and ‘company_id’ establishes the foreign key relationship with the central table ‘companies’.

Finally, the fourth table, ‘project’ contains the seven attributes: 'project_id’, ‘project_name’, ‘project_description’, ‘start_date’, ‘end_date’, ‘budget_usd’ and ‘company_id’. ‘project_id’ serves as the primary key, while ‘company_id’ acts as the foreign key linking to the ‘companies’ table.

Procedure to Import Table Data into MySQL Workbench:

To document the procedure for using the import wizard to import data into tables after running the .sql file from section1 to create the table structures, follow these instructions:

1. Execute the .sql file to create the table structures.
2. Open MySQL Workbench and connect to the database.

3. Select the database where the data is to be imported
4. Access the Import Wizard from the "Server" menu.
5. Select the .csv files corresponding to each of the four tables.
6. Map the columns from the .csv files to the database table columns.
7. Begin the import process to insert data into the tables.
8. Repeat the process for subsequent the other three .sql files.

Business Rules:

1. The database enforces a one-to-many relationship between the ‘companies’ table (parent) and the ‘compliance_records’, ‘location’, and ‘project’ tables (children). This rule ensures that one company can have multiple compliance records, locations, and projects associated with it, but each compliance record, location, or project can only belong to one company. This relationship is expressed through foreign key constraints on the child tables referencing the ‘company_id’ attribute in the ‘companies’ table.

2. The database enforces the uniqueness and automatic generation of primary keys for each record in the ‘companies’ (‘company_id’), ‘compliance_records’ (‘compliance_id’), ‘location’ (‘location_id’), and ‘project’(‘project_id’) tables. This business rule ensures that each record in these tables has a unique identifier, facilitating efficient data retrieval, updates and deletions.

3. Certain attributes in the table, such as ‘company_name’ in the ‘companies’ table, ‘project_name’ and ‘budget_usd’ in the ‘project’ table, ‘regulation_name’ and ‘certification_number’ in the ‘compliance_records’ table, and ‘postal_code’ in the ‘location’ table, must have non-null values. This ensures that essential information is always provided and prevents the storage of incomplete or ambiguous data.

Queries & Purpose :

Query 1: This query retrieves project details from the ‘project’ table where the start date is after January 1, 2023. It calculates the duration of each project in days and returns the project ID, name, start date, end date, and project duration. The overall purpose of this query is to display the project information of all projects that began in the previous year and, for instance, can be run when allocating budgets for projects in the upcoming year.

Query 2: The second query performs an INNER JOIN between the ‘project’ and ‘companies’ table using the ‘company_id’ as the common attribute. It retrieves project details along with the associated company details such as company name and sectors. The purpose of the query is to view all projects undergone (both past and current) by the companies listed in the database.

Query 3: This query calculates the total budget for each company by summing up the budget of all projects associated with the company. It groups the results by company and retrieves the company name along with the total budget. The purpose of this query is to view the total budget allocated for each company and decisions associated with budget allocation and target goals of projects can be made.

Query 4: This query calculates the average budget across all projects and selects compliance records for companies whose project budgets exceed this average. A subquery is used in the FROM clause to calculate this average budget. The purpose of this query is to view projects that require above average funding and can be used to make decisions regarding money diversions from one project to another.

Query 5: This set of queries involves the creation of a view named 'project_compliance' which combines project details with compliance records. The view is created to display project information alongside compliance details. The SELECT query retrieves data from the view, an UPDATE query modifies the project budget in the underlying 'project' table, and the final SELECT query is re-run to reflect the changes in the view after modifying the underlying table. The purpose of this query is to view the modifications made to the underlying tables whenever the budget for a specific company's project is modified and the budget modification for a given company's project can be easily carried out by running this view.

Stored Procedures :

(1) The 'UpdateAndInsertCompliance' procedure is designed to update the budget of a company and simultaneously insert a new compliance record associated with that company. This procedure is particularly useful in scenarios where companies need to update their financial information while ensuring compliance with regulatory standards.

    Parameters:

    - p_company_id: The ID of the company for which the budget and compliance record need to be updated.
    - p_new_budget: The new budget for the company.
    - p_regulation_name: The name of the regulation for the compliance record.
    - p_certification_type: The type of certification for the compliance record.
    - p_certification_number: The certification number for the compliance record.
    - p_expiry_date: The expiry date for the compliance record.

To execute this procedure, users need to provide values for the above parameters in the CALL() statement. Once executed, the procedure retrieves the old budget of the company, updates the budget with the new value, and inserts a new compliance record with the provided regulatory information.

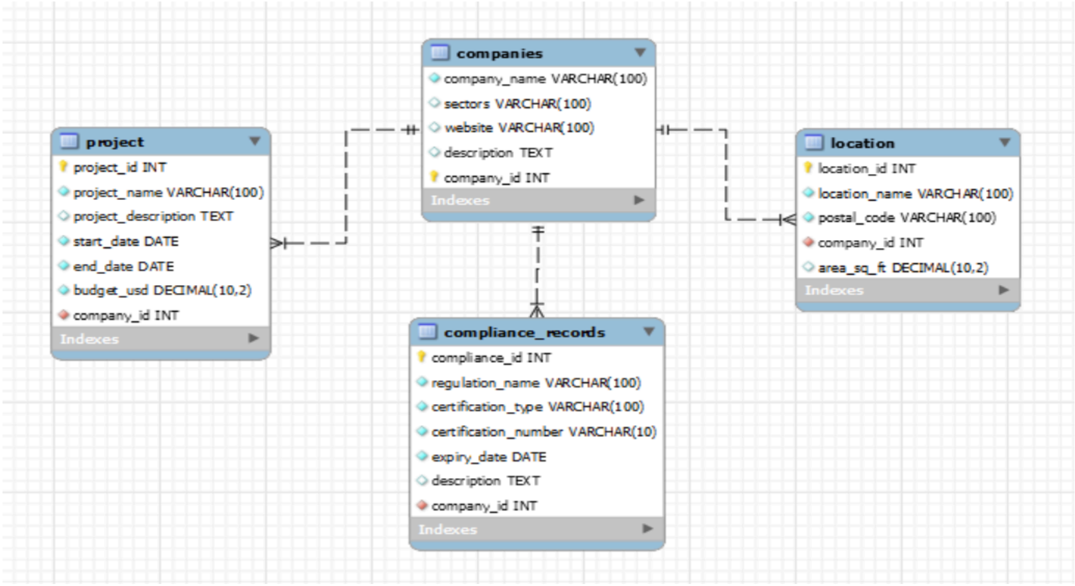
(2) The ‘UpdateCompanyNameAndLocation’ procedure is designed to update the name of a company along with its associated location name and postal code. This procedure is helpful when companies undergo rebranding or relocate their offices.

Parameters:

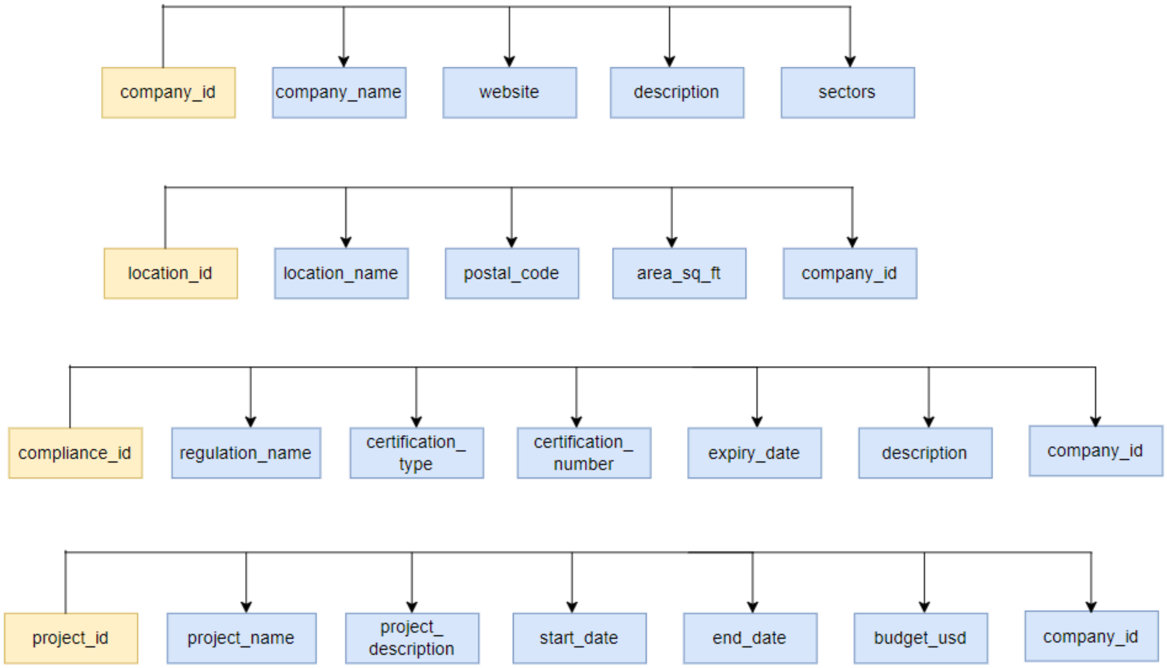
- ○ p_company_id: The ID of the company for which the name and location details need to be updated.
- ○ p_new_company_name: The new name for the company.
- ○ p_new_location_name: The new name for the location.
- ○ p_new_postal_code: The new postal code for the location.

Users can execute this procedure by providing the necessary parameter values in the CALL() statement, separating the parameter values with commas. Upon execution, the procedure retrieves the old company name, location name, and postal code, updates them with the new values, and commits the transaction.

Internal Schema :



Dependency Diagram (for reference) :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company_name
website
description
sectors
location_id
location_name
postal_code
area_sq_ft
company_id
compliance_id
regulation_name
certification_
type
certification_
number
expiry_date
description
company_id
project_id
project_name
project_
description
start_date
end_date
budget_usd
company_id