A picture containing text, clipart

Description automatically generated

**Formative Assignment 3**

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| Module Name | WSQ Database Design and Implementation (SF) |
| Course Name | Postgraduate Diploma in Software Engineering |
| Assignment Title | Database Testing |

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| Learner Name | Huynh Minh Phu |

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| Learner declaration |
| I certify that the work submitted for this assignment is my own and research sources are fully acknowledged.  Learner signature: Phu Date: 15/12/2023 |

## Purpose of this assignment

To demonstrate your capabilities in the following areas:

* Develop sample data for management reports
* Develop SQL queries for management reports
* Test Database
* Document Database

## Submission Format

The submission is in the form of an individual written report with examples and illustrations. This should be written in a concise, formal academic style using single spacing and font size 12.You are required to make use of headings, paragraphs, and subsections as appropriate, and all work must be supported with research and referenced using the Harvard referencing system. Please also provide a bibliography using the Harvard referencing system.

## Submission file

Submission File Name format: CohortCode\_FullName\_AssignmentNumber

E.g.: PGSE-DDI-0823\_AliceTan\_A3.docx

## Scenario

You currently work as a Data Engineer for Brightica design agency, where you design and implement data models for client-centric products. As part of the role, your manager Mr. Andrew assigned the project to develop an optimal database design to deliver Rich Internet Application for Boutiqa. Boutiqa is a marketplace for sellers to promote their products and for consumers to purchase with ease. The company wants to have a consumer-centric application with an enhanced user experience.

You are required to demonstrate your capabilities in the following areas:

* Planning of database use group
* Conceptual, Logical, and Physical design of the database
* Writing queries and stored procedures to optimize the system performance and management reports.

The scope of the project in this module is to design and develop and implement the database. The overview of the project is as below:

There are 3 types of users:

1. Sellers
2. Consumers
3. Administrator

Sellers should be able to perform following functions in the portal:

1. Register in the portal.
2. Update their Profile after logging in.
3. Maintain the product catalog to promote their products.

Consumers should be able to perform following functions in the portal:

1. Register in the portal.
2. Update their Profile after logging in.
3. Search products.
4. Choose products to view the details.
5. Add, edit, and remove items in the shopping cart.

Administrator should be able to perform following functions in the portal:

1. Administer user data.
2. Send bulk email invite to potential clients to register.

You will be required to:

* Import more data for all tables through .csv files
* Create queries which will be used to generate meaningful reports for the management.
* Discuss briefly test methods you will employ to test and validate the database and brief reasons why you choose each test.
* Document the database
* Backup database & schedule backup
* Provide a Restoration script in case of failure

## Evidence to exhibit

* Step-by-step screenshot of .csv import of data
  + Table catalog
* Command

LOAD DATA local INFILE 'C:/Users/ADMIN/Documents/dbms\_res/catalog.csv'

INTO TABLE portal.catalog

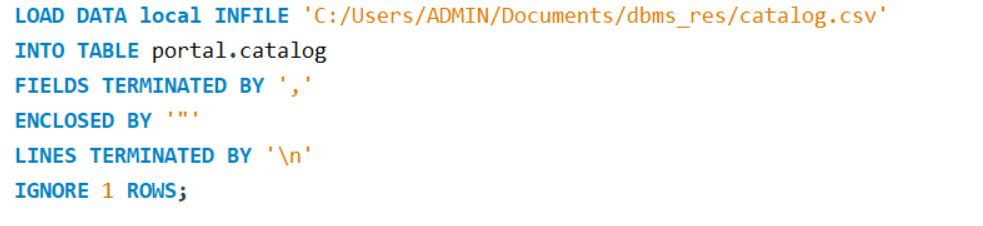
FIELDS TERMINATED BY ','

ENCLOSED BY '"'

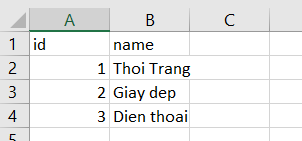
LINES TERMINATED BY '\n'

IGNORE 1 ROWS;

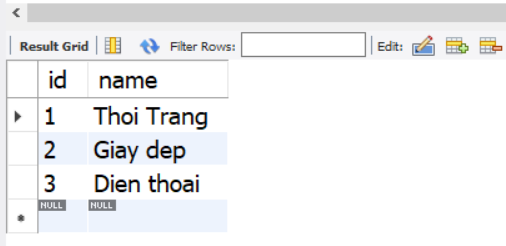
* Command



* Csv file



* SQL Result



* + Table profile
* Command

LOAD DATA local INFILE 'C:/Users/ADMIN/Documents/dbms\_res/profile.csv'

INTO TABLE portal.profile

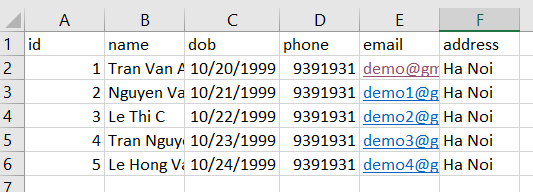
FIELDS TERMINATED BY ','

ENCLOSED BY '"'

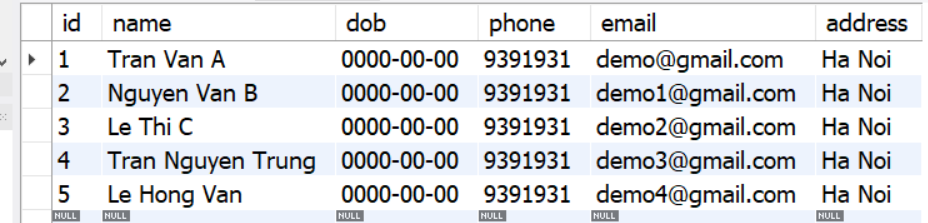
LINES TERMINATED BY '\n'

IGNORE 1 ROWS;

* Csv file



* SQL Result



* + Table product
* Command

LOAD DATA local INFILE 'C:/Users/ADMIN/Documents/dbms\_res/product.csv'

INTO TABLE portal.product

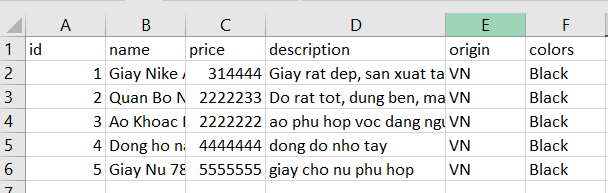
FIELDS TERMINATED BY ','

ENCLOSED BY '"'

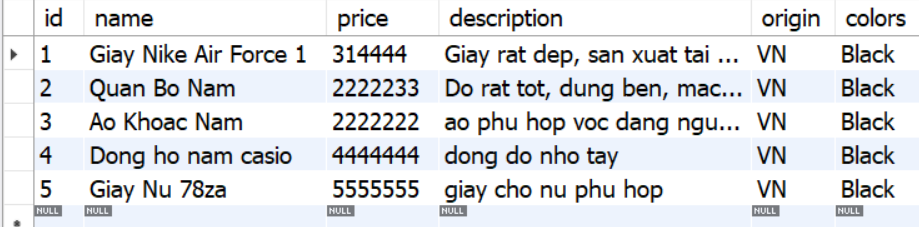
LINES TERMINATED BY '\n'

IGNORE 1 ROWS;

* Csv file



* SQL Result



* + Table order\_item
* Command

LOAD DATA local INFILE 'C:/Users/ADMIN/Documents/dbms\_res/order\_item.csv'

INTO TABLE portal.order\_item

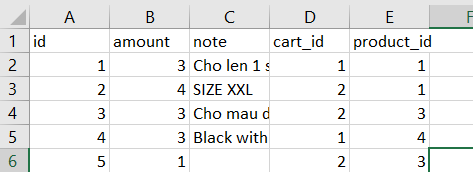
FIELDS TERMINATED BY ','

ENCLOSED BY '"'

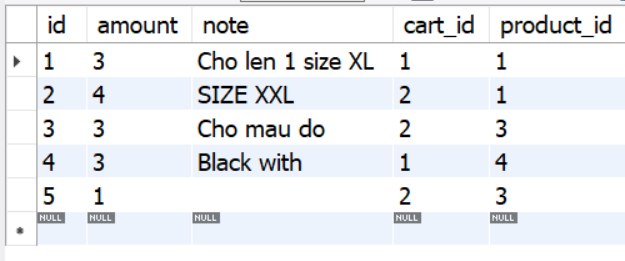
LINES TERMINATED BY '\n'

IGNORE 1 ROWS;

* Csv file



* SQL Result



* Ideate 3 possible reports which management would like to have. For each report query:

|  |  |
| --- | --- |
| **Title of the report** | Total amount sell of one product |
| **Description** | Get the total sales amount of a product |
| **Purpose** | Get the total sales amount of a product |
| **Query** | select sum(amount) as TotalAmountSeller from order\_item where product\_id = '1' |
| **Result screenshot** |  |

|  |  |
| --- | --- |
| **Title of the report** | Total revenue sell of one product |
| **Description** | Get the total revenue of a product |
| **Purpose** | Get the total revenue of a product |
| **Query** | select sum(amount \* p.price) as TotalRevenue from order\_item inner join product as p  on p.id = order\_item.product\_id where product\_id = '1' |
| **Result screenshot** |  |

|  |  |
| --- | --- |
| **Title of the report** | Calculate the total sales revenue of a product |
| **Description** | Statistic the total sales revenue of a product |
| **Purpose** | Calculate the total sales revenue of a product |
| **Query** | select profile.name, profile.phone, profile.email, sum(amount \* p.price) as TotalRevenue from order\_item inner join product as p  on p.id = order\_item.product\_id inner join cart on cart.id = order\_item.cart\_id  inner join portal\_user on portal\_user.id = cart.portal\_user\_id inner join profile  on profile.id = portal\_user.profile\_id  group by cart.portal\_user\_id  order by TotalRevenue desc |
| **Result screenshot** |  |

* List the tests, purpose of tests and results from test
* Document the database as such for each table:
  + Table Product

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field (column) name** | **Data type** | **Field size** | **Key (constraint)** |  | **References** | **Nullable** | **Description** | **Default value** | **Example** |
| Id | INT |  | Primary key |  |  |  |  |  |  |
| Name | VARCHAR | 55 |  |  |  |  |  |  |  |
| price | INT |  |  |  |  |  |  |  |  |
| Description | TEXT |  |  |  |  | Yes |  |  |  |
| Origin | VARCHAR | 55 |  |  |  | Yes | Source of product |  | VN, CN |
| Colors | VARCHAR | 55 |  |  |  | Yes | Color of product |  | Black, White |

* + Table Profile

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field (column) name** | **Data type** | **Field size** | **Key (constraint)** |  | **References** | **Nullable** | **Description** | **Default value** | **Example** |
| Id | INT |  | Primary key |  |  |  |  |  |  |
| Name | VARCHAR | 55 |  |  |  |  |  |  |  |
| Dob | DATE |  |  |  |  | Yes | Date of birth |  | 2000-10-20 |
| Phone | VARCHAR | 55 |  |  |  | Yes |  |  |  |
| Email | VARCHAR | 55 |  |  |  | Yes |  |  |  |
| Address | VARCHAR | 55 |  |  |  | Yes |  |  |  |

* + Table Catalog

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field (column) name** | **Data type** | **Field size** | **Key (constraint)** |  | **References** | **Nullable** | **Description** | **Default value** | **Example** |
| Id | INT |  | Primary key |  |  |  |  |  |  |
| Name | VARCHAR | 55 |  |  |  |  |  |  |  |

* + Table Portal\_User

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field (column) name** | **Data type** | **Field size** | **Key (constraint)** |  | **References** | **Nullable** | **Description** | **Default value** | **Example** |
| Id | INT |  | Primary key |  |  |  |  |  |  |
| Type | enum |  |  |  |  |  |  |  |  |
| Create\_date | timestamp |  |  |  |  |  | Create date of user |  |  |
| username | VARCHAR | 55 |  |  |  |  |  |  |  |
| Password | VARCHAR | 55 |  |  |  |  |  |  |  |
| Profile\_id | Int |  | Foreign key |  | Profile |  | Profile id of user |  |  |

* + Table Order\_item

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field (column) name** | **Data type** | **Fi** | **Key (constraint)** |  | **References** | **Nullable** | **Description** | **Default value** | **Example** |
| Id | INT |  | Primary key |  |  |  |  |  |  |
| Amount | INT |  |  |  |  |  | Amount product in order |  |  |
| note | TEXT |  |  |  |  |  | Note in order |  |  |
| Cart\_id | INT |  | Foreign key |  | Cart |  |  |  |  |
| Product\_id | INT |  | Foreign key |  | Product |  |  |  |  |

* + Table Cart

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Field (column) name** | **Data type** | **Field size** | **Key (constraint)** |  | **References** | **Nullable** | **Description** | **Default value** | **Example** |
| Id | INT |  | Primary key |  |  |  |  |  |  |
| Portal\_user\_id | INT |  | Foreign key |  | Portal\_user |  |  |  |  |

If you are connected with PHPMyAdmin, Go to phpMyAdmin > click on the respective database > click ‘data dictionary’ (above ‘create table’) > save in pdf

* Backup
  + Windows:
* Command

mysql.exe -uroot -p1234 -s -N -e "SHOW DATABASES" | for /F "usebackq" %D in (`findstr /V "information\_schema performance\_schema"`) do mysqldump %D -uroot -p1234 > C:\WorkSpace\backup\%D.sql

* Backup every time script

@echo off

setlocal

REM Set MySQL credentials

set MYSQL\_USER=root

set MYSQL\_PASSWORD=your\_password

set MYSQL\_DATABASE=your\_database

REM Set backup directory

set BACKUP\_DIR=C:\Path\To\Your\Backup\Directory

REM Get current date and time

for /f "tokens=1-4 delims=/ " %%i in ('date /t') do (

set YYYY=%%l

set MM=%%j

set DD=%%k

)

for /f "tokens=1-2 delims=: " %%i in ('time /t') do (

set HH=%%i

set MIN=%%j

)

REM Create timestamp for the backup file

set TIMESTAMP=%YYYY%\_%MM%\_%DD%\_%HH%\_%MIN%

REM Set the path to mysqldump (adjust based on your MySQL installation)

set MYSQLDUMP\_PATH=C:\Path\To\Your\MySQL\bin\mysqldump.exe

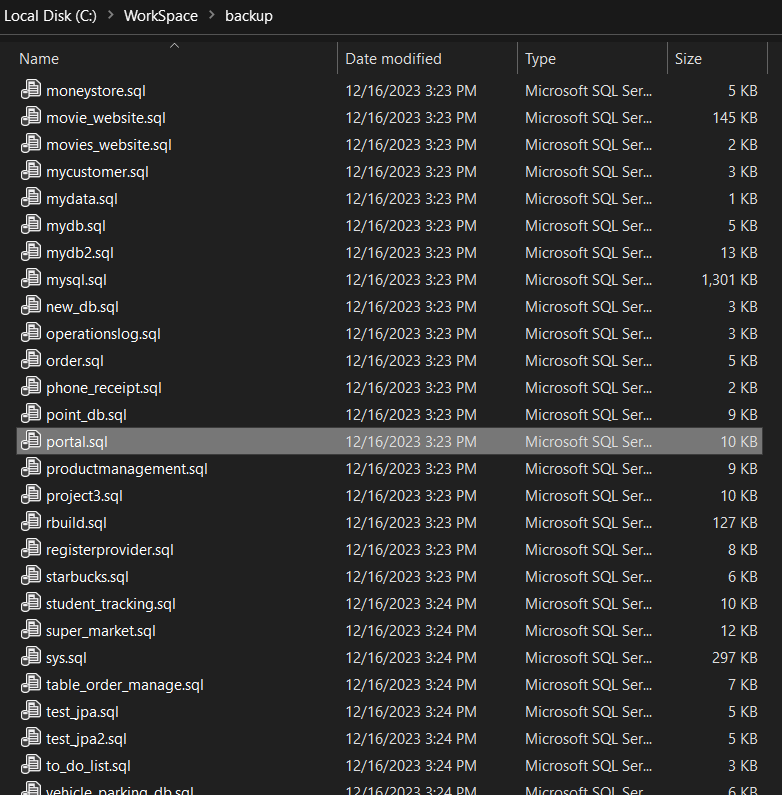
REM Perform the backup

"%MYSQLDUMP\_PATH%" -u %MYSQL\_USER% -p%MYSQL\_PASSWORD% %MYSQL\_DATABASE% > "%BACKUP\_DIR%\backup\_%TIMESTAMP%.sql"

echo Backup completed successfully at %TIMESTAMP%

endlocal

* Screen shot File Explorer



* Screenshot of restoration script in command prompt/terminal
  + Command

mysql.exe -u root -p backup\_db < C:\WorkSpace\backup\portal.sql



* + Screen shot

