Databases portfolio 1

By

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Contents

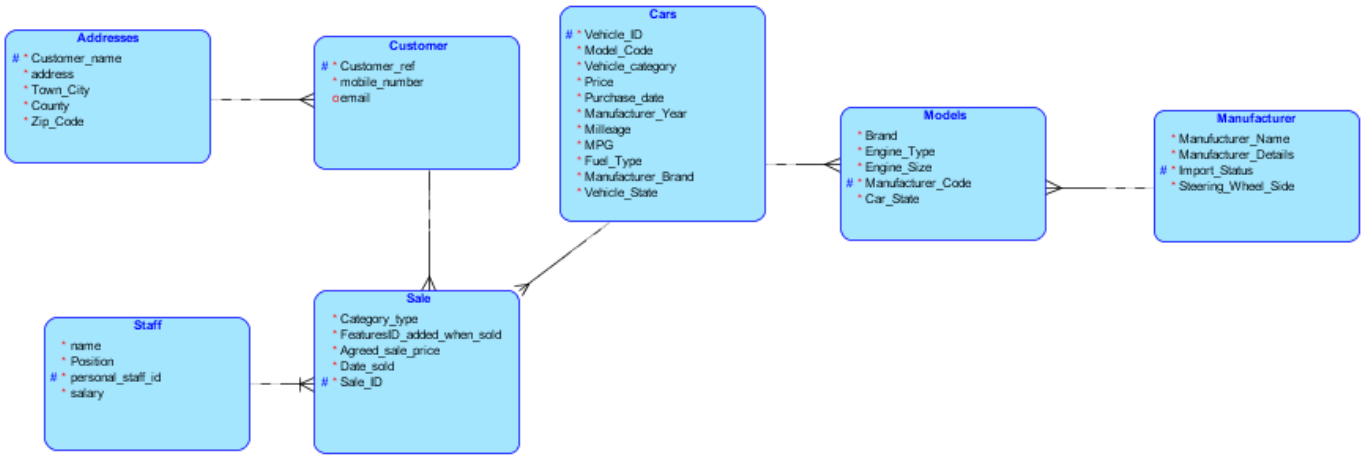
Business Analysis

The businesses aim is to sell new and used cars. The database stores data for cars, staff, customers, Address, Sales, Models, features and Manufacturer, these will be the names of the entities in our SLQ database.

The staff entity is vital as it will allow us to store data that will allow us to see who is employed by the company, what position they hold within the company, a personal ID number that will make it easier to find a specific staff member, and the salary of each member of staff. The Customers entity is also vital as it will allow us to track who our customers are, contact details for the customers if we have to contact them and a customer reference which will make it easier to track their order progress. The Address entity will allow us to store the living status for both the customers and the staff while keeping the tables easy to read by not over flowing them with information. This information will be needed for staff as you need their address to employ and pay them, and for customers for transaction security and insurance purposes. The sales entity will allow us to every sale that is made, what vehicle has been sold including its features, category and date sold, the staff member that sold the car as car sale is commission base and finally its payment status. The cars entity will allow us to see what cars we have for sale, cars condition/ features, when it was purchased and the manufacturer. The model entity allows us to see what features the car model has like engine information. The manufacturer's information allows us to track where the car was made, if it was imported and the steering.

The Data Protection Act provides strict guidelines that have to be followed when managing personal data. As we have to store personal information like the person's name and address we have to make sure we follow the act which states that we have to use the data collected fairly and lawfully. Also that we have to clearly state what the data will be used for and the data will not be held for any longer than is necessary. The data must be kept safe and secure therefor it must be password protected. https://www.gov.uk/data-protection

Entity Relationship Diagram



Relational Table Headings

Addresses (Customer_name, address, Town_city, County, Zip_code, *Personal_staff_id**)

Staff (name, Position, personal_staff_id, salary)

Customer (Customer_ref, mobile_number, email, *Customer_name**)

Cars (Vehicle_ID, Model_code, Vehicle_category, Price, Status, Manufacturer_year, Mileage, MPG, Fuel_type, Manufacturer_brand, Vehicle_state)

Sale (sale_ID, category_Type, FeaturesID_added_when_sold, Agreed_sale_price, Date_sold, *Personal_staff_id**, *Customer_ref**, *Vehicle_ID**)

Models (Brand, Engine_Type, Engine_Size, Manufacturer_Code, car_state, *Import_Status*, Vehicle_ID**)

Manufacturer (Manufacturer_Name, Manufacturer_Name, Import_Status, Steering_Wheels_Side)

SQL Script

```
CREATE TABLE addresses (
        Customer_name          VARCHAR (30) NOT NULL
                CONSTRAINT pk_Cname PRIMARY KEY,
        Address          VARCHAR2 (30) NOT NULL,
        Town_City        VARCHAR (30) NOT NULL,
        County           VARCHAR (30) NOT NULL,
        Zip_Code         VARCHAR (30) NOT NULL,
);
```

```
CREATE TABLE Customer (
        Customer_ref    INT NOT NULL
                CONSTRAINT pk_Cref PRIMARY KEY,
        Mobile_number           INT NOT NULL,
        Email   VARCHAR (30) NOT NULL,
        Customer_name                   VARCHAR (30) NOT NULL,
                ADD CONSTRAINT fk_Cname
                FOREIGN KEY (Customer_name) REFERENCES addresses (Customer_name),
        Zip_Code        VARCHAR (30) NOT NULL,
);

CREATE TABLE Staff (
        name    VARCHAR (30) NOT NULL,
        Position        VARCHAR (30) NOT NULL,
        Personal_staff_id       INT NOT NULL
                CONSTRAINT pk_Psid PRIMARY KEY,
        salary          DECIMAL (2, 1) NOT NULL,
);
```

```
CREATE TABLE Cars (
        Vehicle ID      INT NOT NULL
                CONSTRAINT pk_Vid PRIMARY KEY,
        Model Code      INT NOT NULL,
        Vehicle_category        VARCHAR (10) NOT NULL,
        Price           Decimal (8, 2) NOT NULL,
        Purchase_date   DATE NOT NULL,
        Manufacturer_Year       INT NOT NULL,
        Mileage         DECIMAL (8, 2) NOT NULL,
        Fuel_Type       VARCHAR (10) NOT NULL,
        Manufacturer_Brand      VARCHAR (25) NOT NULL,
        Vehicle_State   VARCHAR (10) NOT NULL,
);
CREATE TABLE Sale (
        Category_type   VARCHAR (30) NOT NULL,
        Agreed_sale_price       DECIMAL (8, 2),
        Date sold       VARCHAR (30),
        Customer_ref    INT NOT NULL,
                ADD CONSTRAINT fk_Cref
                FOREIGN KEY (Customer_ref) REFERENCES Customer (Customer_ref),
        Vehicle_ID      INT NOT NULL,
                ADD CONSTRAINT fk_Vid
                FOREIGN KEY (Vehicle_ID) REFERENCES Cars (Vehicle_ID),
        Sale_ID         INT NOT NULL
        CONSTRAINT pk_Sid PRIMARY KEY,
        Personal_staff_id       INT NOT NULL,
                ADD CONSTRAINT fk_Psid
```

```
                FOREIGN KEY (Personal_staff_id) REFERENCES Staff (Personal_staff_id),
);

CREATE TABLE Manufacturer (
 Manufacturer_name     VARCHAR (30) NOT NULL
        CONSTRAINT pk_Mname PRIMARY KEY,
Manufacturer_Details    VARCHAR (30) NOT NULL,
Import_Status   VARCHAR (10) NOT NULL,
Steering_wheel_Side             VARCHAR (10) NOT NULL,
);

CREATE TABLE Models (
        Brand    VARCHAR (10) NOT NULL,
        Engine_Type      VARCHAR (20) NOT NULL,
        Engine_Size      DECIMAL (3, 1) NOT NULL,
        Manufacturer_Code      INT NOT NULL
                CONSTRAINT pk_MCode PRIMARY KEY,
        Car_state        VARCHAR (10) NOT NULL,
        Vehicle_ID       INT NOT NULL,
                ADD CONSTRAINT fk_VidM
                FOREIGN KEY (Vehicle_ID) REFERENCES Cars (Vehicle_ID),
                VARCHAR (30) NOT NULL,
        Manufacturer_number  INT NOT NULL,
         ADD CONSTRAINT fk_Mnumber
                FOREIGN KEY (Manufacturer_number) REFERENCES Manufacturer
        (Manufacturer_number),
);
```

Populating the Database

```
SQL> select * from addresses;
Press RETURN to Continue...

CUSTOMER_NAME                ADDRESS                      TOWN_CITY                    COUNTY                       ZIP_CODE
---------------------------- ---------------------------- ---------------------------- ---------------------------- ----------
Rob                          FolkStreet                   Birmingham                   WestMidlands                 B1515D
Micheal Andrew               Muller Street                Birmingham                   West Midlands                B11hz
Noah Lawson                  Canterbury Drive             Birmingham                   West Midlands                B36 8DD
Finlay Jenkins               Park Place                   Walsall                      West Midlands                WS1 1GG
Isaac Bell                   Valley Road                  Walsall                      West Midlands                WS1 1BB
Ellis Carter                 Highland Drive               Redditch                     Worcestshire                 B98 7HH

6 rows selected.
```

```
SQL> select * from customer;
Press RETURN to Continue...

CUSTOMER_REF MOBILE_NUMBER EMAIL                          CUSTOMER_NAME
------------ ------------- ------------------------------ ------------------------------
           1    7398561369 rob@extra.co.uk                Rob
           2    7566645225 MichealAndrew                  Micheal Andrew
           3    7578945285 NoahLawson@extra.co.uk         Noah Lawson
           4    7578458333 FinlayJenkins@extra.co.uk      Finlay Jenkins
           5    7366765163 IsaacBell@extra.co.uk          Isaac Bell
           6    7199568364 EllisCarter@extra.co.uk        Ellis Carter

6 rows selected.
```

```
SQL> select * from manufacturer;
Press RETURN to Continue...

IMPORT_STA STEERING_W MANUFACTURER_DETAILS           MANUFACTURER_NAME
---------- ---------- ------------------------------ ------------------------------
UK Type    Right      Made in Italy to UK standards  Ferrari Ltd.
Imported   Left       Made in Italy for US Standards Ferrari Ltd.

SQL>
```

```
SQL> select * from models;
Press RETURN to Continue...

BRAND      ENGINE_TYPE          ENGINE_SIZE MANUFACTURER_CODE CAR_STATE  IMPORT_STA VEHICLE_ID
---------- -------------------- ----------- ----------------- ---------- ---------- ----------
458        V10 Turbo                    4.5        3433267958 New        UK Type           101
California V12                          4.8        9452781237 New        UK Type           102
berlineta  V12 biTurbo                    7        2813099449 New        UK Type           103
250 SWB    V8                           2.4        2040092920 Used       Imported          104
F40        V12 BiTurbo                  2.7        5357403458 Used       Imported          105
246 GTDINO V8                           2.5        1389519953 Used       UK Type           106
ENZO       V10                            6        6926835287 New        UK Type           107
Testarossa V8                           2.7        1882837717 used       Imported          108
Laferrari  V12 BiTurbo                  7.8        4435580552 New        UK Type           109

9 rows selected.
```

```
SQL> select * from cars;
Press RETURN to Continue...

VEHICLE_ID MODEL_CODE      PRICE MANUFACTURER_YEAR    MILLAGE       MPG FUEL_TYPE  MANUFACTURER_BRAND       VEHICLE_ST VEHICLE_CATEGORY             STATUS
---------- ---------- ---------- ----------------- ---------- --------- --------- ------------------------ ---------- ---------------------------- ----------
       101     165989        650              2017         68        18 Petrol    Ferrari 458              New   Sport Exotic                   For Sale
       102     738251        150              2017         12        34 Petrol    Ferrari California       New        Convertible                      For Sale
       103     389510        250              2017        114        25 Petrol    Ferrari F12berlinetta    New        Coupe                            Sold
       104     396614         10              1962      50.79        25 Petrol    Ferrari 250 SWB          Used  Classic                        For Sale
       105     671697       1000              1992         33        29 Petrol    Ferrari F40              Used  Classic                        For Sale
       106     965654     324.99              1973      32.58        34 Petrol    Ferrari 246 GT Dino      Used       Classic                          For Sale
       107     994238          2              2015        4.4        21 Petrol    Ferrari ENZO             New   Coupe                          For Sale
       108     100610        250              1991          1        22 Petrol    Ferrari Testarossa       Used       Classic                          For Sale
       109      85722        2.5              2017         .2        33 Petrol    Ferrari Laferrari        New        Coupe                            For Sale

9 rows selected.
```

```
SQL> select * from staff;
Press RETURN to Continue...

NAME                               POSITION                           PERSONAL_STAFF_ID      SALARY
---------------------------------- ---------------------------------- ----------------- ----------
Betty Potter                       Sales                                          1021          24
Gail Nguyen                        Sales                                          1022          24
Mario Gross                        Sales                                          1023          24
Hector Doyle                       Manager                                        1114          85
Claudia Garner                     Admin                                          1745          22
Terrance Owen                      Valleting                                      1454          15

6 rows selected.
```

```
SQL> select * from sale;
Press RETURN to Continue...

CATEGORY_TYPE       CUSTOMER_NAME              CUSTOMER_REF    SALE_ID VEHICLE_ID PERSONAL_STAFF_ID AGREED_SALE_PRICE DATE_SOLD
------------------- -------------------------- ------------ ---------- ---------- ---------------- ----------------- ---------------------------
Coupe               Micheal Andrew                        2       5525        103             1021               250 19-11-2017

SQL>
```

SQL Queries

The first query we made was SELECT * FROM Addresses WHERE Town_City = 'Birmingham';. This query selects table 'Addresses' then locates the Value 'Birmingham' inside Town_City Column. It then shows everything in the table that has the Birmingham value in Town_City.

```
SQL> SELECT * FROM Addresses WHERE Town_City = 'Birmingham';
Press RETURN to Continue...

CUSTOMER_NAME                  ADDRESS                        TOWN_CITY                      COUNTY                         ZIP_CODE
------------------------------ ------------------------------ ------------------------------ ------------------------------ ------------------------------
Rob                            FolkStreet                     Birmingham                     WestMidlands                   B1515D
Micheal Andrew                 Muller Street                  Birmingham                     West Midlands                  B11hz
Noah Lawson                    Canterbury Drive               Birmingham                     West Midlands                  B36 8DD

SQL>
```

The second query we made was SELECT * FROM customer WHERE customer_Ref <= '4';. This query selects the table 'customer' from the database and finds all the values less than or equal to 4 in the 'customer_ref'. it then shows everything in the table that holds a value less then or equal to 4 in the customer table.

```
SQL> select * from customer where customer_ref <= '4';
Press RETURN to Continue...

CUSTOMER_REF MOBILE_NUMBER EMAIL                          CUSTOMER_NAME
------------ ------------- ------------------------------ ------------------------------
           1    7398561369 rob@extra.co.uk                Rob
           2    7566645225 MichealAndrew                  Micheal Andrew
           3    7578945285 NoahLawson@extra.co.uk         Noah Lawson
           4    7578458333 FinlayJenkins@extra.co.uk      Finlay Jenkins

SQL>
```

The third query we made was SELECT * FROM cars WHERE vehicle_status = 'used';. This query selects the 'cars' table from the database and finds all the values in Vehicle_status with the values 'used'. It then displays everything in the table with the used value in the cars table.

```
SQL> select * from cars where vehicle_state = 'Used';
Press RETURN to Continue...

VEHICLE_ID MODEL_CODE      PRICE MANUFACTURER_YEAR    MILLAGE        MPG FUEL_TYPE  MANUFACTURER_BRAND       VEHICLE_ST VEHICLE_CATEGORY              STATUS
---------- ---------- ---------- ----------------- ---------- ---------- ---------- ------------------------ ---------- ------------------------------ ----------
       104     396614         10              1962      50.79         25 Petrol     Ferrari 250 SWB          Used  Classic                          For Sale
       105     671697       1000              1992         33         29 Petrol     Ferrari F40              Used  Classic                          For Sale
       106     965654     324.99              1973      32.58         34 Petrol     Ferrari 246 GT Dino      Used       Classic                            For Sale
       108     100610        250              1991          1         22 Petrol     Ferrari Testarossa       Used       Classic                            For Sale

SQL>
```

The next query we made was SELECT * FROM models WHERE engine_size >= '4.0';. this query selects the 'models' table from the database and finds all the values in engine_size with a value of less then or equal to '4.0'.

```
SQL> select * from models where engine_size >= '4.0';
Press RETURN to Continue...

BRAND      ENGINE_TYPE           ENGINE_SIZE MANUFACTURER_CODE CAR_STATE  IMPORT_STA VEHICLE_ID
---------- -------------------- ----------- ------------------ ---------- ---------- ----------
458        V10 Turbo                    4.5         3433267958 New        UK Type           101
California V12                          4.8         9452781237 New        UK Type           102
berlineta  V12 biTurbo                    7         2813099449 New        UK Type           103
ENZO       V10                            6         6926835287 New        UK Type           107
Laferrari  V12 BiTurbo                  7.8         4435580552 New        UK Type           109
```

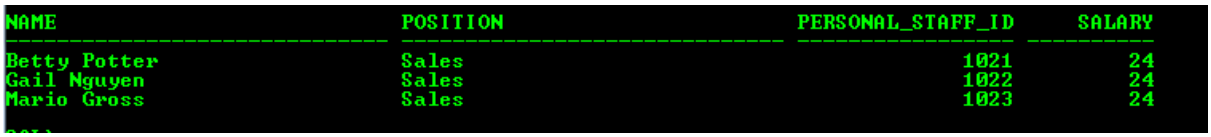
Next we made a query on the manufacturer table, the query was select * from manufacturer where import_status = 'UK Type';. this query selects the table 'manufacturer' from the database and finds all the values 'UK Type' in the import_status attribute and prints all in the table with this value.

```
SQL> select * from manufacturer where import_status = 'UK Type';
Press RETURN to Continue...

IMPORT_STA STEERING_W MANUFACTURER_DETAILS           MANUFACTURER_NAME
---------- ---------- ------------------------------ ------------------------------
UK Type    Right      Made in Italy to UK standards  Ferrari Ltd.

SQL>
```

After that we made the query SELECT * FROM Staff WHERE Position = ‘Sales’. This query selects the table Staff from the database. It then finds the Sales value in the Position attribute. Then it prints out everything containing this value.



NAME	POSITION	PERSONAL_STAFF_ID	SALARY
Betty Potter	Sales	1021	24
Gail Nguyen	Sales	1022	24
Mario Gross	Sales	1023	24

finally we made the query SELECT * FROM sale WHERE date_sold < ’20-11-2017’;. This query selects the table sale. It then finds any value in the date attribute that is less then 20-11-2017. It hen prints everything with a value greater.

```
SQL> select * from sale where date_sold < '20-11-2017';
Press RETURN to Continue...
```

CATEGORY_TYPE	CUSTOMER_NAME	CUSTOMER_REF	SALE_ID	VEHICLE_ID	PERSONAL_STAFF_ID	AGREED_SALE_PRICE	DATE_SOLD
Coupe	Micheal Andrew	2	5525	103	1021	250	19-11-2017

```
SQL>
```

SQL DML Commands

SELECT * FROM sale;

This command pulls all the data that has been input into the table. So in this instance it will show everything in the sale table.

Alter table [staff]

Insert into (Name, Position, Personal_Staff_ID, Salary)

‘Betty Potter’, ‘Sales’, ‘1021’, ‘24’;

This command inserts the values of each column into the table. This is a key part to the table as it populates the table with the data that you want it to hold.

Create table (manufacturer);

This command will create the table manufacturer. You can then start to assign data and values to the table.

Drop table models;

This command will drop the model table. This will completely delete the table from the system.

Drop column mileage;

This command would drop the mileage column from the table. However it would not work on its own as you will have to alter the table first so it knows what table you are trying to drop it from.

Desc table customer;

This command will show all the attributes in the table customer.

ADD CONSTRAINT fk_Mnumber

FOREIGN KEY (Manufacturer_number) REFERENCES Manufacturer (Manufacturer_number),

This command will allow you to add a foreign key to the table which will allow it to hold the data from another table. However, the other must already be created as it has to retrieve the data from it.

Create table table_name

Row_name VARCHAR(30) NOT NULL

ADD PRIMARY KEY (Row_name)

This command will create a table called table_name. it will then assign a attribute to the table called Row_name and assign it as a varchar (30 bit) and make it mandatory in the table. It will then make Row_name a primary key.

Bibliography

https://www.gov.uk/data-protection