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Database Systems Assignment 1

1.0 Introduction

The following report clearly outlines and illustrates several design documents and implemented programs for the systems in question (Coffee Shop System) these are:

- The whole design of the system as stated by the user
- ER-model for the data structure in question (relational database)
- Entity and attributes analysis
- Business constraints incorporated in the design
- The implemented system as required by user
    - Documented reports that will be produced by the system
    - Appropriate and fully documented SQL programs used to develop the database
- Test data and test cases used in testing system in question

Firstly the system has been designed and implemented to produce the best possible administrational reports as required by the executives of the company. Such report includes lists of all shops and their location, lists of employees working in a given shop, Shops in each country and many more.

Secondly, a fully documented database design has also been clearly laid out. This shows an overview of the entire normalised tables that are used in the system. Relationships between tables have also been shown through the entity relationship diagram included in the report. All the assumptions taken when designing the ER have been laid out in order to aid the explanation. A full entity description (data dictionary) is included to explain the design of the database.

Thirdly, the report shows fully documented SQL programs that have been used to develop the system itself. All the appropriate programs used to create tables and populate them have been showed and an explanation given.

2.0 Entity and Attribute Analysis

2.1 Assumptions

The whole design and implementation of the current systems has been based on the following assumption and of course the users requirements:

- A given country always has many shops despite the financial position of the company
- It has been assumed that employee can only work in one shop. Area managers have not been considered as they can work in many shops in real life
- A shop cannot function with only one employee hence many at all times.

2.2 Identified Entities and Attributes

Following below is a list of identified entities and attributes. These have been clearly indicated in the ER diagram seen below. For easy reading all the attributes have been shown inside the entities on the diagram. All the link entities have also been shown so that all the referential integrity constraints can be followed.

Main Entities without link entities:

Shops, Country, Employees, Products, Supplier, Products

Link Entities:

Country/Shops

2.2.1 ER Diagram for the Frothy Coffee System

Data Dictionary

Entity Description		
Table/Entity Name: Shops		
Description: Contains information about the company shops. All the shops are listed here including their opening date and size		
Attribute Shop ID Shop Name Address Opening Date countryID	**Primary Key** Shop ID	**Foreign Key**

Entity Description		
Table/Entity Name: Country		
Description: Contains information about the location of shops within the country.		
Attribute Country Id Country Name Address location	**Primary Key** Country ID	**Foreign Key**

Entity Description		
Table/Entity Name: Employees		
Description: Contains information about all the employees working in different shops and in different countries		
Attribute Employee Id Employee Name Address Joining Date Rank Salary shopID	**Primary Key** Employee ID	**Foreign Key** Shop ID

Entity Description		
Table/Entity Name: Products		
Description: Contains the information about all the products sold in all the shops		
Attribute Product ID Product Name Origin Price Type quantity	**Primary Key** Product ID	**Foreign Key** Shop ID Supplier ID

Entity Description		
Table/Entity Name: Supplier		
Description: Contains Information about all the suppliers supplying products to shops		
Attribute Supplier ID Supplier Name Supplier Address Telephone number Speciality	**Primary Key** Supplier ID	**Foreign Key**

Entity Description		
Table/Entity Name: Reports		
Description: Contains all the produced reports generated by the system		
Attribute Report ID Currency Exchange rates Date	**Primary Key** Report ID	**Foreign Key** Shop ID

2.3 SQL Scripts For Creating Tables

Table Country

```
create table country
( country_id number(3) primary key,
  country_name varchar2(20),
  location varchar2 (20),
  address varchar2 (30))
```

Table Shops

Table Employees

```
create table employees
( employee_id number(3) primary key,
  employee_name varchar(15),
  employee_address varchar2(30),
  employee_rank varchar2(15),
  employee_salary number(5),
  employee_joining_date date );
```

Table Products

```
create table product
( product_id number(3) primary key,
  product_name varchar2(15),
  product_type varchar2(15),
  product_quantity number(3),
  product_origin varchar2(15),
  Product_price number(5),
  total_sales number (5),
  shop_id number(3),
  supplier_id number(3),
  constraint fk_prod_shop_id foreign key (shop_id) references shops,
  constraint fk_prod_supp_id foreign key (supplier_id) references supplier);
```

Table Supplier

```
create table supplier
( supplier_id number(3) primary key,
  supplier_name varchar2(15),
  supplier_address varchar2(30),
  supplier_speciality varchar2(15) )
```

Table Report

```
create table report
 ( report_number number (3) primary key,
   total_sales number (5),
   currency varchar2 (10),
   exchange_rate number(10),
   report_date date,
   shop_id number(3),
   constraint fk_shop_id foreign key (shop_id) references shops);
```

2.4 SQL Scripts Used to Insert Values in the Tables

Insert into Shops

```
insert into shop values(05,'Malawi',8,'12-mar-89','Coffee',10,56);
insert into shop values(06,'Belgium',9,'13-apr-99','Tea',11,55);
insert into shop values(07,'Germany',8,'14-jun-89','Coffee',12,57);
insert into shop values(08,'Zambia',8,'12-jul-98','Banana',13,58);
insert into shop values(09,'Tanzania',8,'12-mar-68','Sugar',14,59);
```

Insert Employees

```
insert into employees values(57,'Hurry','109 Brook Hill rd','Manager',10000,'12-sep-99');
insert into employees values(58,'Anderson','11 Oxford Street','Assistant',5000,'12-jun-80');
insert into employees values(59,'Nedson','15 Hill side','Manager',15000,'15-sep-78');
```

Insert Products

```
insert into product values(20,'Tea','Green',46,'America',89,5000,1,00);
insert into product values(21,'Coffee','Strong',146,'Brazil',189,800,5,01);
insert into product values(22,'Sugar','Brown',546,'Malawi',50,2000,6,02);
insert into product values(23,'Coffee','Normal',746,'Scotland',40,800,7,03);
insert into product values(24,'Banana','Plantain',946,'Wales',15,5000,8,04);
```

Insert Supplier

```
insert into suppliers values(00,'Brown','23-mar-99','Coffee');
insert into suppliers values(01,'JOhn','25-mar-80','Tea');
insert into suppliers values(02,'AK','23-mar-70','Sugar');
insert into suppliers values(03,'Smith','21-sep-79','Banana');
insert into suppliers values(04,'Kenwood','11-jun-89','Coffee
```

Insert Report

```
Insert into
Values (100,’dollars’,15,’12-Dec-89’05);
Insert into
Values (101,’Pounds’,10,’15-Apr-99’06);
Insert into
Values (102,’Pounds’,20,’31-OCT-88’07);
Insert into
Values (103,’dollars’,18,’12-Jul-80’08);
```

Insert Country

```
insert into country values(10,'Malawi','Africa','21 Hebderson st');
insert into country values(11,'America','America','21 woolwich st');
insert into country values(12,'Brazil','S.America','45 victoria st');
insert into country values(13,'Zambia','Africa','21 Henderson st');
insert into country values(14,'S.Africa','Africa','Brookhill RD');
```

2.5 SQL Scripts for Several Queries

A. List of shops and their location

```
SQL> select
  2  shop_name, country_name,location
  3  from shops, country
  4  where
  5  country.country_id = shops.country_id;

SHOP_NAME      COUNTRY_NAME        LOCATION
-------------- ------------------- ---------
clarks         malawi              air port,
Malawi         malawi              air port,
Belgium        America             America
Germany        Brazil              S.America
Zambia         Zambia              Africa
Tanzania       S.Africa            Africa

6 rows selected.

SQL>
```

B. List of Employees Working in a Particular Shop

```
SQL> select
  2  employee_name
  3  from employees, shops
  4  where
  5  shops.shop_id = 1;

EMPLOYEE_NAME
--------------
kadzombe
Andy
Hurry
Nedson
Anderson
```

(Limited to one shop. A & can be used to prompt several entries)

C. Total number of Shops in Each Country

```
SQL> select shop_name
  2  from shops, country
  3  where country.country_id = shops.country_id;

SHOP_NAME
--------------
clarks
```

Malawi
Belgium
Germany
Zambia
Tanzania

6 rows selected.

SQL>

D. List of Employees Working for the Company for more that 12 Months

```
SQL> select employee_name
  2   from employees
  3   where employee_joining_date - sysdate >=

EMPLOYEE_NAME
--------------
kadzombe
Hurry
Nedson
Anderson

SQL>
```

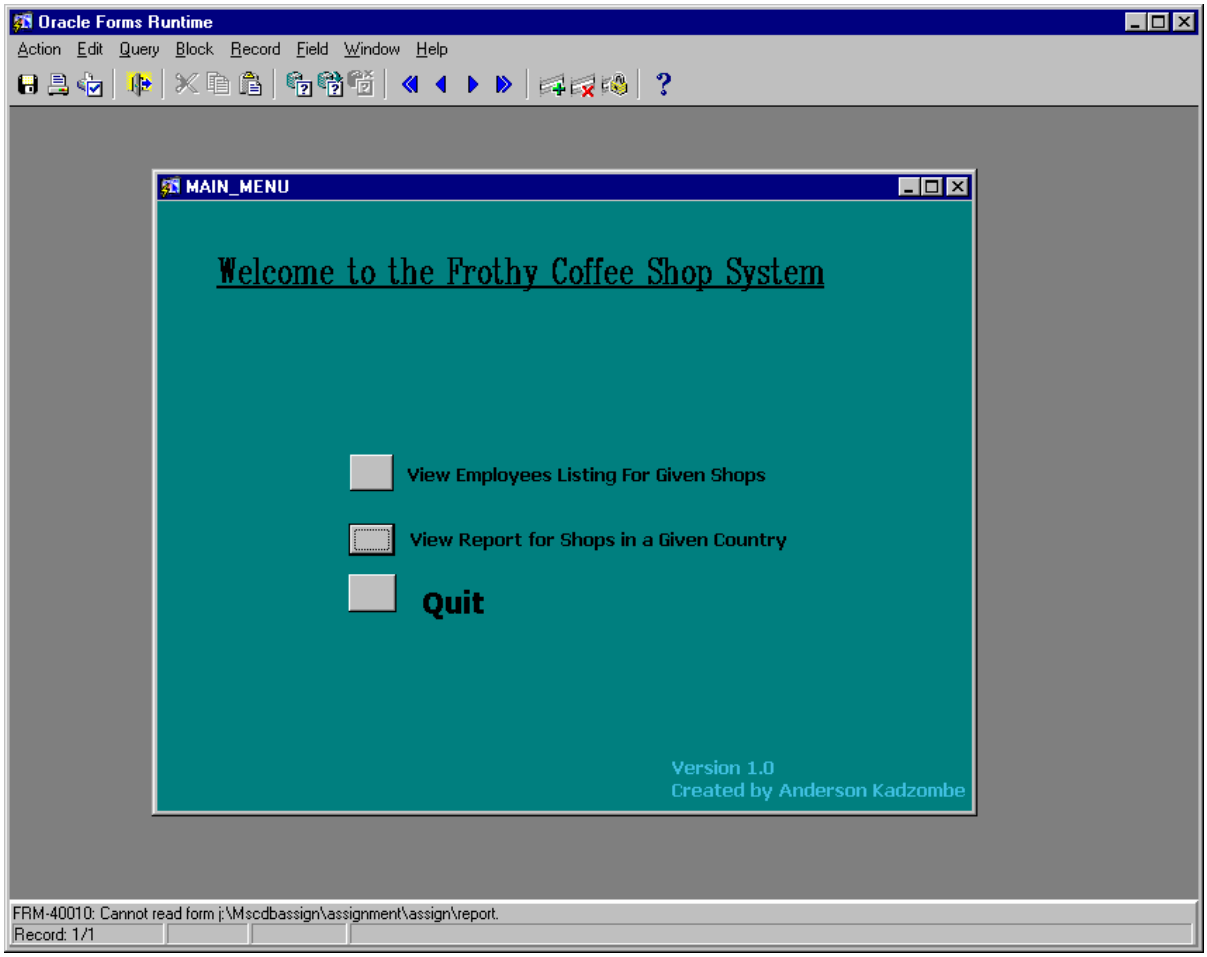
F. Average Taking of a given shop on a given day

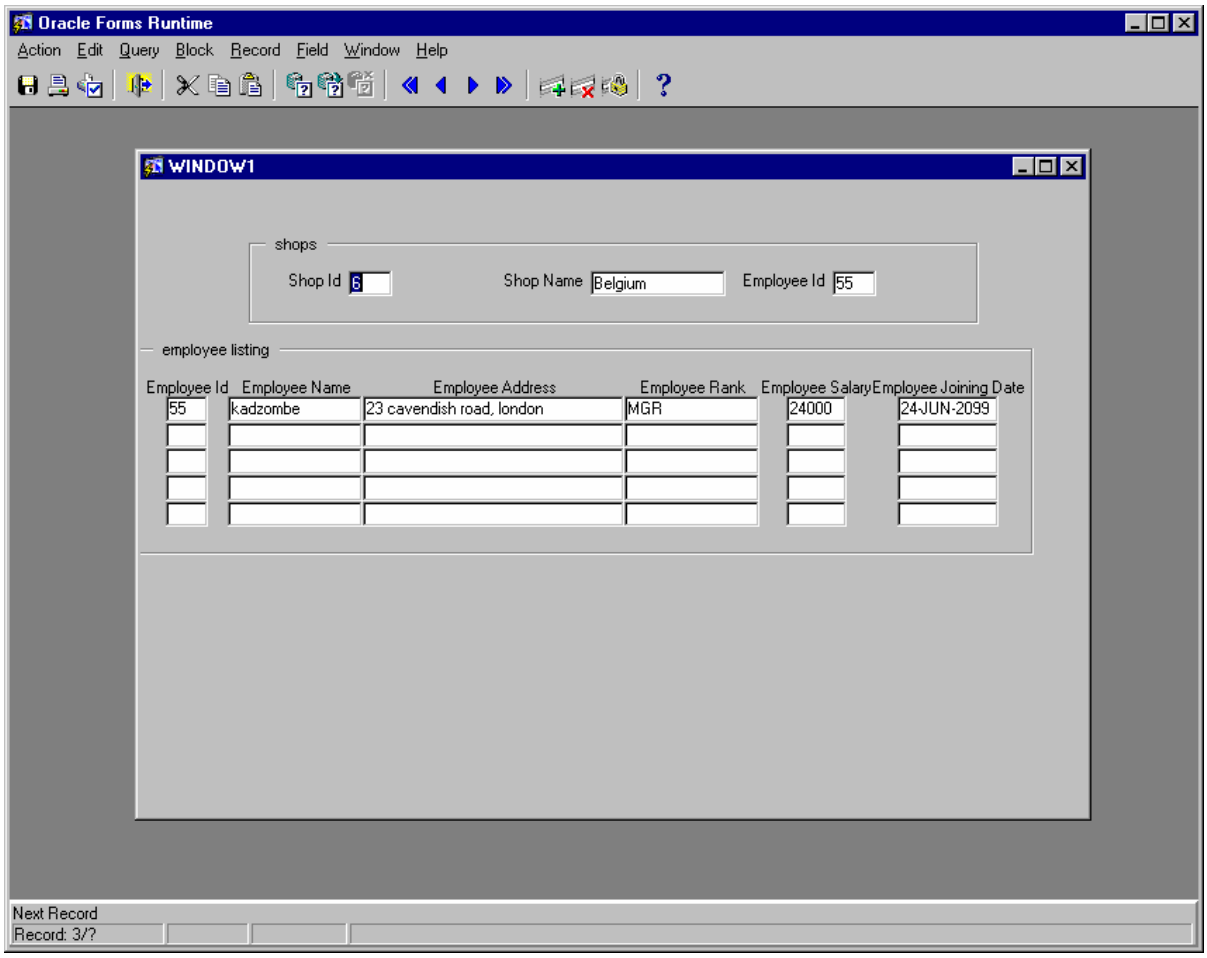
Totol_sales is a calculate field in the database so that it always has a value depending on the sales.

```
SQL> SELECT TOTAL_SALES FROM SHOPS, PRODUCT
  2  WHERE SHOPS.SHOP_ID = PRODUCT.SHOP_ID;

TOTAL_SALES
-----------
       5000
        800
       2000
        800
       5000
```

2.6 Form One Showing List of Employees Working in a Particular Shop




Oracle Forms Runtime
Action Edit Query Block Record Field Window Help
WINDOW1
shops
Shop Id 6
Shop Name Belgium
Employee Id 55
employee listing
Employee Id
Employee Name
Employee Address
Employee Rank
Employee Salary
Employee Joining Date
55
kadzombe
23 cavendish road, london
MGR
24000
24-JUN-2099
Next Record
Record: 3/?

2.7 Report One Showing All Shops in Each Country.