SD3042 Database Systems Development Mark Sheet

Marking Criteria   Date: November 2012

Assignment Group No. 9	Student Nos:	1008015	1235441		

Pts	Criteria	Included & Comments	Marks
a) ERD - 30%	ER Diagram - produced to an acceptable standard, showing Table names, Keys, and relationship descriptions. List of Assumptions		/30
b) use of PL/SQL 40%	***Indicate type for each requirement below.***		
	Stop double bookings / room check		/6
	Produce Customer bill + discount		/6
	ID low stock & reorder + E# + preferred W#		/6
	Inclusion & level of required PL/SQL: Trigger, Function, Procedure, Cursor		/10
	SQL: Question a)		
	SQL: Question b)		
	SQL: Question c)		
	Documentation and Presentation		
c) Doc 10% d) Teamwork & Pres. 20%	List of attributes, snap shot of each table, procedure, function, etc and appropriate syntax. Report comments stating what every procedure, function, anonymous block, triggers is intended to do		/10
	Clarity of Presentation Ability to answer questions and team work		/10
	Demonstration of PL/SQL coding		/10
		Total	/100

Marked by: Date:

University of East London

CERTIFICATE OF SPECIFIC LEARNING DIFFICULTY

……………………..

Student ID number: 1008015

Student: Mohammod Habibur Rahman

This certificate must be copied and put on the front of all assignments and examinations.

This Certificate is for your use only. Any modification or misuse is a breach of university regulations.

Assessors and Examiners:

This certifies that this student has been assessed as a person with specific learning difficulties. In marking, try to look beyond the poor language skills for knowledge, content and ideas, **unless written language and communication skills are essential learning outcomes.**

Students must be fully aware that any adjustments do not override prescribed professional standards required in their course.

For further information on marking guidelines please look on the DDAC website:

http://www.uel.ac.uk/studentservices/supportingyou/staff/index.htm

Signed: Eleanor Girt

Name:	**Eleanor Girt, Head of Disability/Dyslexia and Access Centre**
Date:	**26 November 2012**

Advanced Database System

Module code: SD3042

Institution: University Of East London (UEL)

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Index

Table of Contents

1.0 Case Study

In this assessment we have been told that a company called Natural Health Shop wants us to develop them a booking system for the company which was implemented as a relational database which contains some business logic functionality, as they were having problems making orders and were also double booking rooms. Therefore this company had approached us in good faith and has asked us to design and implement for them, a database. They don't want the whole system to take over the shop, but allow the employees not to double book rooms and also they can have a system where they can see how the exact condition of the stock so they don't need to order more than what is needed. Therefore we, as a team will extract the business rules of the company and present them a design as well as a demo implementation of the system.

1.1 Introduction

Our group will design and develop a database for a Natural Health Shop to help the staff to run the shop more efficiently.

In order to develop a useful system we will have to fully understand and keep in mind the business rules of the company, create an ER1, a logical model, where we can define the entities, attributes and relationships between them. After that the flow of work will proceed by converting the logical model to a relational model etc.

The DBMS (database management system), must be able to cope with some of the questions which are important to the business.

We will be using Oracle DBMS as the platform to develop our database management system for the company.

Before we start developing this database management system we must think of what each person must do. Once everybody has been assigned his part of work, we will then start to build the DBMS one part at a time. We will also make sure that when we are creating the DBMS we are taking into consideration that the DBMS can carry out some simple tasks which the business needs from the system. Oracle will be used in this case to provide the database management system (DBMS) which will help us into programming the business logic using PL/SQL.

We as a group will be working hard into developing consistent, scalable and efficient system to help the staff to keep the business running. We will also create some close to reality sample data in order to run business scenarios and investigate if the system can really respond to the company's needs.

1.3 ER1

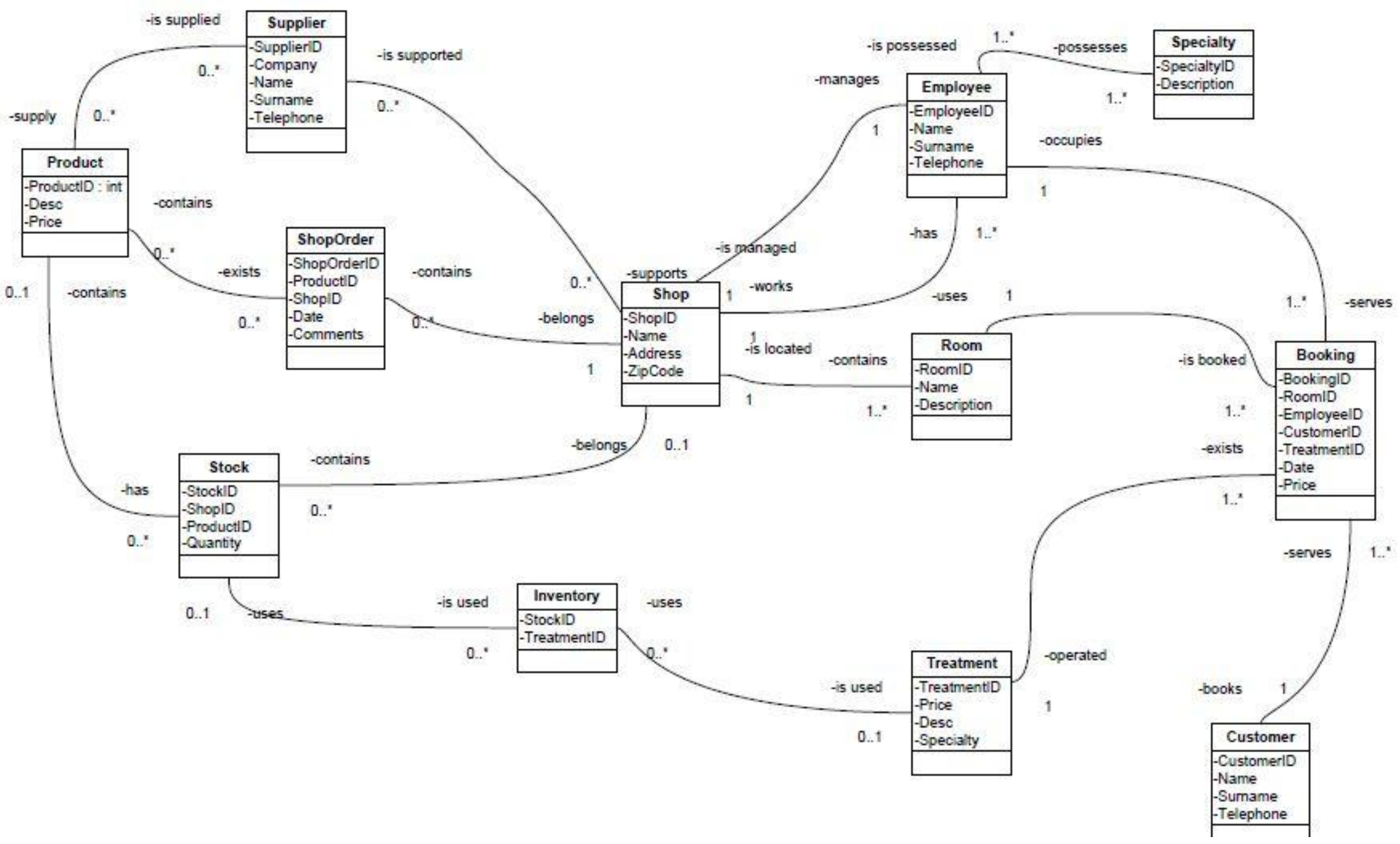


Figure 1: ER1

This is the ER1 which we developed and demonstrates the logical model of the company.

The relationships between entities can be fully demonstrated using 1..* (one to many), *..*(Many to Many) or 1..1(One to One) relationships.

If we forward engineer the logical model appearing in ERD1, along with some modifications, we will get the ERD2.

A brief description of the relationships is given below:

(1) Each **Product** *is supplied* by many **Suppliers**
Each **Supplier** *supplies* many **Products**

(2) Each **Supplier** *supports* many **Shops**
Each **Shop** *is supported* by many **Suppliers**

(3) Each **Product** *exists* in many **ShopOrders**
Each **ShopOrder** *contains* many **Products**

(4) Each **ShopOrder** *belongs* to one **Shop**
Each **Shop** *contains* many **ShopOrders**.

(5) Each **Product** *has* many **Stocks**
Each **Stock** *contains* one **Product**

(6) Each **Stock** *belongs* to one **Shop**
Each **Shop** *contains* many **Stock items**

(7) Each **Stock** *is used* by many **Inventory items**
Each **Inventory** *uses* one **Stock item**

(8) Each **Inventory** *is used* by one **Treatment**
Each **Treatment** *uses* many **Inventory items**

(9) Each **Shop** *contains* many **Rooms**
Each **Room** *is located* at one **Shop**

(10) Each **Shop** *has* many **Employees**
Each **Employee** *works* in one **Shop**

(11) Each **Shop** *manages* many **Employees**
Each **Employee** *is managed* by one **Shop**
Each **Shop** *is managed* by one **Employee**

(12) Each **Employee** possesses many **Specialties**
Each **Specialty** can be possessed by many **Employees**

(13) Each **Employee** *serves* on many **Bookings**
Each **Booking** *is served* by one **Employee**

(14) Each **Room** *is booked* by many **Bookings**
Each **Booking** *uses* one **Room**

(15) Each **Treatment** *exists* in many **Bookings**
Each **Booking** *operates* one **Treatment**

(16) Each **Customer** *is served* in many **Bookings**
Each **Booking** *is booked* by one **Customer**

Except from the relationship descriptions that include our assumptions as well as our client's answers to our questions, we should also state that bookings can be only made at an exact hour, like 2 o'clock, not 2:15, in order for the booking system to behave smoothly.

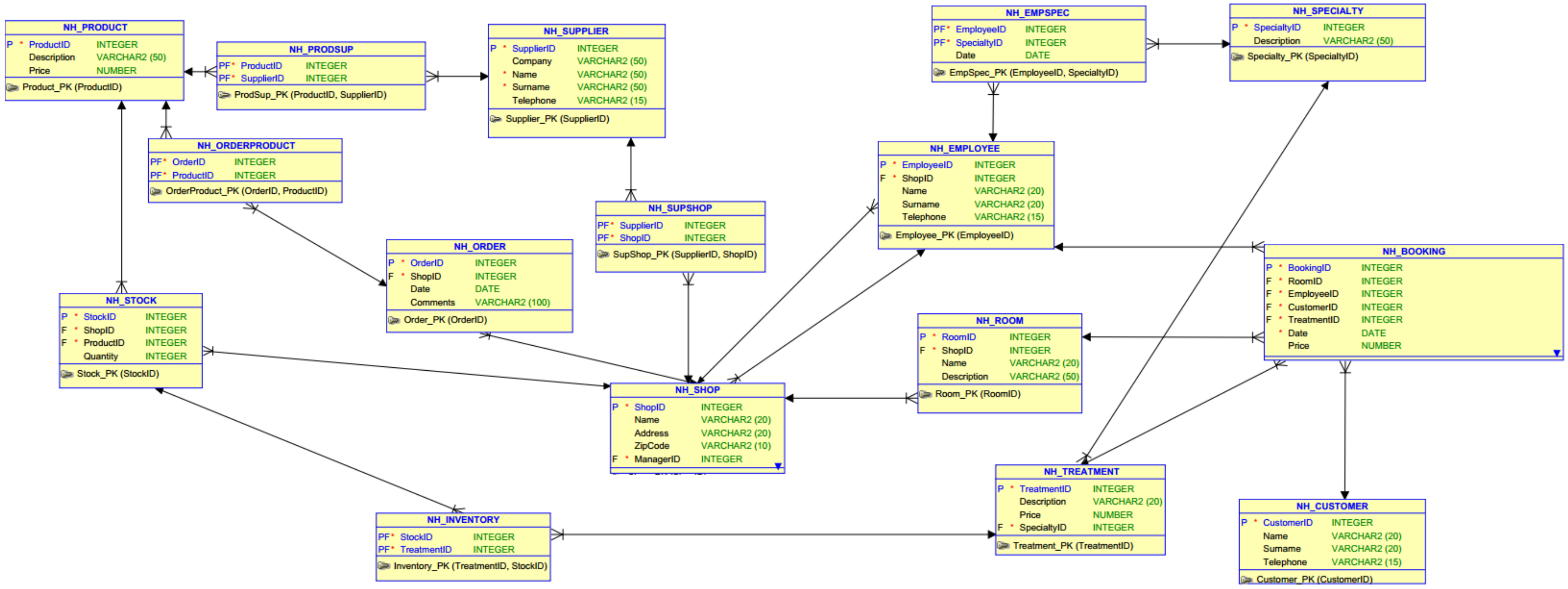
1.2 Database Modelling and Implementation:

Main entities of Natural Health Shop

- Product
- Supplier
- ShopOrder
- Stock
- Shop
- Inventory
- Employee
- Room
- Treatment
- Speciality
- Booking
- Customers

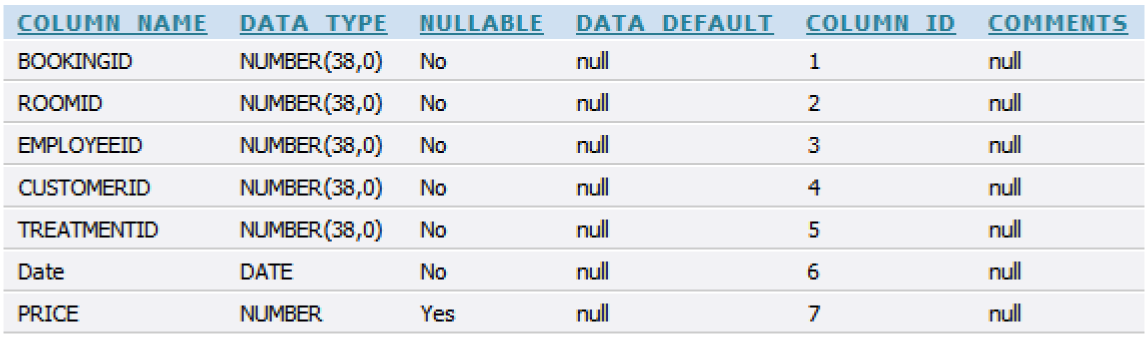
These are our 12 entities for the company which we think they are needed after reading the company's requirements.

1.4 ER2


NH_PRODUCT
P * ProductID INTEGER
Description VARCHAR2 (50)
Price NUMBER
Product_PK (ProductID)
NH_PRODSUP
PF* ProductID INTEGER
PF* SupplierID INTEGER
ProdSup_PK (ProductID, SupplierID)
NH_SUPPLIER
P * SupplierID INTEGER
Company VARCHAR2 (50)
* Name VARCHAR2 (50)
* Surname VARCHAR2 (50)
Telephone VARCHAR2 (15)
Supplier_PK (SupplierID)
NH_EMPSPEC
PF* EmployeeID INTEGER
PF* SpecialtyID INTEGER
Date DATE
EmpSpec_PK (EmployeeID, SpecialtyID)
NH_SPECIALTY
P * SpecialtyID INTEGER
Description VARCHAR2 (50)
Specialty_PK (SpecialtyID)
NH_ORDERPRODUCT
PF* OrderID INTEGER
PF* ProductID INTEGER
OrderProduct_PK (OrderID, ProductID)
NH_EMPLOYEE
P * EmployeeID INTEGER
F * ShopID INTEGER
Name VARCHAR2 (20)
Surname VARCHAR2 (20)
Telephone VARCHAR2 (15)
Employee_PK (EmployeeID)
NH_SUPSHOP
PF* SupplierID INTEGER
PF* ShopID INTEGER
SupShop_PK (SupplierID, ShopID)
NH_ORDER
P * OrderID INTEGER
F * ShopID INTEGER
Date DATE
Comments VARCHAR2 (100)
Order_PK (OrderID)
NH_BOOKING
P * BookingID INTEGER
F * RoomID INTEGER
F * EmployeeID INTEGER
F * CustomerID INTEGER
F * TreatmentID INTEGER
* Date DATE
Price NUMBER
NH_STOCK
P * StockID INTEGER
F * ShopID INTEGER
F * ProductID INTEGER
Quantity INTEGER
Stock_PK (StockID)
NH_ROOM
P * RoomID INTEGER
F * ShopID INTEGER
Name VARCHAR2 (20)
Description VARCHAR2 (50)
Room_PK (RoomID)
NH_SHOP
P * ShopID INTEGER
Name VARCHAR2 (20)
Address VARCHAR2 (20)
ZipCode VARCHAR2 (10)
F * ManagerID INTEGER
NH_TREATMENT
P * TreatmentID INTEGER
Description VARCHAR2 (20)
Price NUMBER
F * SpecialtyID INTEGER
Treatment_PK (TreatmentID)
NH_CUSTOMER
P * CustomerID INTEGER
Name VARCHAR2 (20)
Surname VARCHAR2 (20)
Telephone VARCHAR2 (15)
Customer_PK (CustomerID)
NH_INVENTORY
PF* StockID INTEGER
PF* TreatmentID INTEGER
Inventory_PK (TreatmentID, StockID)

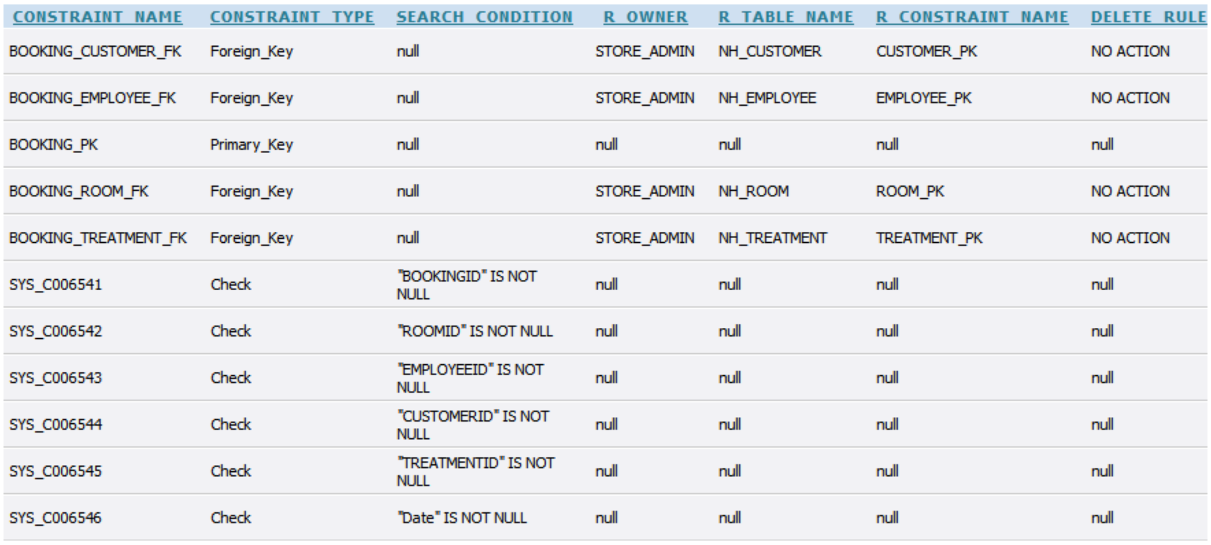
1.5 Listing of all the tables

NH_BOOKING Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
BOOKINGID	NUMBER(38,0)	No	null	1	null
ROOMID	NUMBER(38,0)	No	null	2	null
EMPLOYEEID	NUMBER(38,0)	No	null	3	null
CUSTOMERID	NUMBER(38,0)	No	null	4	null
TREATMENTID	NUMBER(38,0)	No	null	5	null
Date	DATE	No	null	6	null
PRICE	NUMBER	Yes	null	7	null

NH_BOOKING Table Constraints



CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
BOOKING_CUSTOMER_FK	Foreign_Key	null	STORE_ADMIN	NH_CUSTOMER	CUSTOMER_PK	NO ACTION
BOOKING_EMPLOYEE_FK	Foreign_Key	null	STORE_ADMIN	NH_EMPLOYEE	EMPLOYEE_PK	NO ACTION
BOOKING_PK	Primary_Key	null	null	null	null	null
BOOKING_ROOM_FK	Foreign_Key	null	STORE_ADMIN	NH_ROOM	ROOM_PK	NO ACTION
BOOKING_TREATMENT_FK	Foreign_Key	null	STORE_ADMIN	NH_TREATMENT	TREATMENT_PK	NO ACTION
SYS_C006541	Check	"BOOKINGID" IS NOT NULL	null	null	null	null
SYS_C006542	Check	"ROOMID" IS NOT NULL	null	null	null	null
SYS_C006543	Check	"EMPLOYEEID" IS NOT NULL	null	null	null	null
SYS_C006544	Check	"CUSTOMERID" IS NOT NULL	null	null	null	null
SYS_C006545	Check	"TREATMENTID" IS NOT NULL	null	null	null	null
SYS_C006546	Check	"Date" IS NOT NULL	null	null	null	null

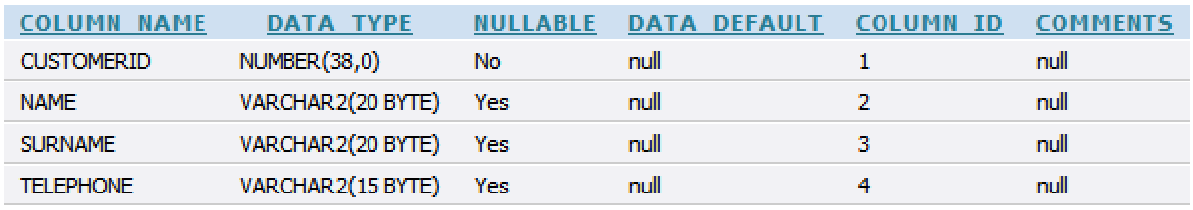
NH_BOOKING Creation, Population and Constraint Script

```
CREATE TABLE NH_BOOKING
    (
     BookingID INTEGER  NOT NULL ,
     RoomID INTEGER  NOT NULL ,
     EmployeeID INTEGER  NOT NULL ,
     CustomerID INTEGER  NOT NULL ,
     TreatmentID INTEGER  NOT NULL ,
     "Date" DATE  NOT NULL ,
     Price NUMBER
    )
;


ALTER TABLE NH_BOOKING
```

```
    ADD CONSTRAINT Booking_PK PRIMARY KEY ( BookingID ) ;

/* BookingID INT, RoomID INT, EmployeeID INT, CustomerID INT,
TreatmentID INT, Date DATE, Price DECIMAL */
INSERT INTO NH_BOOKING VALUES
(1, 1, 1, 1, 1, to_date('04/07/2010:12:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 50.2);

INSERT INTO NH_BOOKING VALUES
(2, 11, 12, 14, 11, to_date('04/07/2010:01:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 45);
INSERT INTO NH_BOOKING VALUES
(3, 4, 2, 4, 6, to_date('04/07/2010:02:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 70);
INSERT INTO NH_BOOKING VALUES
(4, 7, 4, 6, 8, to_date('04/07/2010:03:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 85);
INSERT INTO NH_BOOKING VALUES
(5, 2, 10, 5, 9, to_date('05/07/2010:12:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 90);
INSERT INTO NH_BOOKING VALUES
(6, 4, 9, 3, 5, to_date('06/07/2010:12:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 54);
INSERT INTO NH_BOOKING VALUES
(7, 12, 5, 7, 3, to_date('08/07/2010:12:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 44);
INSERT INTO NH_BOOKING VALUES
(8, 13, 3, 8, 6, to_date('25/09/2011:01:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 40);
INSERT INTO NH_BOOKING VALUES
(9, 11, 1, 2, 12, to_date('19/07/2012:05:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'),  39.99);
INSERT INTO NH_BOOKING VALUES
(10, 10, 14, 8, 6, to_date('20/10/2012:07:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 49.99);
INSERT INTO NH_BOOKING VALUES
(11, 1, 11, 5, 8, to_date('17/07/2012:08:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 59.99);
INSERT INTO NH_BOOKING VALUES
(12, 4, 5, 11, 13, to_date('17/07/2012:07:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 43.3);
INSERT INTO NH_BOOKING VALUES
(13, 7, 3, 10, 12, to_date('17/07/2012:06:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 117);
INSERT INTO NH_BOOKING VALUES
(14, 8, 7, 12, 10, to_date('18/09/2010:06:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 65.4);
INSERT INTO NH_BOOKING VALUES
(15, 2, 8, 14, 5, to_date('12/12/2011:03:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 23.6);
INSERT INTO NH_BOOKING VALUES
(16, 7, 2, 4, 6, to_date('14/09/2010:12:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 32.3);
INSERT INTO NH_BOOKING VALUES
(17, 4, 4, 2, 2, to_date('04/08/2012:02:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 56.7);
```

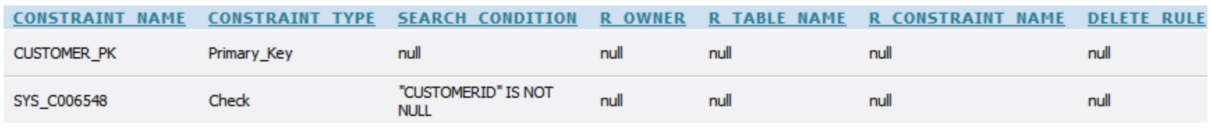
```
INSERT INTO NH_BOOKING VALUES
(18, 12, 11, 8, 7, to_date('16/07/2010:10:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 55);
INSERT INTO NH_BOOKING VALUES
(19, 13, 6, 15, 1, to_date('16/07/2010:09:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 42);
INSERT INTO NH_BOOKING VALUES
(20, 1, 3, 1, 12, to_date('20/07/2010:02:00:00PM',
'dd/mm/yyyy:hh:mi:ssam'), 49.99);

ALTER TABLE NH_BOOKING
    ADD CONSTRAINT Booking_Customer_FK FOREIGN KEY
    (
     CustomerID
    )
    REFERENCES NH_CUSTOMER
    (
     CustomerID
    )
;


ALTER TABLE NH_BOOKING
    ADD CONSTRAINT Booking_Employee_FK FOREIGN KEY
    (
     EmployeeID
    )
    REFERENCES NH_EMPLOYEE
    (
     EmployeeID
    )
;


ALTER TABLE NH_BOOKING
    ADD CONSTRAINT Booking_Room_FK FOREIGN KEY
    (
     RoomID
    )
    REFERENCES NH_ROOM
    (
     RoomID
    )
;


ALTER TABLE NH_BOOKING
    ADD CONSTRAINT Booking_Treatment_FK FOREIGN KEY
    (
     TreatmentID
    )
    REFERENCES NH_TREATMENT
    (
     TreatmentID
    )
;
```

NH_CUSTOMER Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
CUSTOMERID	NUMBER(38,0)	No	null	1	null
NAME	VARCHAR2(20 BYTE)	Yes	null	2	null
SURNAME	VARCHAR2(20 BYTE)	Yes	null	3	null
TELEPHONE	VARCHAR2(15 BYTE)	Yes	null	4	null

NH_CUSTOMER Table Constraints

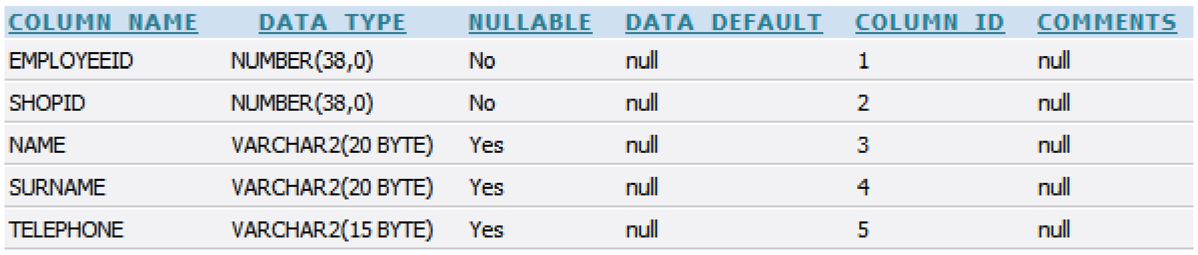


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
CUSTOMER_PK	Primary_Key	null	null	null	null	null
SYS_C006548	Check	"CUSTOMERID" IS NOT NULL	null	null	null	null

NH_CUSTOMER Creation, Population and Constraint Script

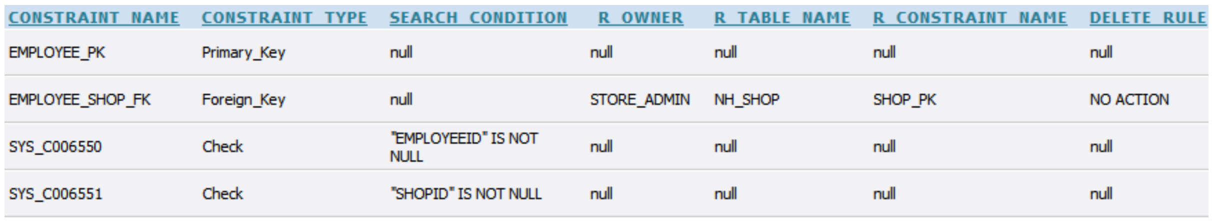
```
CREATE TABLE NH_CUSTOMER
     (
      CustomerID INTEGER  NOT NULL ,
      Name VARCHAR2 (20) ,
      Surname VARCHAR2 (20) ,
      Telephone VARCHAR2 (15)
     )
;

ALTER TABLE NH_CUSTOMER
    ADD CONSTRAINT Customer_PK PRIMARY KEY ( CustomerID ) ;

/* CustomerID INT, Name VARCHAR, Surname VARCHAR, Telephone VARCHAR
*/
INSERT INTO NH_CUSTOMER VALUES
(1, 'aCustomerName', 'aCustomerSurname', '123456789');

INSERT INTO NH_CUSTOMER VALUES (2, 'aCustomerName2',
'aCustomerSurname3', '123456789');
INSERT INTO NH_CUSTOMER VALUES (3, 'Jack', 'New', '02089874563');
INSERT INTO NH_CUSTOMER VALUES (4, 'Ryan', 'ken', '0207589989');
INSERT INTO NH_CUSTOMER VALUES (5, ' Kai', 'roon', '02087414141');
INSERT INTO NH_CUSTOMER VALUES (6, 'rick', 'nick', '02082020232');
INSERT INTO NH_CUSTOMER VALUES (7, 'Adam', 'Ali', '0205255698');
INSERT INTO NH_CUSTOMER VALUES (8, 'Ray', 'milton', '02085478745');
INSERT INTO NH_CUSTOMER VALUES (9, 'milly', 'toof', '0208547457');
INSERT INTO NH_CUSTOMER VALUES (10, 'Brown ', 'Joe', '02087414141');
INSERT INTO NH_CUSTOMER VALUES (11, 'Lloyd', 'bank', '0208578785');
INSERT INTO NH_CUSTOMER VALUES (12, 'Fred', 'Eil', '02085488878');
INSERT INTO NH_CUSTOMER VALUES (13, 'Freddie', 'Elliot',
'02085488878');
INSERT INTO NH_CUSTOMER VALUES (14, 'Bill', 'bush', '02085555893');
INSERT INTO NH_CUSTOMER VALUES (15, 'red ', 'coe', '02085412569');
INSERT INTO NH_CUSTOMER VALUES (16, 'Web', 'Ref', '02085411012');
```

NH_EMPLOYEE Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
EMPLOYEEID	NUMBER(38,0)	No	null	1	null
SHOPID	NUMBER(38,0)	No	null	2	null
NAME	VARCHAR2(20 BYTE)	Yes	null	3	null
SURNAME	VARCHAR2(20 BYTE)	Yes	null	4	null
TELEPHONE	VARCHAR2(15 BYTE)	Yes	null	5	null

NH_EMPLOYEE Table Constraints



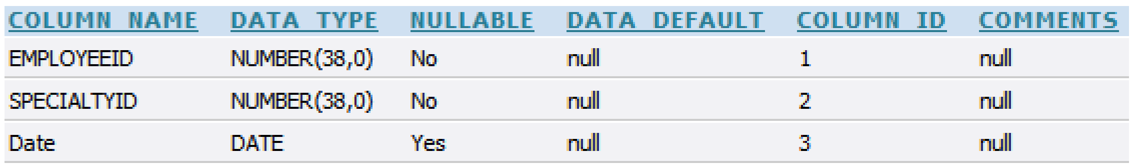
CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
EMPLOYEE_PK	Primary_Key	null	null	null	null	null
EMPLOYEE_SHOP_FK	Foreign_Key	null	STORE_ADMIN	NH_SHOP	SHOP_PK	NO ACTION
SYS_C006550	Check	"EMPLOYEEID" IS NOT NULL	null	null	null	null
SYS_C006551	Check	"SHOPID" IS NOT NULL	null	null	null	null

NH_EMPLOYEE Creation, Population and Constraint Script

```
CREATE TABLE NH_EMPLOYEE
    (
     EmployeeID INTEGER  NOT NULL ,
     ShopID INTEGER  NOT NULL ,
     Name VARCHAR2 (20) ,
     Surname VARCHAR2 (20) ,
     Telephone VARCHAR2 (15)
    )
;

ALTER TABLE NH_EMPLOYEE
    ADD CONSTRAINT Employee_PK PRIMARY KEY ( EmployeeID ) ;

/* EmployeeID INT, ShopID INT, Name VARCHAR, Surname VARCHAR,
Telephone VARCHAR */
INSERT INTO NH_EMPLOYEE VALUES
(1, 1, 'anEmployeeName', 'anEmployeeSurname', '123456789');

INSERT INTO NH_EMPLOYEE VALUES (2, 1, 'Manager', 'Badass',
'123456789');
INSERT INTO NH_EMPLOYEE VALUES (3,1, 'Employee', 'Tool',
'123456789');
INSERT INTO NH_EMPLOYEE VALUES (4, 2, 'Foreigner', 'nbd wants him',
'123456789');
INSERT INTO NH_EMPLOYEE VALUES (5, 2, 'Dwayne','Johnson',
'02075122365');
INSERT INTO NH_EMPLOYEE VALUES (6, 2, 'Rey','Riley',
'012254589651');
INSERT INTO NH_EMPLOYEE VALUES (7, 2, 'Kelly','Kelly',
'01548596321');
INSERT INTO NH_EMPLOYEE VALUES (8, 3, 'Zack','Rider',
'020714788741');
```

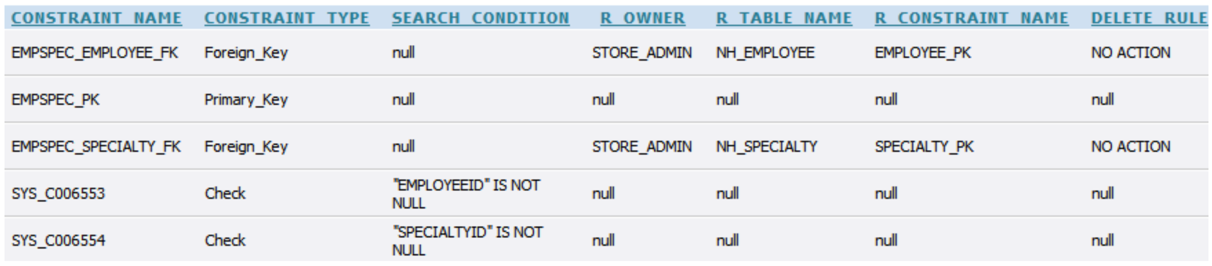
```
INSERT INTO NH_EMPLOYEE VALUES (9, 3, 'Alicia','Fox',
'010136987456');
INSERT INTO NH_EMPLOYEE VALUES (10, 4, 'Mohammed', 'Ali',
'020845554874');
INSERT INTO NH_EMPLOYEE VALUES (11, 5, 'Jay','Rich','012202012354');
INSERT INTO NH_EMPLOYEE VALUES (12, 5, 'Ben','Cole','020741113269');
INSERT INTO NH_EMPLOYEE VALUES (13, 5, 'Steve', 'Law',
'020741113269');
INSERT INTO NH_EMPLOYEE VALUES (14, 6, 'Rock', 'Ross',
'020741113269');
INSERT INTO NH_EMPLOYEE VALUES (15, 7, 'Pat', 'Heart',
'020741113269');
```

NH_EMPSPEC Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
EMPLOYEEID	NUMBER(38,0)	No	null	1	null
SPECIALTYID	NUMBER(38,0)	No	null	2	null
Date	DATE	Yes	null	3	null

NH_EMPSPEC Table Constraints

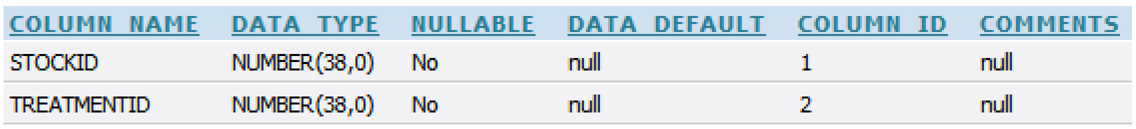


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
EMPSPEC_EMPLOYEE_FK	Foreign_Key	null	STORE_ADMIN	NH_EMPLOYEE	EMPLOYEE_PK	NO ACTION
EMPSPEC_PK	Primary_Key	null	null	null	null	null
EMPSPEC_SPECIALTY_FK	Foreign_Key	null	STORE_ADMIN	NH_SPECIALTY	SPECIALTY_PK	NO ACTION
SYS_C006553	Check	"EMPLOYEEID" IS NOT NULL	null	null	null	null
SYS_C006554	Check	"SPECIALTYID" IS NOT NULL	null	null	null	null

```
NH_EMPSPEC Creation, Population and Constraint Script

CREATE TABLE NH_EMPSPEC
     (
      EmployeeID INTEGER  NOT NULL ,
      SpecialtyID INTEGER  NOT NULL ,
      "Date" DATE
     )
;


ALTER TABLE NH_EMPSPEC
    ADD CONSTRAINT EmpSpec_PK PRIMARY KEY ( EmployeeID, SpecialtyID
) ;

/* EmployeeID INT, SpecialtyID INT, Date DATE */
INSERT INTO NH_EMPSPEC VALUES
(1, 1, '12-DEC-2011');

INSERT INTO NH_EMPSPEC VALUES (2, 1, '18-NOV-2011');
INSERT INTO NH_EMPSPEC VALUES (5, 4, '04-FEB-2012');
INSERT INTO NH_EMPSPEC VALUES (6, 10, '10-MAR-2012');
INSERT INTO NH_EMPSPEC VALUES (9, 8, '26-APR-2012');
INSERT INTO NH_EMPSPEC VALUES (6, 7, '27-OCT-2012');
INSERT INTO NH_EMPSPEC VALUES (5, 3, '23-NOV-2011');
INSERT INTO NH_EMPSPEC VALUES (7, 5, '12-OCT-2010');
INSERT INTO NH_EMPSPEC VALUES (3, 4, '05-JUN-2012');
INSERT INTO NH_EMPSPEC VALUES (4, 3, '12-DEC-2011');
INSERT INTO NH_EMPSPEC VALUES (5, 5, '12-NOV-2012');
INSERT INTO NH_EMPSPEC VALUES (6, 6, '12-MAR-2009');
INSERT INTO NH_EMPSPEC VALUES (9, 9, '15-APR-2008');
INSERT INTO NH_EMPSPEC VALUES (9, 3, '11-DEC-2010');
INSERT INTO NH_EMPSPEC VALUES (5, 2, '20-DEC-2008');
INSERT INTO NH_EMPSPEC VALUES (7, 7, '25-JAN-2011');
INSERT INTO NH_EMPSPEC VALUES (6, 3, '27-MAR-2011');
INSERT INTO NH_EMPSPEC VALUES (4, 8, '12-DEC-2007');
```

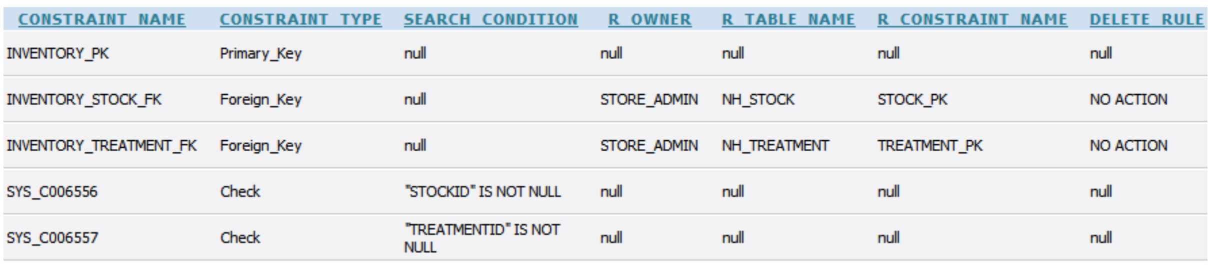
```
ALTER TABLE NH_EMPSPEC
    ADD CONSTRAINT EmpSpec_Employee_FK FOREIGN KEY
    (
     EmployeeID
    )
    REFERENCES NH_EMPLOYEE
    (
     EmployeeID
    )
;


ALTER TABLE NH_EMPSPEC
    ADD CONSTRAINT EmpSpec_Specialty_FK FOREIGN KEY
    (
     SpecialtyID
    )
    REFERENCES NH_SPECIALTY
    (
     SpecialtyID
    )
;
```

NH_INVENTORY Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
STOCKID	NUMBER(38,0)	No	null	1	null
TREATMENTID	NUMBER(38,0)	No	null	2	null

NH_INVENTORY Table Constraints

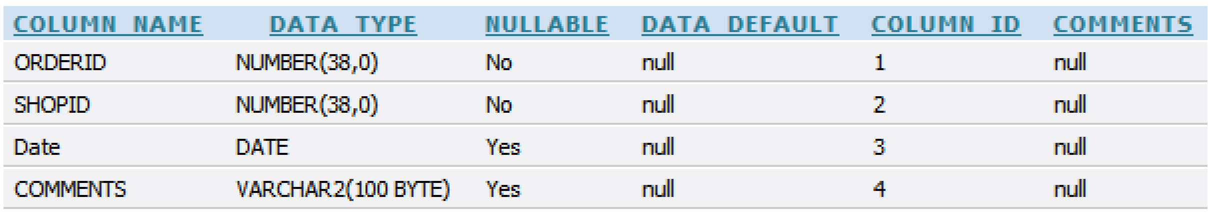


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
INVENTORY_PK	Primary_Key	null	null	null	null	null
INVENTORY_STOCK_FK	Foreign_Key	null	STORE_ADMIN	NH_STOCK	STOCK_PK	NO ACTION
INVENTORY_TREATMENT_FK	Foreign_Key	null	STORE_ADMIN	NH_TREATMENT	TREATMENT_PK	NO ACTION
SYS_C006556	Check	"STOCKID" IS NOT NULL	null	null	null	null
SYS_C006557	Check	"TREATMENTID" IS NOT NULL	null	null	null	null

NH_INVENTORY Table Creation, Population and Constraint Script

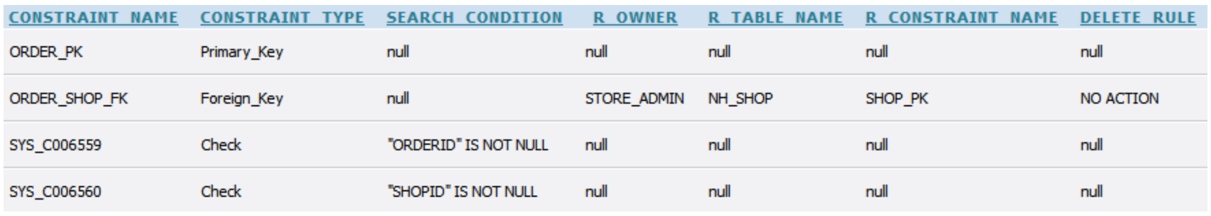
```
CREATE TABLE NH_INVENTORY
    (
     StockID INTEGER  NOT NULL ,
     TreatmentID INTEGER  NOT NULL
    )
;

ALTER TABLE NH_INVENTORY
    ADD CONSTRAINT Inventory_PK PRIMARY KEY ( TreatmentID, StockID )
;

/* StockID INT, TreatmentID INT */
INSERT INTO NH_INVENTORY VALUES
(1, 1);

INSERT INTO NH_INVENTORY VALUES (2, 1);
INSERT INTO NH_INVENTORY VALUES (3, 4);
INSERT INTO NH_INVENTORY VALUES (4, 2);
INSERT INTO NH_INVENTORY VALUES (5, 12);
INSERT INTO NH_INVENTORY VALUES (6, 9);
INSERT INTO NH_INVENTORY VALUES (7, 8);
INSERT INTO NH_INVENTORY VALUES (8, 6);
INSERT INTO NH_INVENTORY VALUES (9, 4);
INSERT INTO NH_INVENTORY VALUES (10, 3);
INSERT INTO NH_INVENTORY VALUES (11, 3);
INSERT INTO NH_INVENTORY VALUES (12, 1);

ALTER TABLE NH_INVENTORY
    ADD CONSTRAINT Inventory_Stock_FK FOREIGN KEY
    (
     StockID
    )
    REFERENCES NH_STOCK
    (
     StockID
    )
;


ALTER TABLE NH_INVENTORY
    ADD CONSTRAINT Inventory_Treatment_FK FOREIGN KEY
    (
     TreatmentID
    )
    REFERENCES NH_TREATMENT
    (
     TreatmentID
    )
;
```

NH_ORDER Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
ORDERID	NUMBER(38,0)	No	null	1	null
SHOPID	NUMBER(38,0)	No	null	2	null
Date	DATE	Yes	null	3	null
COMMENTS	VARCHAR2(100 BYTE)	Yes	null	4	null

NH_ORDER Table Constraints

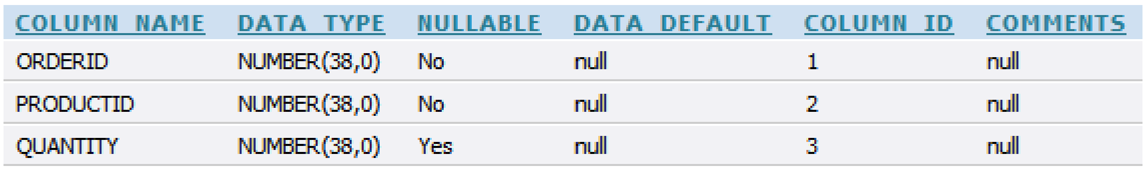


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
ORDER_PK	Primary_Key	null	null	null	null	null
ORDER_SHOP_FK	Foreign_Key	null	STORE_ADMIN	NH_SHOP	SHOP_PK	NO ACTION
SYS_C006559	Check	"ORDERID" IS NOT NULL	null	null	null	null
SYS_C006560	Check	"SHOPID" IS NOT NULL	null	null	null	null

NH_ORDER Table Creation, Population and Constraint Script

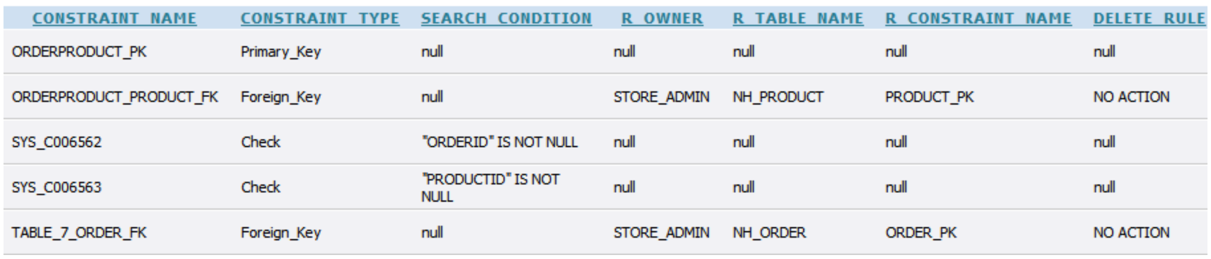
```
CREATE TABLE NH_ORDER
    (
     OrderID INTEGER  NOT NULL ,
     ShopID INTEGER  NOT NULL ,
     "Date" DATE ,
     Comments VARCHAR2 (100)
    )
;

ALTER TABLE NH_ORDER
    ADD CONSTRAINT Order_PK PRIMARY KEY ( OrderID ) ;


/* OrderID INT, ShopID INT, Date, DATE, Comments VARCHAR */
INSERT INTO NH_ORDER VALUES
(1, 1, '13-JUN-2000', 'Delivery before July please');

INSERT INTO NH_ORDER VALUES (2, 1, '22-FEB-2012', 'dont make a mess
like last time');
INSERT INTO NH_ORDER VALUES (3, 3, '22-DEC-2011', 'URGENT! BEFORE
CHRISTMAS!');
INSERT INTO NH_ORDER VALUES (4, 3, '23-DEC-2011', 'complementary to
orderID 3');
INSERT INTO NH_ORDER VALUES (5, 4, '23-FEB-2011', 'one package
broken last time, be careful');
INSERT INTO NH_ORDER VALUES (6, 6, '1-MAR-2011', 'before 10/3/2011
please');
INSERT INTO NH_ORDER VALUES (7, 7, '24-MAR-2011', 'Its a national
holiday in Greece tomorrow, we will have visitors');
INSERT INTO NH_ORDER VALUES (8, 4, '04-APR-2011', 'Stock Refresh');
INSERT INTO NH_ORDER VALUES (9, 6, '05-MAY-2011', 'Ordinary
Scheduled');
INSERT INTO NH_ORDER VALUES (10, 2, '04-JUN-2011', 'no comment');
INSERT INTO NH_ORDER VALUES (11, 4, '07-JUL-2011', 'mid summer stock
refreshment');
INSERT INTO NH_ORDER VALUES (12, 7, '08-AUG-2011', 'just in case');

ALTER TABLE NH_ORDER
    ADD CONSTRAINT Order_Shop_FK FOREIGN KEY
    (
     ShopID
    )
    REFERENCES NH_SHOP
    (
     ShopID
    )
;
```

NH_ORDERPRODUCT Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
ORDERID	NUMBER(38,0)	No	null	1	null
PRODUCTID	NUMBER(38,0)	No	null	2	null
QUANTITY	NUMBER(38,0)	Yes	null	3	null

NH_ORDERPRODUCT Table Constraints



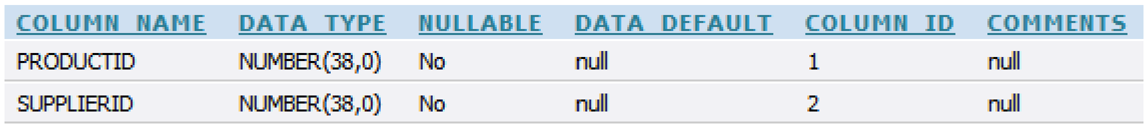
CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
ORDERPRODUCT_PK	Primary_Key	null	null	null	null	null
ORDERPRODUCT_PRODUCT_FK	Foreign_Key	null	STORE_ADMIN	NH_PRODUCT	PRODUCT_PK	NO ACTION
SYS_C006562	Check	"ORDERID" IS NOT NULL	null	null	null	null
SYS_C006563	Check	"PRODUCTID" IS NOT NULL	null	null	null	null
TABLE_7_ORDER_FK	Foreign_Key	null	STORE_ADMIN	NH_ORDER	ORDER_PK	NO ACTION

NH_ORDERPRODUCT Table Creation, Population and Constraint Script

```
CREATE TABLE NH_ORDERPRODUCT
    (
     OrderID INTEGER  NOT NULL ,
     ProductID INTEGER  NOT NULL ,
     Quantity INTEGER
    )
;

ALTER TABLE NH_ORDERPRODUCT
    ADD CONSTRAINT OrderProduct_PK PRIMARY KEY ( OrderID, ProductID
) ;

/* OrderID INT, ProductID INT, Quantity INT*/
INSERT INTO NH_ORDERPRODUCT VALUES
(1, 1, 3);

INSERT INTO NH_ORDERPRODUCT VALUES (12, 15, 5);
INSERT INTO NH_ORDERPRODUCT VALUES (11, 13, 6);
INSERT INTO NH_ORDERPRODUCT VALUES (1, 12, 8);
INSERT INTO NH_ORDERPRODUCT VALUES (4, 9, 4);
INSERT INTO NH_ORDERPRODUCT VALUES (6, 5, 15);
INSERT INTO NH_ORDERPRODUCT VALUES (3, 1, 8);
INSERT INTO NH_ORDERPRODUCT VALUES (2, 1, 7);
INSERT INTO NH_ORDERPRODUCT VALUES (6, 4, 23);
INSERT INTO NH_ORDERPRODUCT VALUES (7, 7, 35);
INSERT INTO NH_ORDERPRODUCT VALUES (2, 2, 8);
INSERT INTO NH_ORDERPRODUCT VALUES (8, 4, 23);
INSERT INTO NH_ORDERPRODUCT VALUES (10, 8, 15);
INSERT INTO NH_ORDERPRODUCT VALUES (11, 12, 32);
INSERT INTO NH_ORDERPRODUCT VALUES (9, 4, 1);
INSERT INTO NH_ORDERPRODUCT VALUES (4, 5, 5);
INSERT INTO NH_ORDERPRODUCT VALUES (5, 7, 80);
INSERT INTO NH_ORDERPRODUCT VALUES (2, 4, 16);
```

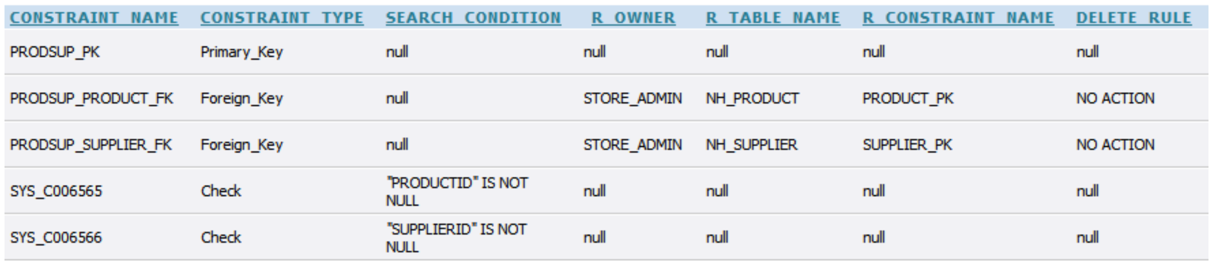
```
ALTER TABLE NH_ORDERPRODUCT
    ADD CONSTRAINT OrderProduct_Product_FK FOREIGN KEY
    (
     ProductID
    )
    REFERENCES NH_PRODUCT
    (
     ProductID
    )
;
```

NH_PRODSUP Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
PRODUCTID	NUMBER(38,0)	No	null	1	null
SUPPLIERID	NUMBER(38,0)	No	null	2	null

NH_PRODSUP Table Constraints

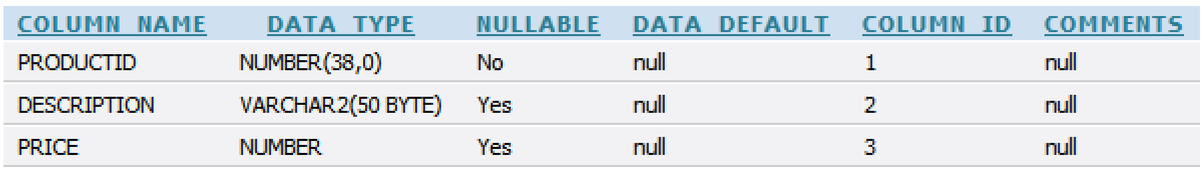


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
PRODSUP_PK	Primary_Key	null	null	null	null	null
PRODSUP_PRODUCT_FK	Foreign_Key	null	STORE_ADMIN	NH_PRODUCT	PRODUCT_PK	NO ACTION
PRODSUP_SUPPLIER_FK	Foreign_Key	null	STORE_ADMIN	NH_SUPPLIER	SUPPLIER_PK	NO ACTION
SYS_C006565	Check	"PRODUCTID" IS NOT NULL	null	null	null	null
SYS_C006566	Check	"SUPPLIERID" IS NOT NULL	null	null	null	null

NH_PRODSUP Table Creation, Population and Constraint Script

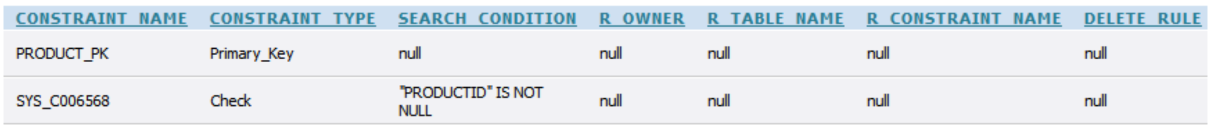
```
CREATE TABLE NH_PRODSUP
    (
     ProductID INTEGER  NOT NULL ,
     SupplierID INTEGER  NOT NULL
    )
;

ALTER TABLE NH_PRODSUP
    ADD CONSTRAINT ProdSup_PK PRIMARY KEY ( ProductID, SupplierID )
;

/* ProductID INT, SupplierID INT */
INSERT INTO NH_PRODSUP VALUES
(1, 1);

INSERT INTO NH_PRODSUP VALUES (1, 2);
INSERT INTO NH_PRODSUP VALUES (2, 2);
INSERT INTO NH_PRODSUP VALUES (1, 5);
INSERT INTO NH_PRODSUP VALUES (1, 6);
INSERT INTO NH_PRODSUP VALUES (5, 1);
INSERT INTO NH_PRODSUP VALUES (8, 1);
INSERT INTO NH_PRODSUP VALUES (1, 7);
INSERT INTO NH_PRODSUP VALUES (3, 1);
INSERT INTO NH_PRODSUP VALUES (6, 8);
INSERT INTO NH_PRODSUP VALUES (4, 3);
INSERT INTO NH_PRODSUP VALUES (7, 1);
INSERT INTO NH_PRODSUP VALUES (8, 8);
INSERT INTO NH_PRODSUP VALUES (7, 6);
INSERT INTO NH_PRODSUP VALUES (3, 4);
INSERT INTO NH_PRODSUP VALUES (2, 6);
INSERT INTO NH_PRODSUP VALUES (10, 11);

ALTER TABLE NH_PRODSUP
    ADD CONSTRAINT ProdSup_Product_FK FOREIGN KEY
    (
     ProductID
    )
    REFERENCES NH_PRODUCT
    (
     ProductID
    )
;


ALTER TABLE NH_PRODSUP
    ADD CONSTRAINT ProdSup_Supplier_FK FOREIGN KEY
    (
     SupplierID
    )
    REFERENCES NH_SUPPLIER
    (
     SupplierID
    )
;
```

NH_PRODUCT Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
PRODUCTID	NUMBER(38,0)	No	null	1	null
DESCRIPTION	VARCHAR2(50 BYTE)	Yes	null	2	null
PRICE	NUMBER	Yes	null	3	null

NH_PRODUCT Table Constraints

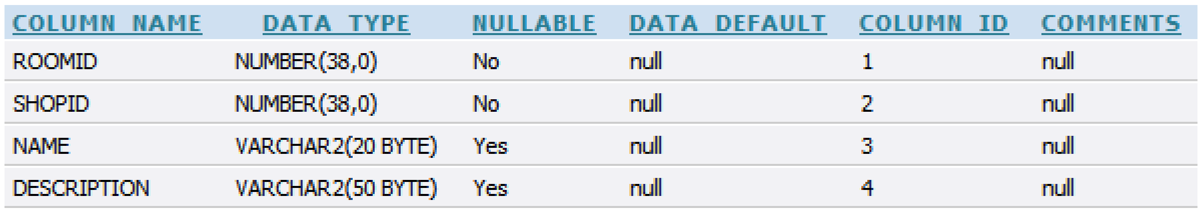


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
PRODUCT_PK	Primary_Key	null	null	null	null	null
SYS_C006568	Check	"PRODUCTID" IS NOT NULL	null	null	null	null

NH_PRODUCT Table Creation, Population and Constraint Script

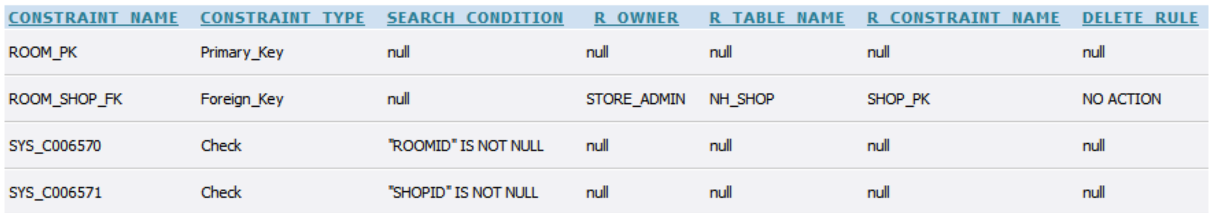
```
CREATE TABLE NH_PRODUCT
    (
     ProductID INTEGER  NOT NULL ,
     Description VARCHAR2 (50) ,
     Price NUMBER
    )
;

ALTER TABLE NH_PRODUCT
    ADD CONSTRAINT Product_PK PRIMARY KEY ( ProductID ) ;

/* ProductID INT, Desc VARCHAR, Price NUMBER (DECIMAL) */
INSERT INTO NH_PRODUCT VALUES
(1, 'ahughes co', 15);

INSERT INTO NH_PRODUCT VALUES (2, 'Amazon Hair', 13.2);
INSERT INTO NH_PRODUCT VALUES (3, 'Latex Gloves', 2.7);
INSERT INTO NH_PRODUCT VALUES (4, 'Premium Lotion', 22.75);
INSERT INTO NH_PRODUCT VALUES (5, 'Ultra Premium Lambda Olive Oil',
49.99);
INSERT INTO NH_PRODUCT VALUES (6, 'Syringe', 3.7);
INSERT INTO NH_PRODUCT VALUES (7, 'My Lucky One', 11.7);
INSERT INTO NH_PRODUCT VALUES (8, 'Massage Underwear', 0.75);
INSERT INTO NH_PRODUCT VALUES (9, 'Massage Slippers', 1.99);
INSERT INTO NH_PRODUCT VALUES (10, 'Hair Protector', 0.5);
INSERT INTO NH_PRODUCT VALUES (11, 'Natural Hair Conditioner',
9.99);
INSERT INTO NH_PRODUCT VALUES (12, 'Natural Hair Shampoo', 4.99);
INSERT INTO NH_PRODUCT VALUES (13, 'Relaxing Herbs', 3.99);
INSERT INTO NH_PRODUCT VALUES (14, 'Natural Painkillers', 6.78);
INSERT INTO NH_PRODUCT VALUES (15, 'Valerian Relaxing Pills', 3.98);
```

NH_ROOM Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
ROOMID	NUMBER(38,0)	No	null	1	null
SHOPID	NUMBER(38,0)	No	null	2	null
NAME	VARCHAR2(20 BYTE)	Yes	null	3	null
DESCRIPTION	VARCHAR2(50 BYTE)	Yes	null	4	null

NH_ROOM Table Constraints

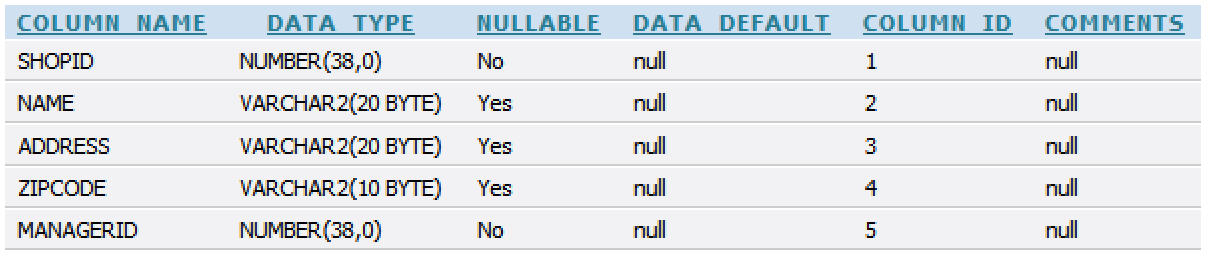


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
ROOM_PK	Primary_Key	null	null	null	null	null
ROOM_SHOP_FK	Foreign_Key	null	STORE_ADMIN	NH_SHOP	SHOP_PK	NO ACTION
SYS_C006570	Check	"ROOMID" IS NOT NULL	null	null	null	null
SYS_C006571	Check	"SHOPID" IS NOT NULL	null	null	null	null

NH_ROOM Table Creation, Population and Constraint Script

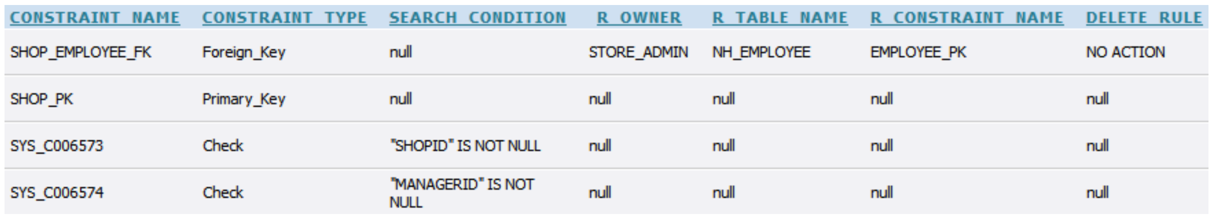
```
CREATE TABLE NH_ROOM
    (
     RoomID INTEGER  NOT NULL ,
     ShopID INTEGER  NOT NULL ,
     Name VARCHAR2 (20)  ,
     Description VARCHAR2 (50)
    )
;

ALTER TABLE NH_ROOM
    ADD CONSTRAINT Room_PK PRIMARY KEY ( RoomID ) ;


/* RoomID INT, ShopID INT, Name VARCHAR, Desc VARCHAR */
INSERT INTO NH_ROOM VALUES
(1, 1, 'G.01','Comfy');

INSERT INTO NH_ROOM VALUES (2, 1, 'G.02','Richmans');
INSERT INTO NH_ROOM VALUES (3, 1, 'F.01','Cozy');
INSERT INTO NH_ROOM VALUES (4, 2, 'G.01','Jubilee');
INSERT INTO NH_ROOM VALUES (5, 3, 'G.01','Estate');
INSERT INTO NH_ROOM VALUES (6, 3, 'G.02','Mansion');
INSERT INTO NH_ROOM VALUES (7, 5, 'E.12','Hand King');
INSERT INTO NH_ROOM VALUES (8, 5, 'E.13','Foot King');
INSERT INTO NH_ROOM VALUES (9, 5, 'F.12','21st century');
INSERT INTO NH_ROOM VALUES (10, 6, 'G.01','Ergonomic');
INSERT INTO NH_ROOM VALUES (11, 7, '117','Body Temple');
INSERT INTO NH_ROOM VALUES (12, 7, '116','Physical Miracle');
INSERT INTO NH_ROOM VALUES (13, 3, '1.01','Illumination');

ALTER TABLE NH_ROOM
    ADD CONSTRAINT Room_Shop_FK FOREIGN KEY
    (
     ShopID
    )
    REFERENCES NH_SHOP
    (
     ShopID
    )
;
```

NH_SHOP Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
SHOPID	NUMBER(38,0)	No	null	1	null
NAME	VARCHAR2(20 BYTE)	Yes	null	2	null
ADDRESS	VARCHAR2(20 BYTE)	Yes	null	3	null
ZIPCODE	VARCHAR2(10 BYTE)	Yes	null	4	null
MANAGERID	NUMBER(38,0)	No	null	5	null

NH_SHOP Table Constraints

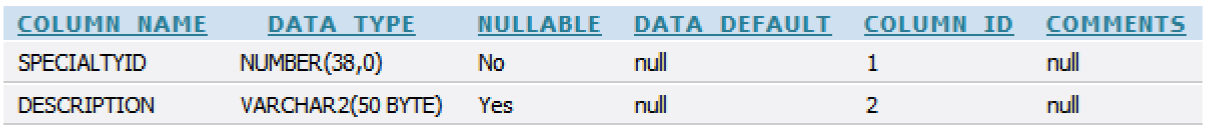


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
SHOP_EMPLOYEE_FK	Foreign_Key	null	STORE_ADMIN	NH_EMPLOYEE	EMPLOYEE_PK	NO ACTION
SHOP_PK	Primary_Key	null	null	null	null	null
SYS_C006573	Check	"SHOPID" IS NOT NULL	null	null	null	null
SYS_C006574	Check	"MANAGERID" IS NOT NULL	null	null	null	null

NH_SHOP Table Creation, Population and Constraint Script

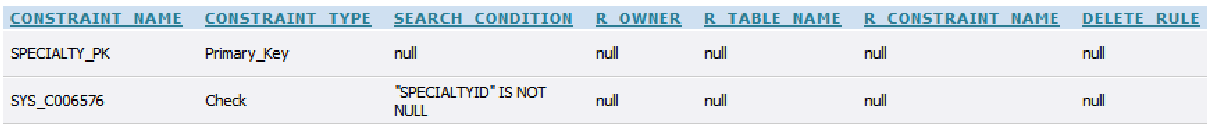
```
CREATE TABLE NH_SHOP
     (
      ShopID INTEGER  NOT NULL ,
      Name VARCHAR2 (20) ,
      Address VARCHAR2 (20) ,
      ZipCode VARCHAR2 (10) ,
      ManagerID INTEGER  NOT NULL
     )
;

ALTER TABLE NH_SHOP
    ADD CONSTRAINT Shop_PK PRIMARY KEY ( ShopID ) ;


/* ShopID INT, Name VARCHAR, Address VARCHAR, Zip_Code VARCHAR,
ManagerID INT*/
INSERT INTO NH_SHOP VALUES
(1, 'aShopName', 'anAddress', 'aZip_Code', 2);

INSERT INTO NH_SHOP VALUES (2,'Bling','74 Addle Hill','E12 kiu', 4);
INSERT INTO NH_SHOP VALUES (3,'Sexy SPA','19 Abchurch Yard','nw2
cfr', 8);
INSERT INTO NH_SHOP VALUES (4,'The Hot Stop','95 Addle Street','s2
6za', 10);
INSERT INTO NH_SHOP VALUES (5,'Relaxing','64Cutler Street','sw1
2lo', 11);
INSERT INTO NH_SHOP VALUES (6,'Abbey','9 Cursitor Street','e13 98h',
14);
INSERT INTO NH_SHOP VALUES (7,'Holy Bacon','45 Amen Corner ','n9
9np', 15);

ALTER TABLE NH_SHOP
    ADD CONSTRAINT Shop_Employee_FK FOREIGN KEY
    (
     ManagerID
    )
    REFERENCES NH_EMPLOYEE
    (
     EmployeeID
    )
;
```

NH_SPECIALTY Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
SPECIALTYID	NUMBER(38,0)	No	null	1	null
DESCRIPTION	VARCHAR2(50 BYTE)	Yes	null	2	null

NH_SPECIALTY Table Constraints

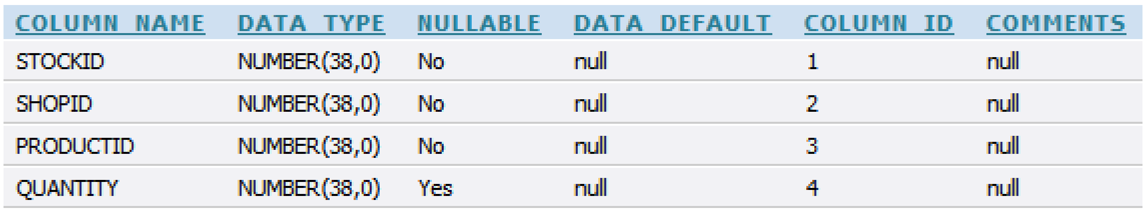


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
SPECIALTY_PK	Primary_Key	null	null	null	null	null
SYS_C006576	Check	"SPECIALTYID" IS NOT NULL	null	null	null	null

NH_SPECIALTY Table Creation, Population and Constraint Script

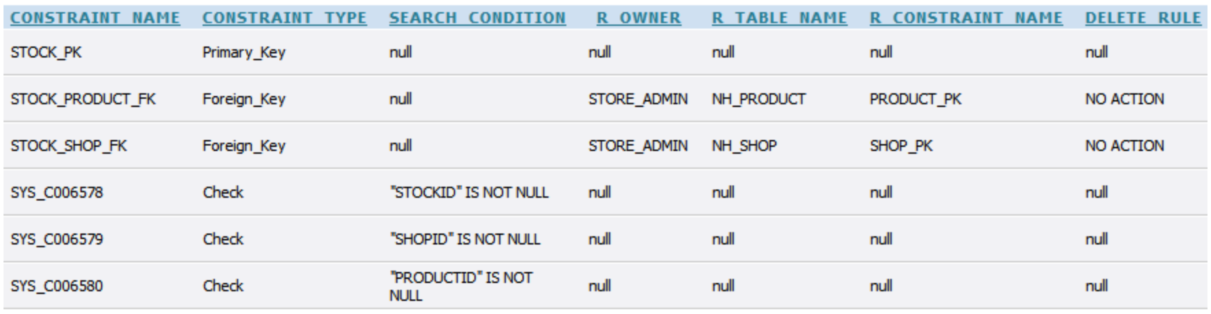
```
CREATE TABLE NH_SPECIALTY
    (
     SpecialtyID INTEGER  NOT NULL ,
     Description VARCHAR2 (50)
    )
;

ALTER TABLE NH_SPECIALTY
    ADD CONSTRAINT Specialty_PK PRIMARY KEY ( SpecialtyID ) ;


/*SpecialtyID INT, Description VARCHAR */
INSERT INTO NH_SPECIALTY VALUES
(1, 'Head Massage');

INSERT INTO NH_SPECIALTY VALUES (2, 'Neck Massage');
INSERT INTO NH_SPECIALTY VALUES (3, 'Music and Aura Relaxation');
INSERT INTO NH_SPECIALTY VALUES (4, 'Full Body Massage');
INSERT INTO NH_SPECIALTY VALUES (5, 'Body Scrub');
INSERT INTO NH_SPECIALTY VALUES (6, 'Face Scrub');
INSERT INTO NH_SPECIALTY VALUES (7, 'Dry Hair Treatment');
INSERT INTO NH_SPECIALTY VALUES (8, 'Curls and Head Scrub');
INSERT INTO NH_SPECIALTY VALUES (9, 'Dry Skin Treatment');
INSERT INTO NH_SPECIALTY VALUES (10, 'Psoriasis Treatment');
INSERT INTO NH_SPECIALTY VALUES (11, 'Reiki Massage');
INSERT INTO NH_SPECIALTY VALUES (12, 'Nail Polishing');
```

NH_STOCK Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
STOCKID	NUMBER(38,0)	No	null	1	null
SHOPID	NUMBER(38,0)	No	null	2	null
PRODUCTID	NUMBER(38,0)	No	null	3	null
QUANTITY	NUMBER(38,0)	Yes	null	4	null

NH_STOCK Table Constraints



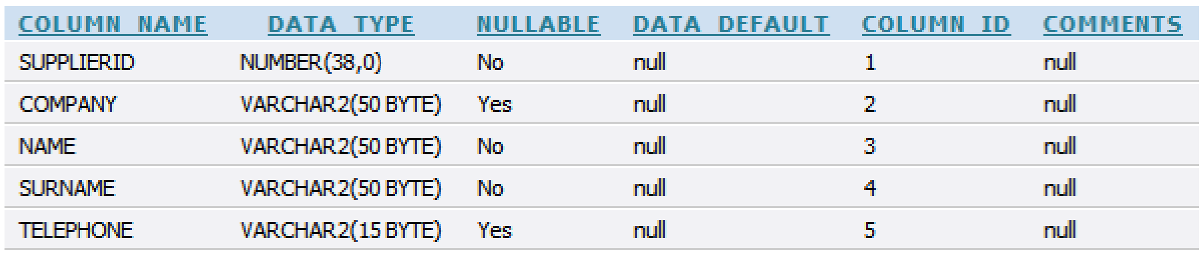
CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
STOCK_PK	Primary_Key	null	null	null	null	null
STOCK_PRODUCT_FK	Foreign_Key	null	STORE_ADMIN	NH_PRODUCT	PRODUCT_PK	NO ACTION
STOCK_SHOP_FK	Foreign_Key	null	STORE_ADMIN	NH_SHOP	SHOP_PK	NO ACTION
SYS_C006578	Check	"STOCKID" IS NOT NULL	null	null	null	null
SYS_C006579	Check	"SHOPID" IS NOT NULL	null	null	null	null
SYS_C006580	Check	"PRODUCTID" IS NOT NULL	null	null	null	null

NH_STOCK Table Creation, Population and Constraint Script

```
CREATE TABLE NH_STOCK
    (
     StockID INTEGER  NOT NULL ,
     ShopID INTEGER  NOT NULL ,
     ProductID INTEGER  NOT NULL ,
     Quantity INTEGER
    )
;
ALTER TABLE NH_STOCK
    ADD CONSTRAINT Stock_PK PRIMARY KEY ( StockID ) ;

/* StockID INT, ShopID INT, ProductID INT, Quantity INT */
INSERT INTO NH_STOCK VALUES
(1, 1, 1, 15);

INSERT INTO NH_STOCK VALUES (2, 1, 12, 12);
INSERT INTO NH_STOCK VALUES (3, 1, 14, 4);
INSERT INTO NH_STOCK VALUES (4, 3, 3, 3);
INSERT INTO NH_STOCK VALUES (5, 3, 10, 4);
INSERT INTO NH_STOCK VALUES (6, 4, 9, 2);
INSERT INTO NH_STOCK VALUES (7, 6, 15, 14);
INSERT INTO NH_STOCK VALUES (8, 7, 1, 10);
INSERT INTO NH_STOCK VALUES (9, 7, 2, 4);
INSERT INTO NH_STOCK VALUES (10, 5, 12, 12);
INSERT INTO NH_STOCK VALUES (11, 2, 14, 4);
INSERT INTO NH_STOCK VALUES (12, 1, 3, 3);
INSERT INTO NH_STOCK VALUES (13, 3, 4, 5);
INSERT INTO NH_STOCK VALUES (14, 5, 13, 4);
INSERT INTO NH_STOCK VALUES (15, 1, 4, 5);

ALTER TABLE NH_STOCK
```

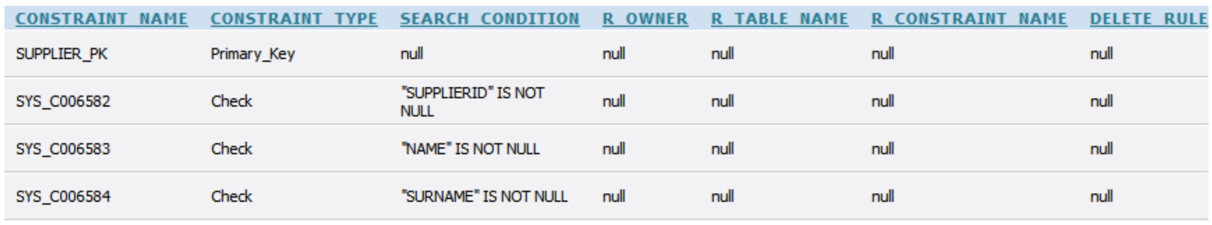
```
    ADD CONSTRAINT Stock_Product_FK FOREIGN KEY
    (
     ProductID
    )
    REFERENCES NH_PRODUCT
    (
     ProductID
    )
;


ALTER TABLE NH_STOCK
    ADD CONSTRAINT Stock_Shop_FK FOREIGN KEY
    (
     ShopID
    )
    REFERENCES NH_SHOP
    (
     ShopID
    )
;
```

NH_SUPPLIER Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
SUPPLIERID	NUMBER(38,0)	No	null	1	null
COMPANY	VARCHAR2(50 BYTE)	Yes	null	2	null
NAME	VARCHAR2(50 BYTE)	No	null	3	null
SURNAME	VARCHAR2(50 BYTE)	No	null	4	null
TELEPHONE	VARCHAR2(15 BYTE)	Yes	null	5	null

NH_SUPPLIER Table Constraints



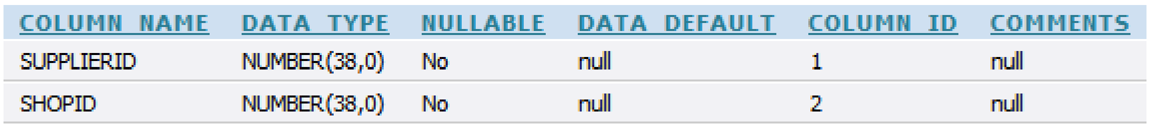
CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
SUPPLIER_PK	Primary_Key	null	null	null	null	null
SYS_C006582	Check	"SUPPLIERID" IS NOT NULL	null	null	null	null
SYS_C006583	Check	"NAME" IS NOT NULL	null	null	null	null
SYS_C006584	Check	"SURNAME" IS NOT NULL	null	null	null	null

NH_SUPPLIER Table Creation, Population and Constraint Script

```
CREATE TABLE NH_SUPPLIER
     (
      SupplierID INTEGER  NOT NULL ,
      Company VARCHAR2 (50) ,
      Name VARCHAR2 (50)  NOT NULL ,
      Surname VARCHAR2 (50)  NOT NULL ,
      Telephone VARCHAR2 (15)
     )
;


ALTER TABLE NH_SUPPLIER
    ADD CONSTRAINT Supplier_PK PRIMARY KEY ( SupplierID ) ;

/* SupplierID INT, Company VARCHAR, Name VARCHAR, Surname VARCHAR,
Telephone VARCHAR */
INSERT INTO NH_SUPPLIER VALUES
(1, 'HeadCare', 'Jack', 'Lee', '07908878547');

INSERT INTO NH_SUPPLIER VALUES (2, 'HandLove', 'Red', 'Clif',
'07505512336');
INSERT INTO NH_SUPPLIER VALUES (3, 'FootLook', 'Kelly', 'Kent',
'020874121458');
INSERT INTO NH_SUPPLIER VALUES (4, 'BodyCare', 'Jeff', 'Kent',
'07814777874');
INSERT INTO NH_SUPPLIER VALUES (5, 'LookGood', 'Jimmy', 'Jay',
'02085477777');
INSERT INTO NH_SUPPLIER VALUES (6, 'FirstWax', 'Ian', 'Beat',
'079022121456');
INSERT INTO NH_SUPPLIER VALUES (7, 'Cleaning', 'Ken', 'Naz',
'020836987451');
```

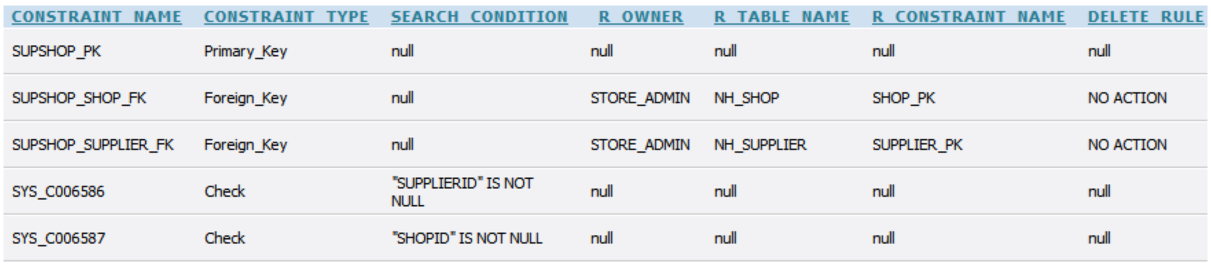
```
INSERT INTO NH_SUPPLIER VALUES (8, 'Marks and Spencer', 'Melinda',
'Belius', '0759874521');
INSERT INTO NH_SUPPLIER VALUES (9, 'Dont judge our name', 'George',
'Jack-the-Elfs', '07569874521');
INSERT INTO NH_SUPPLIER VALUES (10, 'Lousy Cleaning', 'George',
'Lazyman', '0756594521');
INSERT INTO NH_SUPPLIER VALUES (11, 'Croco-Skin', 'Sting', 'Tooth',
'07569874521');
```

NH_SUPSHOP Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
SUPPLIERID	NUMBER(38,0)	No	null	1	null
SHOPID	NUMBER(38,0)	No	null	2	null

NH_SUPSHOP Table Constraints

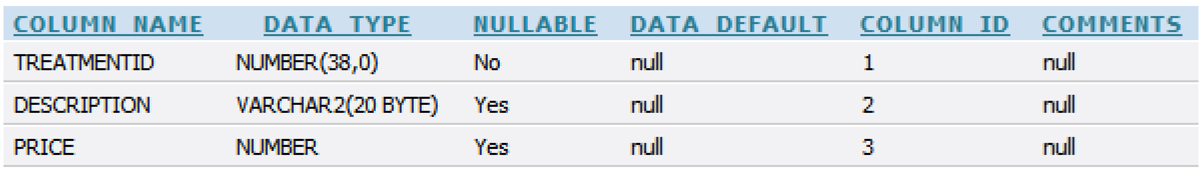


CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
SUPSHOP_PK	Primary_Key	null	null	null	null	null
SUPSHOP_SHOP_FK	Foreign_Key	null	STORE_ADMIN	NH_SHOP	SHOP_PK	NO ACTION
SUPSHOP_SUPPLIER_FK	Foreign_Key	null	STORE_ADMIN	NH_SUPPLIER	SUPPLIER_PK	NO ACTION
SYS_C006586	Check	"SUPPLIERID" IS NOT NULL	null	null	null	null
SYS_C006587	Check	"SHOPID" IS NOT NULL	null	null	null	null

NH_SUPSHOP Table Creation, Population and Constraint Script

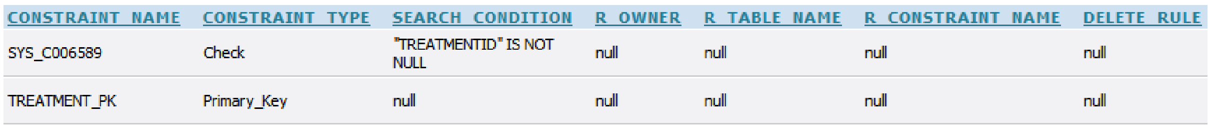
```
CREATE TABLE NH_SUPSHOP
    (
     SupplierID INTEGER  NOT NULL ,
     ShopID INTEGER  NOT NULL
    )
;

ALTER TABLE NH_SUPSHOP
    ADD CONSTRAINT SupShop_PK PRIMARY KEY ( SupplierID, ShopID ) ;


/* SupplierID INT, ShopID INT */
INSERT INTO NH_SUPSHOP VALUES
(1, 1);

INSERT INTO NH_SUPSHOP VALUES (11, 5);
INSERT INTO NH_SUPSHOP VALUES (11, 1);
INSERT INTO NH_SUPSHOP VALUES (1, 6);
INSERT INTO NH_SUPSHOP VALUES (6, 2);
INSERT INTO NH_SUPSHOP VALUES (4, 2);
INSERT INTO NH_SUPSHOP VALUES (5, 4);
INSERT INTO NH_SUPSHOP VALUES (5, 6);
INSERT INTO NH_SUPSHOP VALUES (6, 3);
INSERT INTO NH_SUPSHOP VALUES (1, 7);
INSERT INTO NH_SUPSHOP VALUES (2, 1);
INSERT INTO NH_SUPSHOP VALUES (6, 4);
INSERT INTO NH_SUPSHOP VALUES (4, 3);
INSERT INTO NH_SUPSHOP VALUES (10, 7);
INSERT INTO NH_SUPSHOP VALUES (10, 5);
INSERT INTO NH_SUPSHOP VALUES (5, 1);
INSERT INTO NH_SUPSHOP VALUES (2, 2);
INSERT INTO NH_SUPSHOP VALUES (9, 5);

ALTER TABLE NH_SUPSHOP
    ADD CONSTRAINT SupShop_Shop_FK FOREIGN KEY
    (
     ShopID
    )
    REFERENCES NH_SHOP
    (
     ShopID
    )
;


ALTER TABLE NH_SUPSHOP
    ADD CONSTRAINT SupShop_Supplier_FK FOREIGN KEY
    (
     SupplierID
    )
    REFERENCES NH_SUPPLIER
    (
     SupplierID
    )
;
```

NH_TREATMENT Table Structure



COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
TREATMENTID	NUMBER(38,0)	No	null	1	null
DESCRIPTION	VARCHAR2(20 BYTE)	Yes	null	2	null
PRICE	NUMBER	Yes	null	3	null

NH_TREATMENT Table Constraints



CONSTRAINT_NAME	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAME	R_CONSTRAINT_NAME	DELETE_RULE
SYS_C006589	Check	"TREATMENTID" IS NOT NULL	null	null	null	null
TREATMENT_PK	Primary_Key	null	null	null	null	null

NH_TREATMENT Table Creation, Population and Constraint Script

```
CREATE TABLE NH_TREATMENT
    (
     TreatmentID INTEGER  NOT NULL ,
     Description VARCHAR2 (20) ,
     Price NUMBER
    )
;

ALTER TABLE NH_TREATMENT
    ADD CONSTRAINT Treatment_PK PRIMARY KEY ( TreatmentID ) ;

/* TreatmentID INT, Desc VARCHAR, Price DECIMAL */
INSERT INTO NH_TREATMENT VALUES
(1, 'Head Care', 15);

INSERT INTO NH_TREATMENT VALUES (2, 'Foot Massage', 8.88);
INSERT INTO NH_TREATMENT VALUES (3, 'Full Body Massage', 30);
INSERT INTO NH_TREATMENT VALUES (4, 'Hair Loss Treatment', 100);
INSERT INTO NH_TREATMENT VALUES (5, 'Leg Wax and Care',  20);
INSERT INTO NH_TREATMENT VALUES (6, 'Spanish Massage', 55);
INSERT INTO NH_TREATMENT VALUES (7, 'Face Massage', 15);
INSERT INTO NH_TREATMENT VALUES (8, 'Face Scrub', 18);
INSERT INTO NH_TREATMENT VALUES (9, 'Voice Therapy', 70);
INSERT INTO NH_TREATMENT VALUES (10, 'Head Massage', 40);
INSERT INTO NH_TREATMENT VALUES (11, 'Body Scrub', 60);
INSERT INTO NH_TREATMENT VALUES (12, 'Stress Therapy', 28.99);
INSERT INTO NH_TREATMENT VALUES (13, 'Full Body Massage', 50);
```

1.6 PL/SQL

Stored function using a cursor.

```
/* This function checks and returns the number of rows a particular
query has. This query is the one who checks if we have date - room
clashes and returns 0 if everything is alright (no rows fetched) and
1 if we need to check another time in the future.
*** We assume that booking are only closed exactly at an hour. e.g.
2 o'clock, NOT 2:15. ***
*/

CREATE OR REPLACE FUNCTION
 isRoomAvailable(
      --input arguments: we only need room number and date (contains
time)
      v_roomID IN INT,
      v_date IN NH_BOOKING."Date"%TYPE)
      --we return only whether we had rows or not.
      RETURN NUMBER
IS
      --output variable
      v_output NUMBER;

      --creating the cursor, using the suitable query
      --just selecting any integer type column, the result is not
used
      CURSOR queryCursor IS
            SELECT RoomID
            FROM NH_BOOKING
            WHERE RoomID = v_roomID AND "Date" = v_date;

BEGIN

      --opening and iterating through cursor
      OPEN queryCursor;

      FETCH queryCursor INTO v_output;

      --if we have rows on resultset, means that the room is already
booked.
      IF queryCursor%FOUND THEN
            v_output := 1;
      ELSE
            v_output := 0;
      END IF;

      --closing resources is a good habit
      CLOSE queryCursor;

--returning result
RETURN v_output;

EXCEPTION
WHEN OTHERS THEN
```

```
      raise_application_error(-2001, 'Critical Error, call ahughes'
|| SQLERRM);
END;
```

Triggers

```
/* This trigger autoincrements a primary key value and makes
insertions easier, for table NH_BOOKING.
*/
CREATE OR REPLACE SEQUENCE BOOKING_SEQ;

CREATE OR REPLACE TRIGGER BOOKINGID_AI
BEFORE INSERT ON "NH_BOOKING"
FOR EACH ROW
BEGIN
      SELECT "BOOKING_SEQ".NEXTVAL INTO :NEW.BookingID FROM DUAL;
END;

/* This trigger calculates and applies a discount to the booking
that comply with the conditions below:
*
* 10% for the 3rd visit
* 20% for the 6th visit
* 30% for the 9th visit
*/
CREATE OR REPLACE TRIGGER discount
BEFORE INSERT ON "NH_BOOKING"
FOR EACH ROW

DECLARE
      v_instances INTEGER;

BEGIN
      --by using mod we limit it to 9 instances
      SELECT MOD(COUNT(*), 9)
      INTO v_instances
      FROM NH_BOOKING
      WHERE CustomerID = :NEW.CustomerID;

  --hacking around the mutating trigger error.
  --instead of updating after the table,
  --we check before doing a minus 1
      IF (v_instances = 2) THEN
    :NEW.Price := :NEW.Price - 0.1*:NEW.Price;
            DBMS_OUTPUT.PUT_LINE('3');
      ELSIF (v_instances = 5) THEN
    :NEW.Price := :NEW.Price - 0.2*:NEW.Price;
            DBMS_OUTPUT.PUT_LINE('6');
      ELSIF (v_instances = 8) THEN
    :NEW.Price := :NEW.Price - 0.3*:NEW.Price;
            DBMS_OUTPUT.PUT_LINE('9');
      END IF;
END;
```

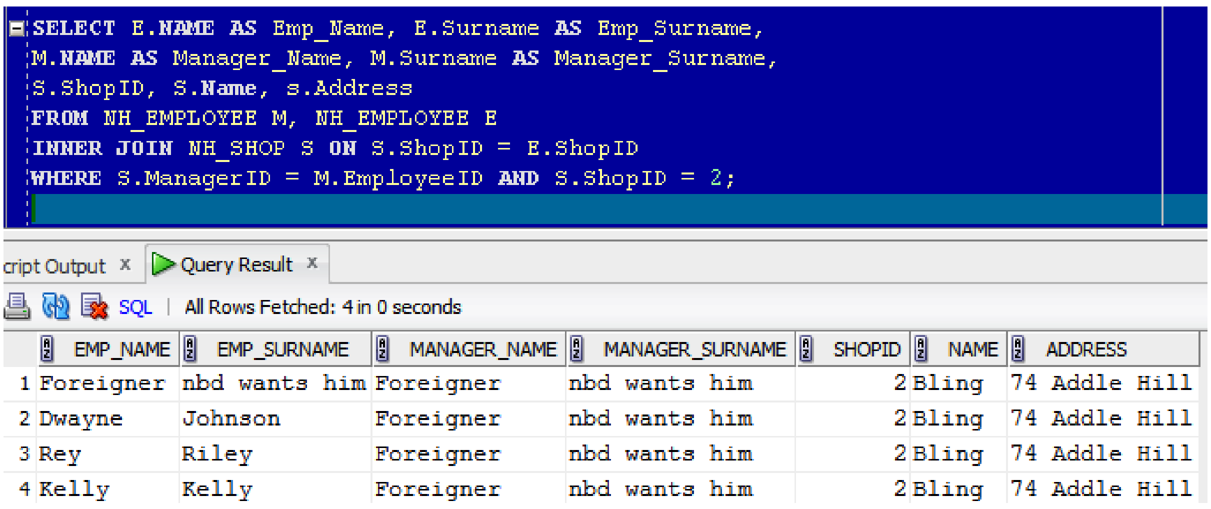
Stored Procedure

```
/* This procedure makes-inserts a booking after it checks about the
availability of the room. It makes use of the AutoIncrementing
trigger and also of the check availability function
*** We assume that bookings are only closed exactly at an hour. e.g.
2 o’clock, NOT 2:15. ***
*/
CREATE OR REPLACE PROCEDURE
new_booking(
      v_roomID IN INT,
      v_employeeID IN INT,
      v_customerID IN INT,
      v_treatmentID IN INT,
      v_date IN NH_BOOKING."Date"%TYPE,
      v_price IN NUMBER)
AS
v_errors INTEGER;
BEGIN

      v_errors := isRoomAvailable(v_roomID, v_date);

      IF (v_errors =0) THEN
            --key is produced using AI trigger
            INSERT INTO NH_BOOKING(RoomID, EmployeeID, CustomerID,
TreatmentID, "Date", Price)
            VALUES (v_roomID, v_employeeID, v_customerID,
v_treatmentID, v_date, v_price);

            DBMS_OUTPUT.PUT_LINE('Booking Completed!');
      ELSE
            DBMS_OUTPUT.PUT_LINE('This room is not available at that
time. Try another one');
      END IF;

EXCEPTION
      WHEN OTHERS THEN
      raise_application_error(-20001, 'Critical Error, call ahughes
' || SQLERRM);

END;
```

1.7 Showing the Queries

4. Can you list all the staff names and their manager's name, for a particular shop?

```
SELECT E.Name AS Emp_Name, E.Surname AS Emp_Surname,
      M.Name AS Manager_Name, M.Surname AS Manager_Surname,
      S.ShopID, S.Address
FROM NH_EMPLOYEE M, NH_EMPLOYEE E
INNER JOIN NH_SHOP S ON S.ShopID = E.ShopID
WHERE S.ManagerID = M.EmployeeID AND S.ShopID = 2;
```



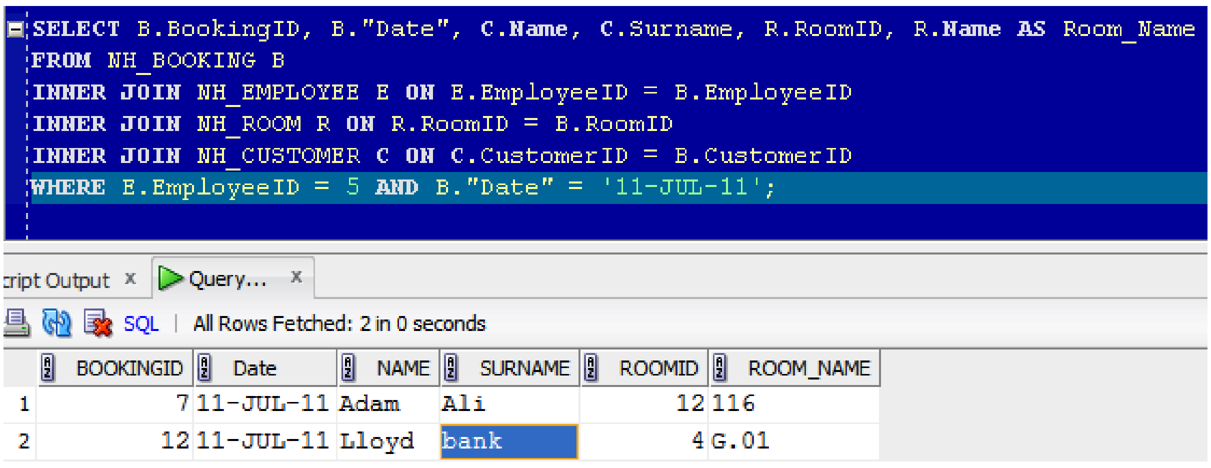
```
SELECT E.NAME AS Emp_Name, E.Surname AS Emp_Surname,
M.NAME AS Manager_Name, M.Surname AS Manager_Surname,
S.ShopID, S.Name, s.Address
FROM NH_EMPLOYEE M, NH_EMPLOYEE E
INNER JOIN NH_SHOP S ON S.ShopID = E.ShopID
WHERE S.ManagerID = M.EmployeeID AND S.ShopID = 2;
```

All Rows Fetched: 4 in 0 seconds

	EMP_NAME	EMP_SURNAME	MANAGER_NAME	MANAGER_SURNAME	SHOPID	NAME	ADDRESS
1	Foreigner	nbd wants him	Foreigner	nbd wants him	2	Bling	74 Addle Hill
2	Dwayne	Johnson	Foreigner	nbd wants him	2	Bling	74 Addle Hill
3	Rey	Riley	Foreigner	nbd wants him	2	Bling	74 Addle Hill
4	Kelly	Kelly	Foreigner	nbd wants him	2	Bling	74 Addle Hill

5. Can you list all the sessions a specific member of staff had on a specific day, which customers and the room numbers?

```
SELECT B.BookingID, B."Date", C.Name, C.Surname, R.RoomID,
      R.Name AS Room_Name
FROM NH_BOOKING B
INNER JOIN NH_EMPLOYEE E ON E.EmployeeID = B.EmployeeID
INNER JOIN NH_ROOM R ON R.RoomID = B.RoomID
INNER JOIN NH_CUSTOMER C ON C.CustomerID = B.CustomerID
WHERE E.EmployeeID = 5 AND B."Date" = '11-JUL-11';
```



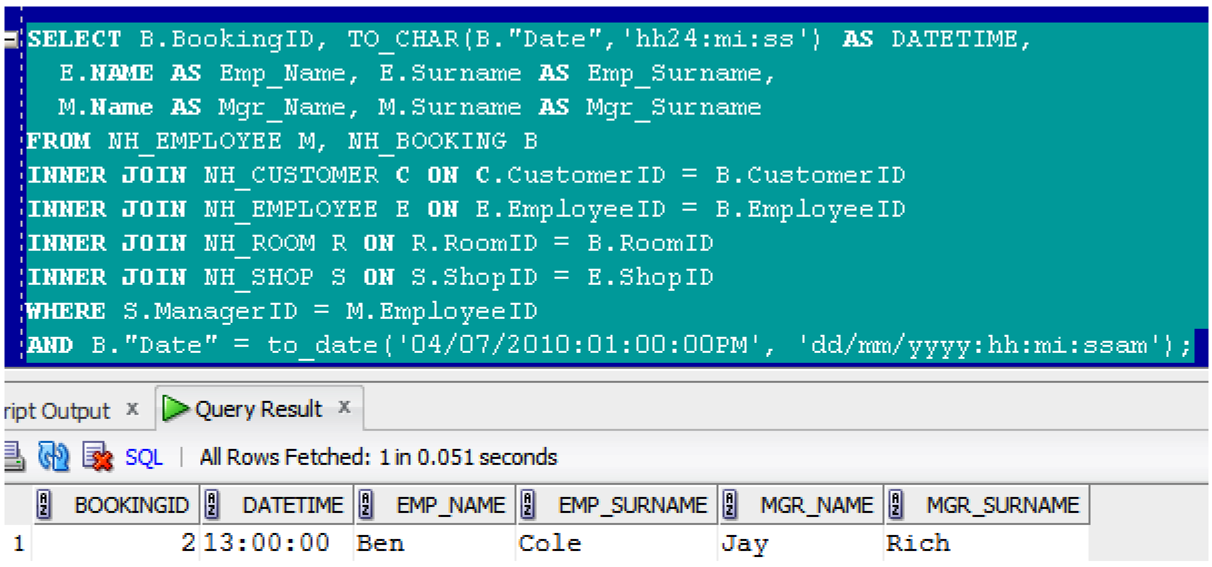
```
SELECT B.BookingID, B."Date", C.Name, C.Surname, R.RoomID, R.Name AS Room_Name
FROM NH_BOOKING B
INNER JOIN NH_EMPLOYEE E ON E.EmployeeID = B.EmployeeID
INNER JOIN NH_ROOM R ON R.RoomID = B.RoomID
INNER JOIN NH_CUSTOMER C ON C.CustomerID = B.CustomerID
WHERE E.EmployeeID = 5 AND B."Date" = '11-JUL-11';
```

All Rows Fetched: 2 in 0 seconds

	BOOKINGID	Date	NAME	SURNAME	ROOMID	ROOM_NAME
1	7	11-JUL-11	Adam	Ali	12	116
2	12	11-JUL-11	Lloyd	bank	4	G.01

6. A customer could ask 'Which member of staff did my 9-10 session today and can you tell me who their manager is because I want to complain?'

```
SELECT B.BookingID, TO_CHAR(B."Date",'hh24:mi:ss') AS DATETIME,
  E.NAME AS Emp_Name, E.Surname AS Emp_Surname,
  M.Name AS Mgr_Name, M.Surname AS Mgr_Surname
FROM NH_EMPLOYEE M, NH_BOOKING B
INNER JOIN NH_CUSTOMER C ON C.CustomerID = B.CustomerID
INNER JOIN NH_EMPLOYEE E ON E.EmployeeID = B.EmployeeID
INNER JOIN NH_ROOM R ON R.RoomID = B.RoomID
INNER JOIN NH_SHOP S ON S.ShopID = E.ShopID
WHERE S.ManagerID = M.EmployeeID
AND B."Date" = to_date('04/07/2010:01:00:00PM',
'dd/mm/yyyy:hh:mi:ssam');
```



```
SELECT B.BookingID, TO_CHAR(B."Date",'hh24:mi:ss') AS DATETIME,
  E.NAME AS Emp_Name, E.Surname AS Emp_Surname,
  M.Name AS Mgr_Name, M.Surname AS Mgr_Surname
FROM NH_EMPLOYEE M, NH_BOOKING B
INNER JOIN NH_CUSTOMER C ON C.CustomerID = B.CustomerID
INNER JOIN NH_EMPLOYEE E ON E.EmployeeID = B.EmployeeID
INNER JOIN NH_ROOM R ON R.RoomID = B.RoomID
INNER JOIN NH_SHOP S ON S.ShopID = E.ShopID
WHERE S.ManagerID = M.EmployeeID
AND B."Date" = to_date('04/07/2010:01:00:00PM', 'dd/mm/yyyy:hh:mi:ssam');
```

All Rows Fetched: 1 in 0.051 seconds

	BOOKINGID	DATETIME	EMP_NAME	EMP_SURNAME	MGR_NAME	MGR_SURNAME
1	2	13:00:00	Ben	Cole	Jay	Rich

1.8 Group Member Participation

Within our group we had people with some strengths and weaknesses who played a big part on the development of the database management system. We will try to present and report for some problems we had during this assignment.

Firstly let's talk about the group members participation within the group.

Talking about **Mohammod Habibur Rahman (ID: u10080150)**, he is a very hard working person, he does a lot of research and he is very committed to his work and to his group team. He is one of them guys which will stay late to make sure that the DBMS is the best it could be within the team. This is a very strong attribute from Habib, however everyone has his own weakness, and for Habib his main weakness is that he has a disability which it hard for him some of the time to spell words. He's dyslexic and this is one of his weaknesses; however this did not stop him from giving his most best 100% of the time while developing this system for the company. Another thing which I needed to develop on before I could really help out in the project was to expand my own key knowledge of database system and how to write simple PL/SQL. Once I did his I could start coding some of the database system for the company.

Apart from this one weakness which he has, his work which he has put in must be recognition as he has work as hard as he can to try and make this DBMS as best as possible as it can be. I cannot really say anything negative about this person as he is always the first to come in and the last to leave.

We both took turns in developing the database system as we both had to gain some new skills into learning PL/SQL. The way we went about this was to research a little about how to write PL/SQL before starting to develop the database management system for the company. Once we had learnt the PL/SQL we then had to expand our knowledge into database system in order to make the system function to the best of its ability.

Another aspect of the project which me and my group partner did was running the test on the database system to make sure that the system which was developed ran as smoothly as possible.

The second member of the group is **Alexandros Akrivopoulos-Hughes (ID: u1235441)**. The database coding was done by both of us. Both of us help each other to make sure that when we were developing the database system we used each other skills sets to achieve our main object.

My group member was the chief architect in designing the ER1 logical diagram, along with engineering it to ER2 relational diagram. He proposed sample diagrams commenting about possible problems that may arise from each of them and we both chose the best for the job.

My group member also did the most of the coding for creating the embedded business logic for the database. I had some skills in PL/SQL; however my group member had a better understanding of the big picture when it comes to PL/SQL. Therefore he was the one that designed the business logic functionality for the database but we both were charged with developing it.

These are the few things which we have done within the group. We were meeting up at least once a week to catch up and report for our progress and also make some decisions about the projects working flow. Within the group we had to understand each other's strengths and weaknesses to make sure that each one of us was capable of delivering high quality work, so that the overall database solution was of high quality.

2.0 Evaluation

We were given a case study whereby we had to develop a database management system to help a company's booking policy as well as stock management. The database system must be developed to help this company to minimize their errors in order to maximize their profits.

Once the ER1 logical diagram was created after brainstorming and merging proposed solutions from team members, we started testing it by creating real time scenarios and questions that the diagram should have the ability to answer.

After creating a proper logical model, we only had to import it and pass it to the right tools and the ER2 relational model was just a matter of time to construct, test and finalize. However, checking, modelling and implementing all the constraints takes time and energy.

After the ER2 relational model was made completely, it was really easy to make the database creation script, as well as some sample test data. We moved on with that and we had the ability of already answering the questions that have been asked to us, after constructing the right queries.

The other time consuming part was writing the PL/SQL for embedding the business logic into the database, because it was a bit new to every member of the team and we spent some time learning and experimenting with its advantages, disadvantages and capabilities.

In the end, business logic was also coded and shipped along with the database product and it really enhanced the product's operation as it stopped double bookings, applied automatically discounts etc.

2.1 Recommendation

If we had more time we both think that we could have learnt much more of PL/SQL and we would have tried to develop an enhanced database system for the company. However, according to the time given and the workload of our everyday lives, the system was really complete and stable, as we really made use of our available time and optimized the development process by increasing our productivity, using the right tools for the job.

Overall we can both say that our group gained a lot of experience and also learn new things, concepts, ideas and methodologies during this assignment.

2.2 References:

[1] Thomas, C. and Carolyn, B. (2008), Database Systems A Practical Approach to Design, Implementation, and Management, 5th ed.

[2] Thomas, C. and Carolyn, B. (2010), Database system Database Systems a Practical Approach to Design, Implementation, and Management

[3] Andy, O. (2004), Database, a self teaching guide