

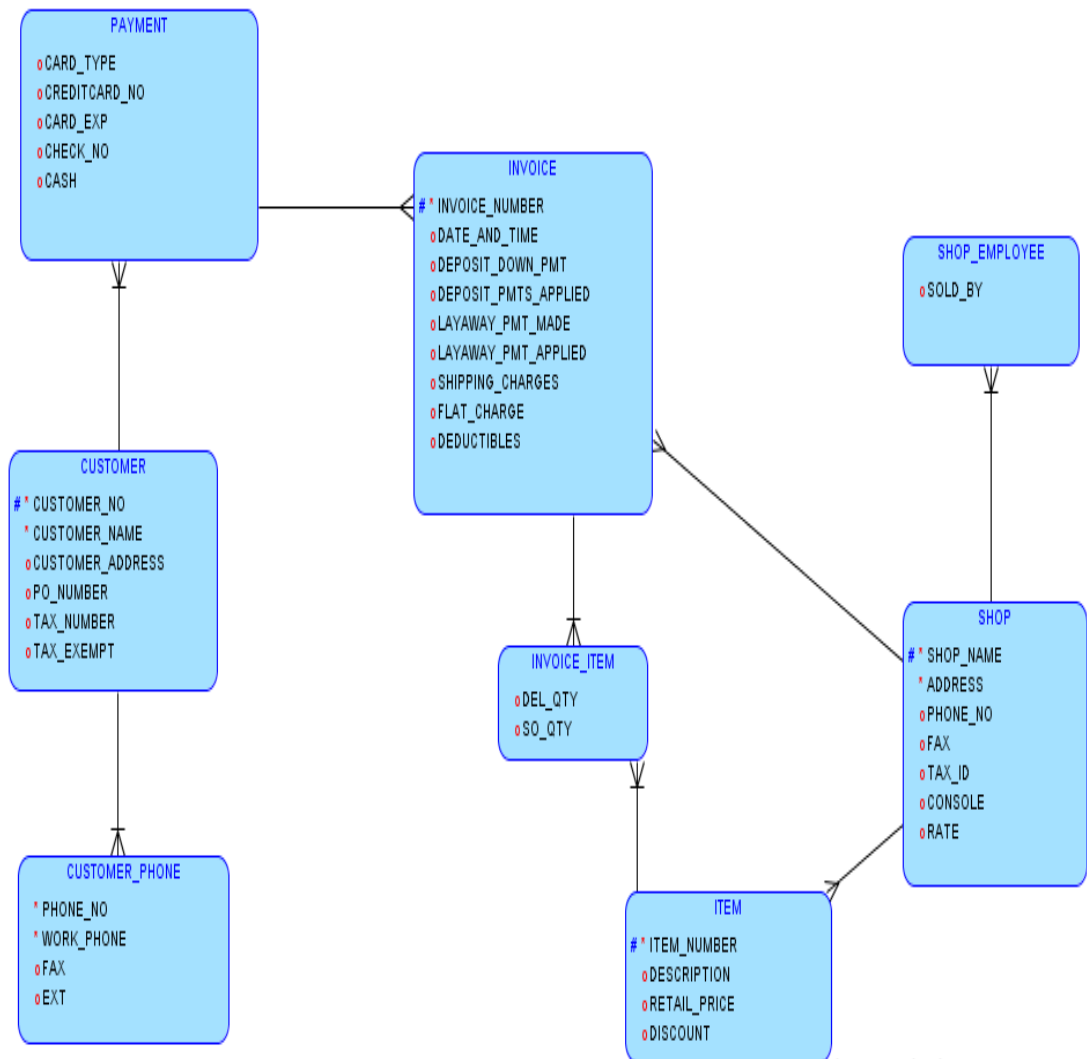
FINAL PROJECT

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Course: **CSC 451**

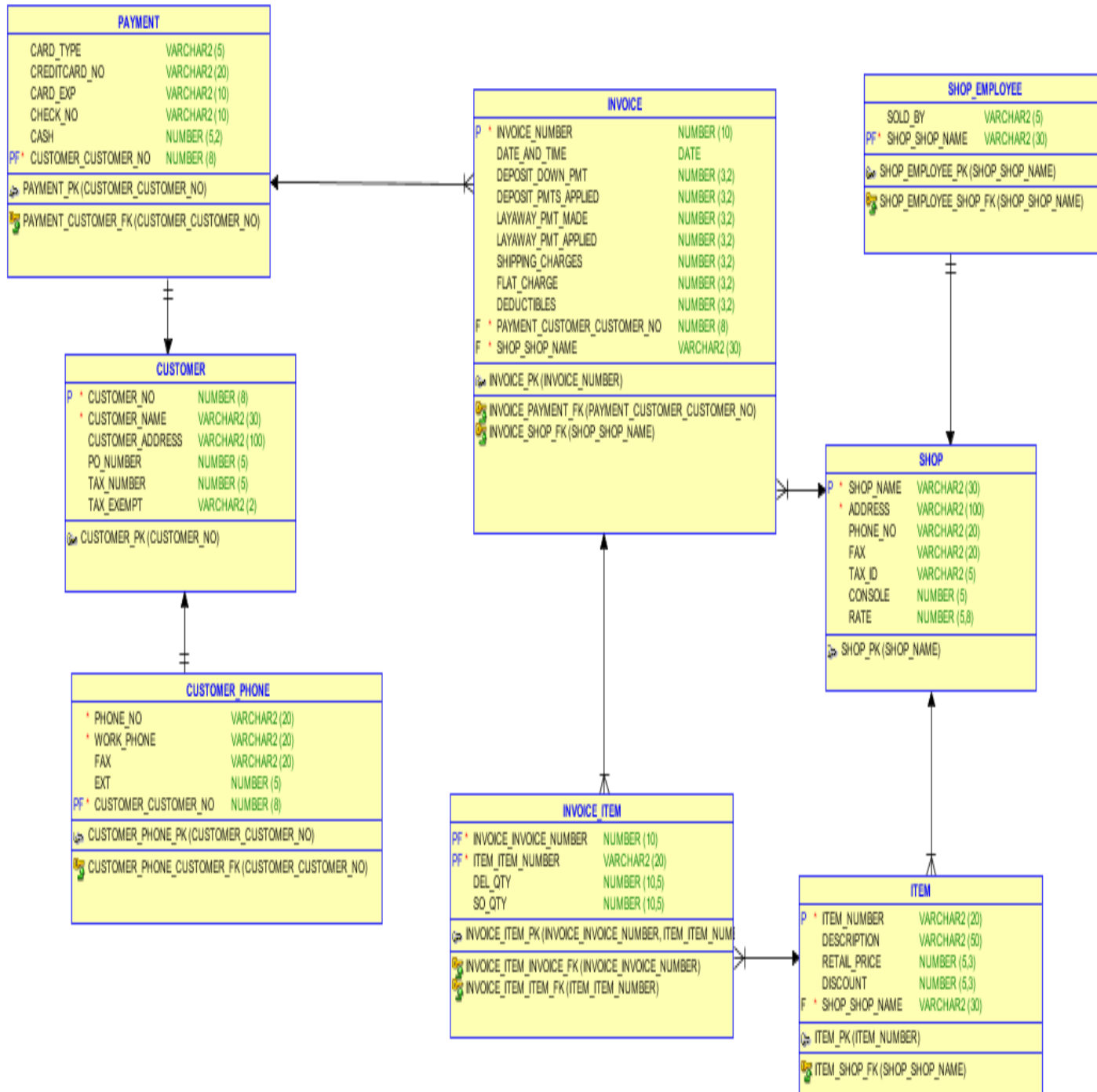
Section: **701**

LOGICAL MODEL



Activate Windows

RELATIONAL MODEL



Activate Windows

CREATE TABLES AND INSERTION OF DATA

CUSTOMER TABLE

CREATE TABLE:

```
CREATE TABLE customer (  
    customer_no    NUMBER(8) NOT NULL,  
    customer_name  VARCHAR2(30) NOT NULL,  
    customer_address VARCHAR2(100),  
    po_number      NUMBER(5),  
    tax_number     NUMBER(5),  
    tax_exempt     VARCHAR2(2)  
);
```

```
ALTER TABLE customer ADD CONSTRAINT customer_pk PRIMARY KEY ( customer_no );
```

INSERT:

```
INSERT INTO CUSTOMER VALUES(30086,'SPEED RACER','243 S WABASH AVE  
CHICAGO IL 60604',NULL,NULL,'N');
```

```
INSERT INTO CUSTOMER VALUES(2250,'JIM SHOE','1 E JACKSON BLVD CHICAGO IL  
60604',NULL,NULL,'N');
```

The screenshot shows a database query tool interface. At the top, there are tabs for 'Worksheet' and 'Query Builder'. Below the tabs, a query is entered in a text area: `SELECT * FROM CUSTOMER;`. Below the query area, there is a 'Script Output' tab and a 'Query Result' tab. The 'Query Result' tab is active, showing the results of the query. The results are displayed in a table with 6 columns: CUSTOMER_NO, CUSTOMER_NAME, CUSTOMER_ADDRESS, PO_NUMBER, TAX_NUMBER, and TAX_EXEMPT. There are 2 rows of data.

	CUSTOMER_NO	CUSTOMER_NAME	CUSTOMER_ADDRESS	PO_NUMBER	TAX_NUMBER	TAX_EXEMPT
1	30086	SPEED RACER	243 S WABASH AVE CHICAGO IL 60604	(null)	(null)	N
2	2250	JIM SHOE	1 E JACKSON BLVD CHICAGO IL 60604	(null)	(null)	N

CUSTOMER_PHONE TABLE

CREATE:

```
CREATE TABLE customer_phone (  
    phone_no          VARCHAR2(20) NOT NULL,  
    work_phone        VARCHAR2(20) NOT NULL,  
    fax               VARCHAR2(20),  
    ext               NUMBER(5),  
    customer_customer_no NUMBER(8) NOT NULL  
);
```

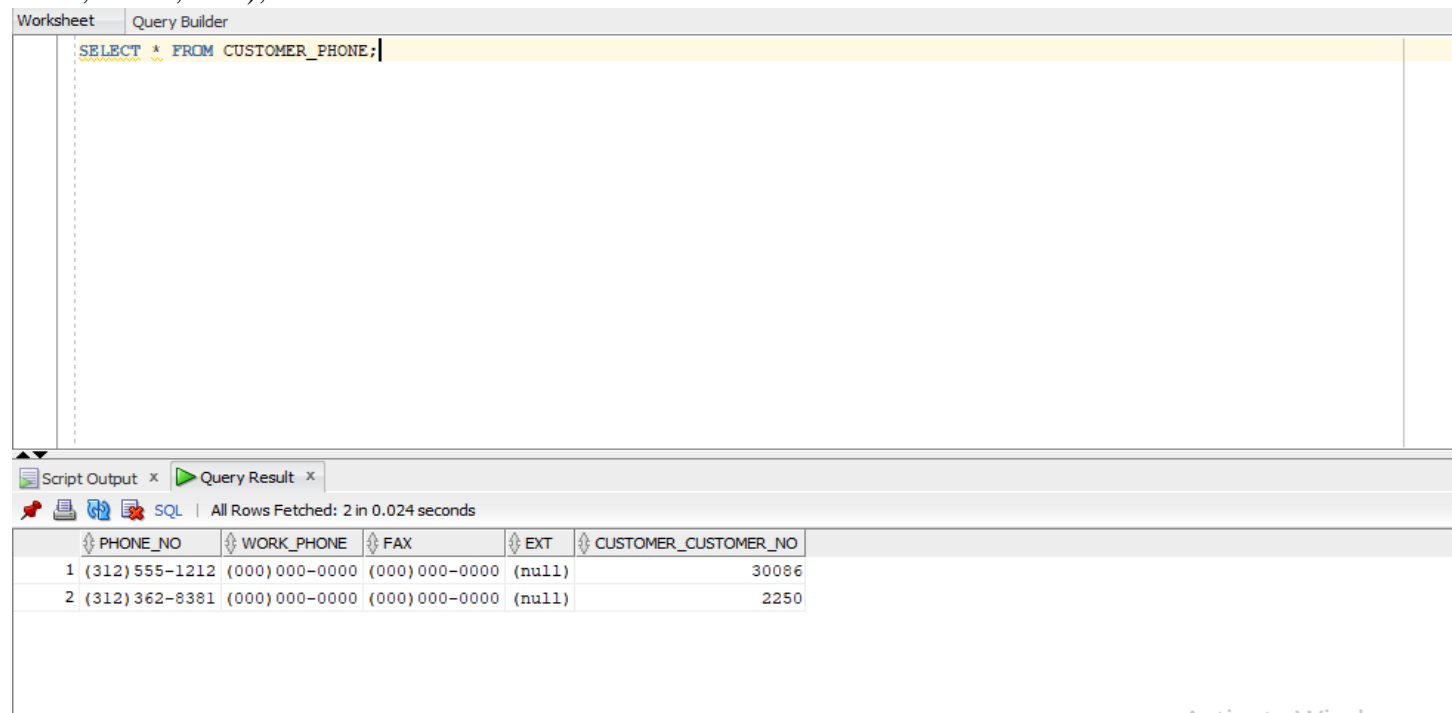
```
ALTER TABLE customer_phone ADD CONSTRAINT customer_phone_pk PRIMARY KEY (  
customer_customer_no );
```

```
ALTER TABLE customer_phone  
    ADD CONSTRAINT customer_phone_customer_fk FOREIGN KEY (  
customer_customer_no )  
    REFERENCES customer ( customer_no );
```

INSERT:

```
INSERT INTO CUSTOMER_PHONE VALUES(' (312) 555-1212', '(000) 000-0000', '(000) 000-  
0000', NULL, 30086);
```

```
INSERT INTO CUSTOMER_PHONE VALUES(' (312) 362-8381', '(000) 000-0000', '(000) 000-  
0000', NULL, 2250);
```



Worksheet Query Builder

SELECT * FROM CUSTOMER_PHONE;

Script Output x Query Result x

SQL | All Rows Fetched: 2 in 0.024 seconds

	PHONE_NO	WORK_PHONE	FAX	EXT	CUSTOMER_CUSTOMER_NO
1	(312) 555-1212	(000) 000-0000	(000) 000-0000	(null)	30086
2	(312) 362-8381	(000) 000-0000	(000) 000-0000	(null)	2250

PAYMENT TABLE

CREATE:

```
CREATE TABLE payment (  
    card_type          VARCHAR2(5),  
    creditcard_no      VARCHAR2(20),  
    card_exp           VARCHAR2(10),  
    check_no           VARCHAR2(10),  
    cash               NUMBER(5,2),  
    customer_customer_no NUMBER(8) NOT NULL  
);
```

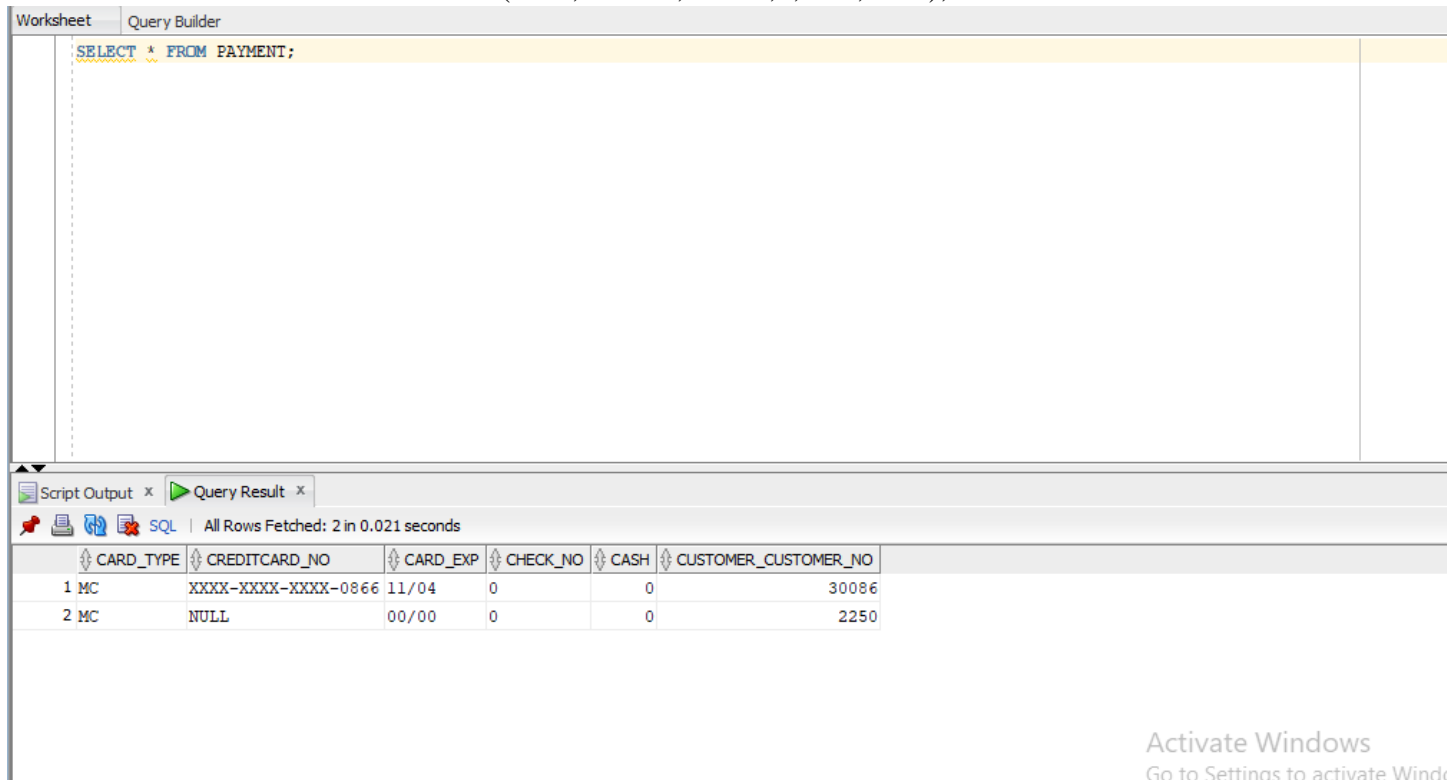
```
ALTER TABLE payment ADD CONSTRAINT payment_pk PRIMARY KEY (  
customer_customer_no );
```

```
ALTER TABLE payment  
    ADD CONSTRAINT payment_customer_fk FOREIGN KEY ( customer_customer_no )  
    REFERENCES customer ( customer_no );
```

INSERT:

```
INSERT INTO PAYMENT VALUES('MC','XXXX-XXXX-XXXX-0866','11/04',0,0.00,30086);
```

```
INSERT INTO PAYMENT VALUES('MC','NULL','00/00',0,0.00,2250);
```



The screenshot shows a database query tool interface. At the top, there are tabs for 'Worksheet' and 'Query Builder'. Below them, a SQL query is entered in a text area: `SELECT * FROM PAYMENT;`. The query is highlighted in yellow. Below the query area, there is a 'Script Output' tab and a 'Query Result' tab. The 'Query Result' tab is active, showing the results of the query. The results are displayed in a table with 6 columns: CARD_TYPE, CREDITCARD_NO, CARD_EXP, CHECK_NO, CASH, and CUSTOMER_CUSTOMER_NO. There are 2 rows of data.

	CARD_TYPE	CREDITCARD_NO	CARD_EXP	CHECK_NO	CASH	CUSTOMER_CUSTOMER_NO
1	MC	XXXX-XXXX-XXXX-0866	11/04	0	0	30086
2	MC	NULL	00/00	0	0	2250

At the bottom right of the screenshot, there is a watermark that says 'Activate Windows Go to Settings to activate Windows'.

SHOP TABLE

CREATE:

```
CREATE TABLE shop (  
    shop_name VARCHAR2(30) NOT NULL,  
    address   VARCHAR2(100) NOT NULL,  
    phone_no  VARCHAR2(20),  
    fax       VARCHAR2(20),  
    tax_id    VARCHAR2(5),  
    console   NUMBER(5),  
    rate      VARCHAR2(20)  
);
```

```
ALTER TABLE shop ADD CONSTRAINT shop_pk PRIMARY KEY ( shop_name );
```

INSERT:

```
INSERT INTO SHOP VALUES('CHICAGO HARLEY-DAVIDSON. INC','6868 N WESTERN  
AVE. CHICAGO IL 60645','(773)338-6868','(773)338-8868','IL',010,0.0875);
```

```
INSERT INTO SHOP VALUES('CHICAGO H-D SHOP','2929 PATRIOT BLVD GLENVIEW  
IL 60026','(847)412-2929','(847)412-6868','IL',020,0.0825);
```

Worksheet

Query Builder

SELECT * FROM SHOP;

Script Output x Query Result x Query Result 1 x

SQL | All Rows Fetched: 2 in 0.017 seconds

SHOP_NAME	ADDRESS	PHONE_NO	FAX	TAX_ID	CONSOLE	RATE
1 CHICAGO HARLEY-DAVIDSON. INC	6868 N WESTERN AVE. CHICAGO IL 60645	(773)338-6868	(773)338-8868	IL	10	.0875
2 CHICAGO H-D SHOP	2929 PATRIOT BLVD GLENVIEW IL 60026	(847)412-2929	(847)412-6868	IL	20	.0825

CREATE:

```
CREATE TABLE shop_employee (
    sold_by      VARCHAR2(5),
    shop_shop_name VARCHAR2(30) NOT NULL
);
```

```
ALTER TABLE shop_employee ADD CONSTRAINT shop_employee_pk PRIMARY KEY (
shop_shop_name );
```

```
ALTER TABLE shop_employee
ADD CONSTRAINT shop_employee_shop_fk FOREIGN KEY ( shop_shop_name )
REFERENCES shop ( shop_name );
```

INSERT:

```
INSERT INTO SHOP_EMPLOYEE VALUES('RPF','CHICAGO HARLEY-DAVIDSON.
INC');
```

```
INSERT INTO SHOP_EMPLOYEE VALUES('EOS','CHICAGO H-D SHOP');
```

Worksheet

Query Builder

SELECT * FROM SHOP_EMPLOYEE;

Script Output x

Query Result x

SQL | All Rows Fetched: 2 in 0.018 seconds

SOLD_BY	SHOP_SHOP_NAME
1 RPF	CHICAGO HARLEY-DAVIDSON. INC
2 EOS	CHICAGO H-D SHOP

ITEM TABLE

CREATE:

```
CREATE TABLE item (  
    item_number    VARCHAR2(20) NOT NULL,  
    description    VARCHAR2(50),  
    retail_price   NUMBER(10,5),  
    discount       NUMBER(10,5),  
    shop_shop_name VARCHAR2(50) NOT NULL  
);  
ALTER TABLE item ADD CONSTRAINT item_pk PRIMARY KEY ( item_number );  
  
ALTER TABLE item  
    ADD CONSTRAINT item_shop_fk FOREIGN KEY ( shop_shop_name )  
        REFERENCES shop ( shop_name );
```

INSERT:

```
INSERT INTO ITEM VALUES('69112-95B','HORN KIT CHROM',79.95,15.99,'CHICAGO  
HARLEY-DAVIDSON. INC');
```

```
INSERT INTO ITEM VALUES('16554-92A','CYLINDER SILVER',139.95,41.99,'CHICAGO  
H-D SHOP');
```

```
INSERT INTO ITEM VALUES('22698-01','SE XL 883/1200 PIS',279.95,83.99,'CHICAGO H-  
D SHOP');
```

```
INSERT INTO ITEM VALUES('59263-79','REFLECTOR',2.50,NULL,'CHICAGO H-D  
SHOP');
```

```
INSERT INTO ITEM VALUES('59988-72A','REFLECTOR RED',4.20,NULL,'CHICAGO H-D  
SHOP');
```

```
INSERT INTO ITEM VALUES('70404-99Y','SWITCH ASSY R.H',21.80,NULL,'CHICAGO  
H-D SHOP');
```

```
INSERT INTO ITEM VALUES('M0737.M','DECAL TAIL SECT',5.95,NULL,'CHICAGO H-D  
SHOP');
```

```
INSERT INTO ITEM VALUES('17048-98','GASKET KIT EXHA',7.95,1.99,'CHICAGO H-D  
SHOP');
```



```
INSERT INTO ITEM VALUES('17056-01','KIT HEAD GASKET',24.95,6.24,'CHICAGO H-D
SHOP');
```

Worksheet Query Builder

SELECT * FROM ITEM;

Script Output x Query Result x

SQL | All Rows Fetched: 9 in 0.018 seconds

ITEM_NUMBER	DESCRIPTION	RETAIL_PRICE	DISCOUNT	SHOP_SHOP_NAME
1 69112-95B	HORN KIT CHROM	79.95	15.99	CHICAGO HARLEY-DAVIDSON. INC
2 16554-92A	CYLINDER SILVER	139.95	41.99	CHICAGO H-D SHOP
3 22698-01	SE XL 883/1200 PIS	279.95	83.99	CHICAGO H-D SHOP
4 59263-79	REFLECTOR	2.5	(null)	CHICAGO H-D SHOP
5 59988-72A	REFLECTOR RED	4.2	(null)	CHICAGO H-D SHOP
6 70404-99Y	SWITCH ASSY R.H	21.8	(null)	CHICAGO H-D SHOP
7 M0737.M	DECAL TAIL SECT	5.95	(null)	CHICAGO H-D SHOP
8 17048-98	GASKET KIT EXHA	7.95	1.99	CHICAGO H-D SHOP
9 17056-01	KIT HEAD GASKET	24.95	6.24	CHICAGO H-D SHOP

Activate Windows
Go to Settings to activate Windows.

INVOICE TABLE

CREATE:

```
CREATE TABLE invoice (  
    invoice_number      NUMBER(10) NOT NULL,  
    date_and_time       DATE,  
    deposit_down_pmt    NUMBER(3,2),  
    deposit_pmts_applied NUMBER(3,2),  
    layaway_pmt_made    NUMBER(3,2),  
    layaway_pmt_applied NUMBER(3,2),  
    shipping_charges    NUMBER(3,2),  
    flat_charge         NUMBER(3,2),  
    deductibles        NUMBER(3,2),  
    payment_customer_customer_no NUMBER(8) NOT NULL,  
    shop_shop_name      VARCHAR2(30) NOT NULL  
);
```

```
ALTER TABLE invoice ADD CONSTRAINT invoice_pk PRIMARY KEY ( invoice_number );
```

```
ALTER TABLE invoice  
    ADD CONSTRAINT invoice_payment_fk FOREIGN KEY  
(payment_customer_customer_no)  
    REFERENCES payment ( customer_customer_no );
```

```
ALTER TABLE invoice  
    ADD CONSTRAINT invoice_shop_fk FOREIGN KEY ( shop_shop_name )  
    REFERENCES shop ( shop_name );
```

INSERT:

```
INSERT INTO INVOICE VALUES(346221,TO_DATE('10/11/2003  
12:31:00PM','MM/DD/YYYY  
HH:MI:SSPM'),0.00,0.00,0.00,0.00,0.00,0.00,0.00,30086,'CHICAGO HARLEY-DAVIDSON.  
INC');
```

```
INSERT INTO INVOICE VALUES(36107,TO_DATE('11/11/2006  
03:16:00PM','MM/DD/YYYY  
HH:MI:SSPM'),0.00,0.00,0.00,0.00,0.00,0.00,0.00,2250,'CHICAGO H-D SHOP');
```

```
INSERT INTO INVOICE VALUES(38804,TO_DATE('12/04/2006
06:45:00PM','MM/DD/YYYY
HH:MI:SSPM'),0.00,0.00,0.00,0.00,0.00,0.00,0.00,2250,'CHICAGO H-D SHOP');
```

Worksheet

Query Builder

SELECT * FROM INVOICE;

Script Output x

Query Result x

SQL | All Rows Fetched: 3 in 0.016 seconds

	INVOICE_NUMBER	DATE_AND_TIME	DEPOSIT_...	DEPOSI...	LAYAWAY...	LAYAW...	SHIPPING...	FLAT_CH...	DEDUCT...	PAYMENT_C...	SHOP_SHOP_NAME
1	346221	11-OCT-03	0	0	0	0	0	0	0	30086	CHICAGO HARLEY-DAVIDSON. INC
2	36107	11-NOV-06	0	0	0	0	0	0	0	2250	CHICAGO H-D SHOP
3	38804	04-DEC-06	0	0	0	0	0	0	0	2250	CHICAGO H-D SHOP

ITEM_INVOICE TABLE:

CREATE:

```
CREATE TABLE invoice_item (  
    invoice_invoice_number  NUMBER(10) NOT NULL,  
    item_item_number        VARCHAR2(20) NOT NULL,  
    del_qty                 NUMBER(10,5),  
    so_qty                  NUMBER(10,5)  
);
```

```
ALTER TABLE invoice_item ADD CONSTRAINT invoice_item_pk PRIMARY KEY (  
invoice_invoice_number, item_item_number );
```

```
ALTER TABLE invoice_item  
    ADD CONSTRAINT invoice_item_invoice_fk FOREIGN KEY ( invoice_invoice_number )  
        REFERENCES invoice ( invoice_number );
```

```
ALTER TABLE invoice_item  
    ADD CONSTRAINT invoice_item_item_fk FOREIGN KEY ( item_item_number )  
        REFERENCES item ( item_number );
```

INSERT:

```
INSERT INTO INVOICE_ITEM VALUES( 346221,'69112-95B',1.00,NULL);
```

```
INSERT INTO INVOICE_ITEM VALUES( 36107,'16554-92A',2.00,NULL);
```

```
INSERT INTO INVOICE_ITEM VALUES( 36107,'22698-01',1.00,NULL);
```

```
INSERT INTO INVOICE_ITEM VALUES( 36107,'59263-79',NULL,5);
```

```
INSERT INTO INVOICE_ITEM VALUES( 36107,'59988-72A',NULL,2);
```

```
INSERT INTO INVOICE_ITEM VALUES( 36107,'70404-99Y',NULL,1);
```

```
INSERT INTO INVOICE_ITEM VALUES( 36107,'M0737.M',NULL,2);
```

```
INSERT INTO INVOICE_ITEM VALUES( 38804,'17048-98',1.00,NULL);
```

```
INSERT INTO INVOICE_ITEM VALUES( 38804,'17056-01',1.00,NULL);
```

```
SELECT * FROM INVOICE_ITEM;
```

Script Output x Query Result x
All Rows Fetched: 9 in 0.028 seconds

	INVOICE_INVOICE_NUMBER	ITEM_ITEM_NUMBER	DEL_QTY	SO_QTY
1	346221	69112-95B	1	(null)
2	36107	16554-92A	2	(null)
3	36107	22698-01	1	(null)
4	36107	59263-79	(null)	5
5	36107	59988-72A	(null)	2
6	36107	70404-99Y	(null)	1
7	36107	M0737.M	(null)	2
8	38804	17048-98	1	(null)
9	38804	17056-01	1	(null)

QUERIES

- 1) How many parts did Jim Shoe purchase in November 2006?

```
SELECT CUSTOMER.CUSTOMER_NAME,  
COUNT(INVOICE_ITEM.ITEM_ITEM_NUMBER) AS NUMBER_OF_PARTS,  
INVOICE.DATE_AND_TIME  
FROM CUSTOMER, PAYMENT, INVOICE, INVOICE_ITEM  
WHERE CUSTOMER.CUSTOMER_NO =  
PAYMENT.CUSTOMER_CUSTOMERS_NO  
AND PAYMENT.CUSTOMER_CUSTOMERS_NO =  
INVOICE.PAYMENT_CUSTOMERS_NO  
AND INVOICE.INVOICE_NUMBER =  
INVOICE_ITEM.INVOICE_INVOICE_NUMBER  
GROUP BY CUSTOMER.CUSTOMER_NAME, INVOICE.DATE_AND_TIME  
HAVING CUSTOMER_NAME = 'JIM SHOE' AND DATE_AND_TIME BETWEEN  
'01-NOV-06' AND '30-NOV-06';
```

Worksheet Query Builder

```
SELECT CUSTOMER.CUSTOMER_NAME, COUNT(INVOICE_ITEM.ITEM_ITEM_NUMBER) AS NUMBER_OF_PARTS, INVOICE.DATE_AND_TIME  
FROM CUSTOMER, PAYMENT, INVOICE, INVOICE_ITEM  
WHERE CUSTOMER.CUSTOMER_NO = PAYMENT.CUSTOMER_CUSTOMERS_NO  
AND PAYMENT.CUSTOMER_CUSTOMERS_NO = INVOICE.PAYMENT_CUSTOMERS_NO  
AND INVOICE.INVOICE_NUMBER = INVOICE_ITEM.INVOICE_INVOICE_NUMBER  
GROUP BY CUSTOMER.CUSTOMER_NAME, INVOICE.DATE_AND_TIME  
HAVING CUSTOMER_NAME = 'JIM SHOE' AND DATE_AND_TIME BETWEEN '01-NOV-06' AND '30-NOV-06';
```

Script Output x Query Result x

SQL | All Rows Fetched: 1 in 0.017 seconds

CUSTOMER_NAME	NUMBER_OF_PARTS	DATE_AND_TIME
1 JIM SHOE	6	11-NOV-06

2) What was the total amount of all purchases by Speed Racer?

```
SELECT CUSTOMER.CUSTOMER_NAME, SUM (((INVOICE_ITEM.DEL_QTY *  
ITEM.RETAIL_PRICE)-ITEM.DISCOUNT) + ((INVOICE_ITEM.DEL_QTY *  
ITEM.RETAIL_PRICE)-ITEM.DISCOUNT) *SHOP.RATE) AS TOTAL_AMOUNT  
FROM INVOICE_ITEM, ITEM, CUSTOMER, SHOP, PAYMENT, INVOICE  
WHERE CUSTOMER.CUSTOMER_NO =  
PAYMENT.CUSTOMER_CUSTOMER_NO  
AND PAYMENT.CUSTOMER_CUSTOMER_NO =  
INVOICE.PAYMENT_CUSTOMER_CUSTOMER_NO  
AND INVOICE.INVOICE_NUMBER =  
INVOICE_ITEM.INVOICE_INVOICE_NUMBER  
AND INVOICE_ITEM.ITEM_ITEM_NUMBER = ITEM.ITEM_NUMBER  
AND ITEM.SHOP_SHOP_NAME = SHOP.SHOP_NAME  
GROUP BY CUSTOMER.CUSTOMER_NAME  
HAVING CUSTOMER_NAME = 'SPEED RACER';
```

The screenshot shows a database query editor with a toolbar at the top. The main window is divided into two panes: 'Worksheet' and 'Query Builder'. The 'Query Builder' pane contains the following SQL query:

```
SELECT CUSTOMER.CUSTOMER_NAME,  
SUM (((INVOICE_ITEM.DEL_QTY * ITEM.RETAIL_PRICE)-ITEM.DISCOUNT)+((INVOICE_ITEM.DEL_QTY * ITEM.RETAIL_PRICE)-ITEM.DISCOUNT)*SHOP.RATE) AS TOTAL_AMOUNT  
FROM INVOICE_ITEM,ITEM,CUSTOMER,SHOP,PAYMENT, INVOICE  
WHERE CUSTOMER.CUSTOMER_NO = PAYMENT.CUSTOMER_CUSTOMER_NO  
AND PAYMENT.CUSTOMER_CUSTOMER_NO = INVOICE.PAYMENT_CUSTOMER_CUSTOMER_NO  
AND INVOICE.INVOICE_NUMBER = INVOICE_ITEM.INVOICE_INVOICE_NUMBER  
AND INVOICE_ITEM.ITEM_ITEM_NUMBER = ITEM.ITEM_NUMBER  
AND ITEM.SHOP_SHOP_NAME = SHOP.SHOP_NAME  
GROUP BY CUSTOMER.CUSTOMER_NAME  
HAVING CUSTOMER_NAME = 'SPEED RACER'  
;  
  
UPDATE SHOP  
SET rate = 0.0825
```

Below the query editor, there is a status bar showing 'Script Output x', 'Query Result x', and 'Query Result 1 x'. The 'Query Result 1 x' pane displays the results of the query:

CUSTOMER_NAME	TOTAL_AMOUNT
1 SPEED RACER	69.5565

