**Jacob Hopkins:** cs411331**, Patrick Beech:** cs411322**,**

**Kwinton Dropps:** cs411328**, Rose Hughes:** cs411332

**GROUP PROJECT 1**

**CSCI 411/511**

**Jacob and Kwinton were unable to get Apps Anywhere working to access the oracle program and worked with Rose and Patrick on their accounts to make the tables and queries!**

**TABLE CREATION SCRIPT**

/\*CREATETABLE STATEMENTS\*/

CREATE TABLE Address (

astreetID int,

astreet varchar(255) NOT NULL PRIMARY KEY,

acity varchar(255),

astate varchar(2)

);

CREATE TABLE PersonAddress (

pstreetID int,

pstreet varchar(255) NOT NULL PRIMARY KEY,

pcity varchar(255),

pstate varchar(2)

);

CREATE TABLE SupplierLocation (

wsstreetID int,

wsstreet varchar(255) NOT NULL PRIMARY KEY,

wscity varchar(255),

wsstate varchar(2)

);

CREATE TABLE Person (

personID int NOT NULL PRIMARY KEY,

pname varchar(255)

);

CREATE TABLE Employee (

employeeID int NOT NULL PRIMARY KEY,

ename varchar(255)

);

CREATE TABLE Customer (

customerID int NOT NULL PRIMARY KEY,

cname varchar(255)

);

CREATE TABLE Supplier (

supplierID int NOT NULL PRIMARY KEY,

sname varchar(255)

);

CREATE TABLE Items (

itemID int NOT NULL PRIMARY KEY,

iname varchar(255),

idescription varchar(255)

);

CREATE TABLE Hardware (

hardwareID int NOT NULL PRIMARY KEY,

hname varchar(255),

hdescription varchar(255)

);

CREATE TABLE Services (

serviceID int NOT NULL PRIMARY KEY,

sname varchar(255),

sdescription varchar(255)

);

CREATE TABLE HardwareInServiceUse (

serviceID int,

hardwareID int,

FOREIGN KEY(serviceID) REFERENCES Services(serviceID),

FOREIGN KEY(hardwareID) REFERENCES Hardware(hardwareID)

/\*ON DELETE SET NULL\*/

);

CREATE TABLE CustomerPurchases (

customerID int,

itemID int,

quantity int,

price float,

FOREIGN KEY(customerID) REFERENCES Customer(customerID),

FOREIGN KEY(itemID) REFERENCES Items(itemID)

);

CREATE TABLE Deliveries (

customerID int,

itemID int,

streetAddress varchar(250),

city varchar(250),

sstate varchar(250),

deliveryDate varchar(250),

employeeID int,

FOREIGN KEY(customerID) REFERENCES Customer(customerID),

FOREIGN KEY(itemID) REFERENCES Items(itemID),

FOREIGN KEY(streetAddress) REFERENCES PersonAddress(pstreet),

FOREIGN KEY(employeeID) REFERENCES Employee(employeeID)

);

CREATE TABLE PurchaseFromSupplier (

itemID int,

supplierID int,

quantity int,

unitCost float,

FOREIGN KEY(itemID) REFERENCES Items(itemID),

FOREIGN KEY(supplierID) REFERENCES Supplier(supplierID)

);

CREATE TABLE EmployeePerformService (

employee\_pid int,

customer\_pid int,

iid int,

sDate varchar(250),

sHours float,

FOREIGN KEY(employee\_pid) REFERENCES Employee(employeeID),

FOREIGN KEY(customer\_pid) REFERENCES Customer(customerID),

FOREIGN KEY(iid) REFERENCES Items(itemID)

);

INSERT INTO PersonAddress VALUES (10234,'342 streetA','Monticello','MN');

INSERT INTO PersonAddress VALUES (11567,'65 streetS','St Cloud','MN');

INSERT INTO PersonAddress VALUES (3289,'892 streetM','Minneapolis','MN');

INSERT INTO PersonAddress VALUES (17645,'342 streetB','Monticello','MN');

INSERT INTO PersonAddress VALUES (88331,'342 streetC','Monticello','MN');

INSERT INTO PersonAddress VALUES (74591,'999 streetG','Duluth','MN');

INSERT INTO PersonAddress VALUES (NULL,'344 streetA','Monticello','MN');

INSERT INTO SupplierLocation VALUES (7760,'60 steetG','St. Paul','MN');

INSERT INTO SupplierLocation VALUES (7760,'75 streetT','Duluth','MN');

INSERT INTO SupplierLocation VALUES (7761,'6 streetA','St. Paul','MN');

INSERT INTO SupplierLocation VALUES (98760,'798 StreetE','Duluth','MN');

INSERT INTO Address VALUES (10234,'342 streetA','Monticello','MN');

INSERT INTO Address VALUES (11567,'65 streetS','St Cloud','MN');

INSERT INTO Address VALUES (3289,'892 streetM','Minneapolis','MN');

INSERT INTO Address VALUES (17645,'342 streetB','Monticello','MN');

INSERT INTO Address VALUES (88331,'342 streetC','Monticello','MN');

INSERT INTO Address VALUES (74591,'999 streetG','Duluth','MN');

INSERT INTO Address VALUES (NULL,'344 streetA','Monticello','MN');

INSERT INTO Address VALUES (7760,'60 steetG','St. Paul','MN');

INSERT INTO Address VALUES (7760,'75 streetT','Duluth','MN');

INSERT INTO Address VALUES (7761,'6 streetA','St. Paul','MN');

INSERT INTO Address VALUES (98760,'798 StreetE','Duluth','MN');

INSERT INTO Person VALUES (10234,'Able');

INSERT INTO Person VALUES (11567,'Baker');

INSERT INTO Person VALUES (3289,'George');

INSERT INTO Person VALUES (88331,'Alice');

INSERT INTO Person VALUES (74591,'Jane');

INSERT INTO Person VALUES (17645,'Bill');

INSERT INTO Employee VALUES (10234,'Able');

INSERT INTO Employee VALUES (11567,'Baker');

INSERT INTO Employee VALUES (3289,'George');

INSERT INTO Employee VALUES (88331,'Alice');

INSERT INTO Customer VALUES (3289,'George');

INSERT INTO Customer VALUES (88331,'Alice');

INSERT INTO Customer VALUES (74591,'Jane');

INSERT INTO Customer VALUES (10234,'Able');

INSERT INTO Supplier VALUES (7760,'ABC-Supply');

INSERT INTO Supplier VALUES (7761,'MyHWCo');

INSERT INTO Supplier VALUES (98760,'LightCo');

INSERT INTO Hardware VALUES (2,'cement','60 lb , bag of cement');

INSERT INTO Hardware VALUES (4,'paint','gallon of white paint');

INSERT INTO Hardware VALUES (10,'nail','2 in nail');

INSERT INTO Hardware VALUES (12,'nail','3 in nail');

INSERT INTO Hardware VALUES (14,'nail','4 in nail');

INSERT INTO Hardware VALUES (16,'bolt','2 in bolt');

INSERT INTO Hardware VALUES (20,'light bulb','40 watt');

INSERT INTO Hardware VALUES (22,'light bulb','60 watt');

INSERT INTO Hardware VALUES (24,'light bulb','10 watt LED');

INSERT INTO Hardware VALUES (26,'light bulb','14 watt LED');

INSERT INTO Hardware VALUES (28,'glaze','16 ounces');

INSERT INTO Hardware VALUES (29,'grill','40lb barbeque');

INSERT INTO Hardware VALUES (30,'key','key blank - type 1');

INSERT INTO Hardware VALUES (32,'key','key blank - type 2');

INSERT INTO Hardware VALUES (34,'grass seed','1 pound');

INSERT INTO Services VALUES (100,'duplicate','type 1 key');

INSERT INTO Services VALUES (101,'duplicate','type 2 key');

INSERT INTO Services VALUES (102,'repair','re-glaze window');

INSERT INTO Services VALUES (103,'rent','seed spreader');

INSERT INTO Items VALUES (2,'cement','60 lb , bag of cement');

INSERT INTO Items VALUES (4,'paint','gallon of white paint');

INSERT INTO Items VALUES (10,'nail','2 in nail');

INSERT INTO Items VALUES (12,'nail','3 in nail');

INSERT INTO Items VALUES (14,'nail','4 in nail');

INSERT INTO Items VALUES (16,'bolt','2 in bolt');

INSERT INTO Items VALUES (20,'light bulb','40 watt');

INSERT INTO Items VALUES (22,'light bulb','60 watt');

INSERT INTO Items VALUES (24,'light bulb','10 watt LED');

INSERT INTO Items VALUES (26,'light bulb','14 watt LED');

INSERT INTO Items VALUES (28,'glaze','16 ounces');

INSERT INTO Items VALUES (29,'grill','40lb barbeque');

INSERT INTO Items VALUES (30,'key','key blank - type 1');

INSERT INTO Items VALUES (32,'key','key blank - type 2');

INSERT INTO Items VALUES (34,'grass seed','1 pound');

INSERT INTO Items VALUES (100,'duplicate','type 1 key');

INSERT INTO Items VALUES (101,'duplicate','type 2 key');

INSERT INTO Items VALUES (102,'repair','re-glaze window');

INSERT INTO Items VALUES (103,'rent','seed spreader');

INSERT INTO HardwareInServiceUse VALUES (100,30);

INSERT INTO HardwareInServiceUse VALUES (101,32);

INSERT INTO HardwareInServiceUse VALUES (102,28);

INSERT INTO HardwareInServiceUse VALUES (103,34);

INSERT INTO CustomerPurchases VALUES (3289,100,2,2);

INSERT INTO CustomerPurchases VALUES (3289,101,1,1);

INSERT INTO CustomerPurchases VALUES (3289,29,1,300);

INSERT INTO CustomerPurchases VALUES (88331,26,32,160);

INSERT INTO CustomerPurchases VALUES (88331,24,2,20);

INSERT INTO CustomerPurchases VALUES (88331,20,2,25);

INSERT INTO CustomerPurchases VALUES (88331,4,7,70);

INSERT INTO CustomerPurchases VALUES (74591,4,3,90);

INSERT INTO CustomerPurchases VALUES (74591,28,1,5);

INSERT INTO CustomerPurchases VALUES (74591,20,4,12);

INSERT INTO CustomerPurchases VALUES (74591,103,1,10);

INSERT INTO CustomerPurchases VALUES (10234,2,25,125);

INSERT INTO CustomerPurchases VALUES (10234,14,100,5);

INSERT INTO CustomerPurchases VALUES (10234,16,150,15);

INSERT INTO CustomerPurchases VALUES (10234,100,1,1);

INSERT INTO Deliveries VALUES (3289,29,'65 streetS','St. Cloud','MN','8/31/21',3289);

INSERT INTO Deliveries VALUES (74591,4,'344 streetA','Monticello','MN','9/10/21',3289);

INSERT INTO PurchaseFromSupplier VALUES (2,7760,50,3);

INSERT INTO PurchaseFromSupplier VALUES (16,7760,1440,0.05);

INSERT INTO PurchaseFromSupplier VALUES (29,7761,10,200);

INSERT INTO PurchaseFromSupplier VALUES (24,98760,100,5);

INSERT INTO PurchaseFromSupplier VALUES (26,98760,250,6);

INSERT INTO PurchaseFromSupplier VALUES (14,7761,20000,0.02);

INSERT INTO PurchaseFromSupplier VALUES (28,7760,288,2);

INSERT INTO EmployeePerformService VALUES (11567,3289,100,'09/09/21',0.1);

INSERT INTO EmployeePerformService VALUES (11567,3289,101,'09/08/21',0.1);

INSERT INTO EmployeePerformService VALUES (10234,10234,100,'09/12/21',0.1);

**OUTPUT**

Table ADDRESS created.

Table PERSONADDRESS created.

Table SUPPLIERLOCATION created.

Table PERSON created.

Table EMPLOYEE created.

Table CUSTOMER created.

Table SUPPLIER created.

Table ITEMS created.

Table HARDWARE created.

Table SERVICES created.

Table HARDWAREINSERVICEUSE created.

Table CUSTOMERPURCHASES created.

Table DELIVERIES created.

Table PURCHASEFROMSUPPLIER created.

Table EMPLOYEEPERFORMSERVICE created.

1 row inserted.

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B)

**ADDRESS**

ASTREETID ASTREET ACITY ASTREET

---------- -------------- ------------ --

10234 342 streetA Monticello MN

11567 65 streetS St Cloud MN

3289 892 streetM Minneapolis MN

17645 342 streetB Monticello MN

88331 342 streetC Monticello MN

74591 999 streetG Duluth MN

NULL 344 streetA Monticello MN

7760 60 steetG St. Paul MN

7760 75 streetT Duluth MN

7761 6 streetA St. Paul MN

98760 798 StreetE Duluth MN

11 rows selected.

**PERSONADDRESS**

PSTREETID PSTREET PCITY PSTREET

---------- ------------ ----------- --

10234 342 streetA Monticello MN

11567 65 streetS St Cloud MN

3289 892 streetM Minneapolis MN

17645 342 streetB Monticello MN

88331 342 streetC Monticello MN

74591 999 streetG Duluth MN

NULL 344 streetA Monticello MN

7 rows selected.

**SUPPLIERLOCATION**

WSSTREETID WSSTREET WSCITY WSTATE ---------- ------------ ---------- --

7760 60 steetG St. Paul MN

7760 75 streetT Duluth MN

7761 6 streetA St. Paul MN

98760 798 StreetE Duluth MN

**PERSON**

PERSONID PNAME

---------- -------

10234 Able

11567 Baker

3289 George

88331 Alice

74591 Jane

17645 Bill

6 rows selected.

**Employee**

EMPLOYEEID ENAME

---------- --------

10234 Able

11567 Baker

3289 George

88331 Alice

**CUSTOMER**

CUSTOMERID CNAME

---------- -------

3289 George

88331 Alice

74591 Jane

10234 Able

**SUPPLIER**

SUPPLIERID SNAME

---------- -----------

7760 ABC-Supply

7761 MyHWCo

98760 LightCo

**ITEM**

ITEMID INAME IDESCRIPTION

---------- ------------ ----------------------

2 cement 60 lb , bag of cement

4 paint gallon of white paint

10 nail 2 in nail

12 nail 3 in nail

14 nail 4 in nail

16 bolt 2 in bolt

20 light bulb 40 watt

22 light bulb 60 watt

24 light bulb 10 watt LED

26 light bulb 14 watt LED

28 glaze 16 ounces

29 grill 40lb barbeque

30 key key blank - type 1

32 key key blank - type 2

34 grass seed 1 pound

100 duplicate type 1 key

101 duplicate type 2 key

102 repair re-glaze window

103 rent seed spreader

19 rows selected.

**HARDWARE**

HARDWAREID HNAME HDESCRIPTION

---------- ----------- -----------------------

2 cement 60 lb , bag of cement

4 paint gallon of white paint

10 nail 2 in nail

12 nail 3 in nail

14 nail 4 in nail

16 bolt 2 in bolt

20 light bulb 40 watt

22 light bulb 60 watt

24 light bulb 10 watt LED

26 light bulb 14 watt LED

28 glaze 16 ounces

29 grill 40lb barbeque

30 key key blank - type 1

32 key key blank - type 2

34 grass seed 1 pound

15 rows selected.

**SERVICES**

SERVICEID SNAME SDESCRIPTION

---------- ----------- -----------------

100 duplicate type 1 key

101 duplicate type 2 key

102 repair re-glaze window

103 rent seed spreader

**HARDWAREINSERVICEUSE**

SERVICEID HARDWAREID

---------- ----------

100 30

101 32

102 28

103 34

**CustomerPurchases**

CUSTOMERID ITEMID QUANTITY PRICE

---------- ---------- ---------- ----------

3289 100 2 2

3289 101 1 1

3289 29 1 300

88331 26 32 160

88331 24 2 20

88331 20 2 25

88331 4 7 70

74591 4 3 90

74591 28 1 5

74591 20 4 12

74591 103 1 10

10234 2 25 125

10234 14 100 5

10234 16 150 15

10234 100 1 1

15 rows selected.

**DELIVERIES**

CUSTOMERID ITEMID STREETADDRESS CITY SSTATE DELIVERYDATE EMPLOYEEID

---------- ---------- --------------- ------------ ------- ------------- ----------

3289 29 65 streetS St. Cloud MN 8/31/21 3289

74591 4 344 streetA Monticello MN 9/10/21 3289

**PurchaseFromSupplier**

ITEMID SUPPLIERID QUANTITY UNITCOST

---------- ---------- ---------- ----------

2 7760 50 3

16 7760 1440 .05

29 7761 10 200

24 98760 100 5

26 98760 250 6

14 7761 20000 .02

28 7760 288 2

7 rows selected.

**EmployeePerformService**

EMPLOYEE\_PID CUSTOMER\_PID IID SDATE SHOURS

------------ ------------ ---------- ---------- ----------

11567 3289 100 09/09/21 .1

11567 3289 101 09/08/21 .1

10234 10234 100 09/12/21 .1

C)

1. List the complete addresses of People who are both Customers and Employees

**CODE**

Text

Description automatically generated

SELECT e.ename, a.astreet, a.acity, a.astate

FROM ADDRESS a, CUSTOMER c, EMPLOYEE e

WHERE

a.astreetID = c.customerID AND

a.astreetID = e.employeeID;

**RESULT**

Table

Description automatically generated

1. List the items that were delivered to an address where neither a customer lives nor a wholesale supplier is located at. Give the Item iid and description as well at the complete address.

**CODE**

Text

Description automatically generated

SELECT i.itemID, i.iname, i.idescription, a.astreet, a.acity, a.astate

FROM ITEMS i, ADDRESS a, DELIVERIES d

WHERE d.streetAddress NOT IN (SELECT a.astreet

FROM ADDRESS a, CUSTOMER c

WHERE a.astreetID = c.customerID )

AND d.streetAddress NOT IN (SELECT a.astreet

FROM ADDRESS a, SUPPLIER s

WHERE a.astreetID = s.supplierID )

AND i.itemID = d.itemID

AND d.streetAddress = a.astreet;

**RESULT**

Table

Description automatically generated

1. How many people have bought one or more hardware items and no services.

**CODE**

Text

Description automatically generated

SELECT count (distinct a.customerID) "hardware only customers count"

FROM CustomerPurchases a

LEFT JOIN

(SELECT cpt.customerID

FROM CustomerPurchases cpt, Services S

WHERE cpt.itemID = s.serviceID) b

ON a.customerID = b.customerID

WHERE b.customerID IS NULL;

**RESULT**

Graphical user interface, text, application

Description automatically generated

1. List the customers who made the least expensive hardware purchase in a single transaction; consider the price paid, not the per unit price. Include the customer name, pid, and hardware iid and price.

**CODE**

Text

Description automatically generated

SELECT c.cname, c.customerID, cp.itemID, cp.price\*cp.quantity

FROM CustomerPurchases cp, CUSTOMER c

WHERE

c.customerID = cp.customerID AND

cp.price \* cp.quantity = (SELECT MIN(cp.price\*cp.quantity)

FROM CustomerPurchases cp, Hardware h

WHERE

cp.itemID = h.hardwareID);

**RESULT**

Table

Description automatically generated

1. List the pids and names of the people who bought a service that they did not perform for themselves.

**CODE**

Text

Description automatically generated

SELECT DISTINCT c.customerID, c.cname

FROM EmployeePerformService eps, CUSTOMER c

WHERE

eps.customer\_pid = c.customerID

AND

eps.employee\_pid != eps.customer\_pid;

**RESULT**

Table

Description automatically generated

1. For the services that use hardware, list the service iid, name and description; also list the iid, name and description of the hardware used.

Text

Description automatically generated

SELECT s.serviceID, s.sname, s.sdescription, h.hardwareID, h.hname, h.hdescription

FROM Services s, Hardware h, HardwareInServiceUse hsu

WHERE

hsu.serviceID = s.serviceID

AND

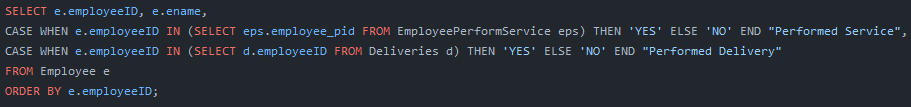
hsu.hardwareID = h.hardwareID;

Table

Description automatically generated

1. For each employee indicate whether they have performed a service or delivered an item. Each row in the resulting table should have four columns: Employee pid, name, service and delivery. If they have delivered an item, then indicated “yes” for the delivery attribute; if they have performed a service, then indicate “yes” for the service attribute; otherwise, the attribute value is to be “no”. Employees must be listed only once. In addition, each employee is to be listed even if they performed no service or delivery. The output must be sorted by pid.

**CODE**



SELECT e.employeeID, e.ename,

CASE WHEN e.employeeID IN (SELECT eps.employee\_pid FROM EmployeePerformService eps) THEN 'YES' ELSE 'NO' END "Performed Service",

CASE WHEN e.employeeID IN (SELECT d.employeeID FROM Deliveries d) THEN 'YES' ELSE 'NO' END "Performed Delivery"

FROM Employee e

ORDER BY e.employeeID;

**RESULT**

Table

Description automatically generated

1. For each hardware item, compute the total quantity that has been sold to customers, and the total quantity that has been bought from Wholesale suppliers. Hardware items must be listed eve n if they have a zero total quantity for number bought or sold. List the hardware item iid and the two total quantity values. Output must be sorted by iid. One single table is to be produced. In addition to the SQL command s and printed output from the execution of these queries, you are to justify the results in writing. For each query, the command, result, and justification are to be listed adjacent to each other. Display of duplicate tuples must be eliminated. Your queries must be capable of producing correct results for ANY instance of the tables.

**CODE**

Text

Description automatically generated

SELECT h.hardwareID, SUM(NVL(cp.quantity, 0)), SUM(NVL(pfs.quantity, 0))

FROM Hardware h, CustomerPurchases cp, PurchaseFromSupplier pfs

WHERE

h.hardwareID IN (SELECT cp.itemID FROM CustomerPurchases cp)

AND

(h.hardwareID = cp.itemID

AND

h.hardwareID = pfs.itemID)

GROUP BY h.hardwareID;

**RESULT**

Table

Description automatically generated

Additional Query 1)

i.

Additional Queries: List the complete addresses of People who are neither Customers nor Employees.

ii.

Text

Description automatically generated

|  |
| --- |
| SELECT p.pname, a.astreet, a.acity, a.astate |
|  |

|  |
| --- |
| FROM ADDRESS a, Person p |
|  |

|  |
| --- |
| WHERE |
|  |

|  |
| --- |
| a.astreetID = p.personID |
|  |

|  |
| --- |
| AND |
|  |

|  |
| --- |
| p.personID NOT IN (SELECT e.employeeID from Employee e) |
|  |

|  |
| --- |
| AND |
|  |

p.personID NOT IN (SELECT c.customerID from Customer c);

iii.

Table

Description automatically generated

iv. This would give the hardware store insight as to who does not have direct relationship with the store, so that they can better advertise.

Additional Query 2)

i. List the transactions that are the most expensive hardware purchases from the supplier; consider the price paid, not the per unit price. Include the hardware id, hardware name, hardware description, and the total cost.

ii.  
Text

Description automatically generated

|  |
| --- |
| SELECT h.hardwareID, h.hname, h.hdescription, pfs.unitCost \* pfs.quantity |
|  |

|  |
| --- |
| FROM Hardware h, PurchaseFromSupplier pfs |
|  |

|  |
| --- |
| WHERE |
|  |

|  |
| --- |
| h.hardwareID = pfs.itemID |
|  |

|  |
| --- |
| AND |
|  |

|  |
| --- |
| pfs.unitCost \* pfs.quantity = (SELECT MAX(pfs.unitCost \* pfs.quantity) |
|  |

|  |
| --- |
| FROM PurchaseFromSupplier pfs, Hardware h |
|  |

WHERE h.hardwareID = pfs.itemID);

iii.

Graphical user interface, text, application

Description automatically generated

iv. This query would give the company knowledge on as to what purchases are costing the most from the supplier.