

Computer Science Department

University of Computer & Emerging Sciences (FAST-NU)

HOME WORK ASSIGNMENT COVER SHEET

COURSE TITLE	DATABASE SYSTEMS	COURSE CODE	CS219
INSTRUCTOR	Doctor Ejaz Ahmed.	TYPE	<input type="checkbox"/> <input checked="" type="checkbox"/> (Please tick)
ASSIGNMENT NO	HW-3 (Class)	Indiv. Group	
ASSIGNMENT	Completing Schema of Purchase and Sales		
HAND OUT DATE	28-April-2021	DUE DATE	08-May-2021 (6PM)
ESTIMATE TIME	8 Hours		

ASSESSMENT CRITERIA (or attached)	% Mark
<p>This HW includes the following</p> <p>tasks Scenario Schema's tables with Keys and Constraints Sample datasets</p> <p>Submission: Only soft copy in pdf is required. Any mistake or missing material will lead to the reduction of 5% marks.</p> <p>Group of max 3 students is allowed, individual work and group of 2 is acceptable in extreme situations and with <u>prior written (by email) permission of theory course teacher. Such permission should be sought at least 5 days before the deadline of the assignment.</u></p> <p>Any type of plagiarism will lead to 0% marks of both/all parties. Cross Section Groups are not allowed.</p>	

TO BE COMPLETED BY STUDENT (TEAM LEAD)	GROUP MEMBERS ID
NAME Abdul Manan Akram, Hasaan Asif, Waqar Amin	19i-0500 Section A
ID NO 19i-0500, 17i-0193, 18i-0530 Section# A	18i-0530 Section A
DECLARATION: I/We declare that this Coursework is my/our group's own work	17i-0193 Section A

GRADE/ MARK AWARDED	<input type="text"/>	COMMENTS	
INSTRUCTOR'S SIGNATURE		DATE	06 may, 2021

Tables that were already given:

1. Supplier:

```
SQL> CREATE TABLE Suppliers(  
2     Supp#      NUMBER(7),  
3     SName      varchar2(20),  
4     Address    varchar2(50),  
5     City       varchar2(25),  
6     TelNo      varchar2(15)  
7 );
```

Table created.

Supp Primary Key:

Supp# will be the Primary key in this case because each supply has a unique identifier which tells that it has certain or unique number that differs it from other employees.

```
SQL> Alter Table Suppliers  
2     ADD Constraint Suppliers_PK  
3     primary key (Supp#);
```

Table altered.

2. Item:

```
SQL> CREATE TABLE Item(  
2     Item#      NUMBER(7),  
3     Name       varchar2(20),  
4     Price      NUMBER(12),  
5     TotalQty   NUMBER(12),  
6     Category   varchar2(15)  
7 );
```

Table created.

Item Primary Key: In this case item# will be the Primary Key because in every enterprise every item have a unique number which differs it from other items in the enterprise.

```
SQL> Alter Table Item  
2     ADD Constraint Item_PK  
3     primary key (Item#);
```

Table altered.

3. Supplied Items:

```
SQL> CREATE TABLE SuppliedItems(  
2  supp#          Number(7),  
3  Item#          NUMBER(7),  
4  Qty           NUMBER(12),  
5  Price         NUMBER(12)  
6  );
```

Table created.

Supp Item Foreign Key 1: Supp# is the first foreign key in this table which comes from the supplier table so it is in relationship with the Supplier table because items in an enterprise are obviously supplied by some suppliers which have certain unique number.

```
SQL> Alter Table SuppliedItems  
2  Add Constraint Supplier_FK  
3  foreign key (supp#)  
4  references suppliers(supp#);
```

Table altered.

Supp Item Foreign Key 2: Item# is the second foreign key in this table which comes from the Item table. So, these both tables are in relationship with each other because items that are supplied by suppliers have some unique number.

```
SQL> Alter Table SuppliedItems  
2  Add Constraint Item_FK  
3  foreign key (Item#)  
4  references Item(Item#);
```

Table altered.

Tables that were selected by ourselves:

4. Employee:

```
SQL> create Table EmployeeX(  
2     Emp_ID      NUMBER(7),  
3     Name        varchar2(50),  
4     phoneNumber  varchar2(15),  
5     jobTitle     varchar2(25),  
6     Address      varchar2(80),  
7     Age          Number(3),  
8     DOB          Date  
9 );  
  
Table created.
```

Emp Primary Key: In this table Emp_ID is the Primary Key because each employee having any job_title have one unique identifier which separates it from other employees.

```
SQL> Alter Table EmployeeX  
2     ADD Constraint Employee_PK  
3     primary key (Emp_ID);  
  
Table altered.
```

5. ItemOrder:

```
SQL> create Table ItemOrder(  
2     ItemOrder#   NUMBER(7),  
3     Emp_ID       NUMBER(7),  
4     ItemOrderType varchar(255),  
5     Item#        NUMBER(7)  
6 );  
  
Table created.
```

Order Primary Key: As, Order table is the most important table in any enterprise as it is the real evaluator of what the customer orders from an enterprise. So, each Customer has some unique Order# which separates it from other Customers. So, that's why it has been chosen as the Primary key in the table.

```
SQL> Alter Table ItemOrder
2      ADD Constraint ItemOrder_PK
3      primary key (ItemOrder#);

Table altered.
```

Order Foreign Key: In this table Emp_ID is the foreign key because each particular customer when purchases some item from the enterprise he/she purchases it from one of the employees of the enterprise, so that's why order table needs Emp_ID so that it should know which employee has given which order to which customer.

```
SQL> Alter Table ItemOrder
2      Add Constraint ItemOrder_FK1
3      foreign key (EMP_ID)
4      references EmployeeX(Emp_ID);

Table altered.
```

Order Foreign Key 2: There will be another foreign key in the table Item# because whenever customer orders something he/she is given some type of item which has certain number so it is in relationship with the item table.

```
SQL> Alter Table ItemOrder
2      Add Constraint ItemOrder_FK2
3      foreign key (Item#)
4      references Item(Item#);

Table altered.
```

6. Customer:

```
SQL> create table CustomerX(  
2     Cid      NUMBER(7),  
3     C_Name   varchar2(50),  
4     Phone#   varchar2(15),  
5     Address  varchar2(80),  
6     Purchase_Date Date,  
7     ItemOrder# Number(7),  
8     Emp_ID    Number(7)  
9 );
```

Table created.

Customer Primary Key: In this table Cid will be the Primary key because whenever customer purchases some item from the enterprise he has some number called CNIC, which uniquely identifies each customer.

```
SQL> Alter Table CustomerX  
2     ADD Constraint Customer_PK  
3     primary key (Cid);
```

Table altered.

Customer Foreign Key#01: Customer table will be having one of the foreign key as the item# because whenever customer purchases some item that item has some kind of number so Customer and Item both tables are in relationship with each other.

```
SQL> Alter Table CustomerX  
2     Add Constraint Customer_FK  
3     foreign key (ItemOrder#)  
4     references Item(Item#);
```

Table altered.

Customer Foreign Key#02: Secondly, Customer table will be having foreign key as the Emp_ID because each customer purchases items from the enterprise via Employee called Sales Man. So, these both tables are linked together with each other.

```
SQL> Alter Table CustomerX  
2     Add Constraint Customer_FK2  
3     foreign key (Emp_ID)  
4     references EmployeeX(Emp_ID);
```

Table altered.

7. Point of Sales Table:

```
SQL> create Table POS(  
2     invoice# NUMBER(7),  
3     Emp_ID NUMBER(7),  
4     ItemOrder# Number(7),  
5     price Number(30)  
6 );
```

Table created.

POS Primary Key: It is the table which we basically called the counter in the enterprise which actually stores all the sales prices of items and cost etc. So, it gives the Customer an invoice# which is unique, so that if customer have some item missing he/she can get it by telling the invoice# to the employees.

```
SQL> Alter Table POS  
2     ADD Constraint POS_PK  
3     primary key (invoice#);
```

Table altered.

POS Foreign Key#01: In this table item# is the first foreign key which comes from the item table because in point of sales counter each item# is checked before giving it to customers so, this table is in relationship with the

```
SQL>     Alter Table POS  
2     Add Constraint POS_FK1  
3     foreign key (ItemOrder#)  
4     references Item(Item#);
```

Table altered.

POS Foreign Key#02: Another foreign key in this table which comes from the Employee table because in the POS counter employees or sales man gives items to customers so, they have certain ID to maintain their record so it is in relationship with the Employee table.

```
SQL> Alter Table POS
2      Add Constraint POS_FK2
3      foreign key (Emp_ID)
4      references EmployeeX(Emp_ID);
```

8. **Shipment:**

```
SQL> create Table Shipment(
2      Shipment# NUMBER(7),
3      Emp_ID NUMBER(7),
4      Address varchar2(150),
5      City varchar(20),
6      ItemOrder# NUMBER(7),
7      Ship_Price  NUMBER(15)
8  );
```

Table created.

Shipment Primary Key: In an enterprise some sales are made via shipped. So, each shipment has a unique id which separates it from other shipments so it is primary key in this case.

```
SQL> Alter Table Shipment
2      ADD Constraint Shipment_PK
3      primary key (Shipment#);
```

Table altered.

Shipment Foreign Key#01: First foreign key in the shipment table is the item# because obviously items are sold to customers via ship so each item has a unique id. SO, these both tables are in relationship with each other.

```
SQL> Alter Table Shipment
2      Add Constraint Shipment_FK1
3      foreign key (ItemOrder#)
4      references Item(Item#);
```

Table altered.

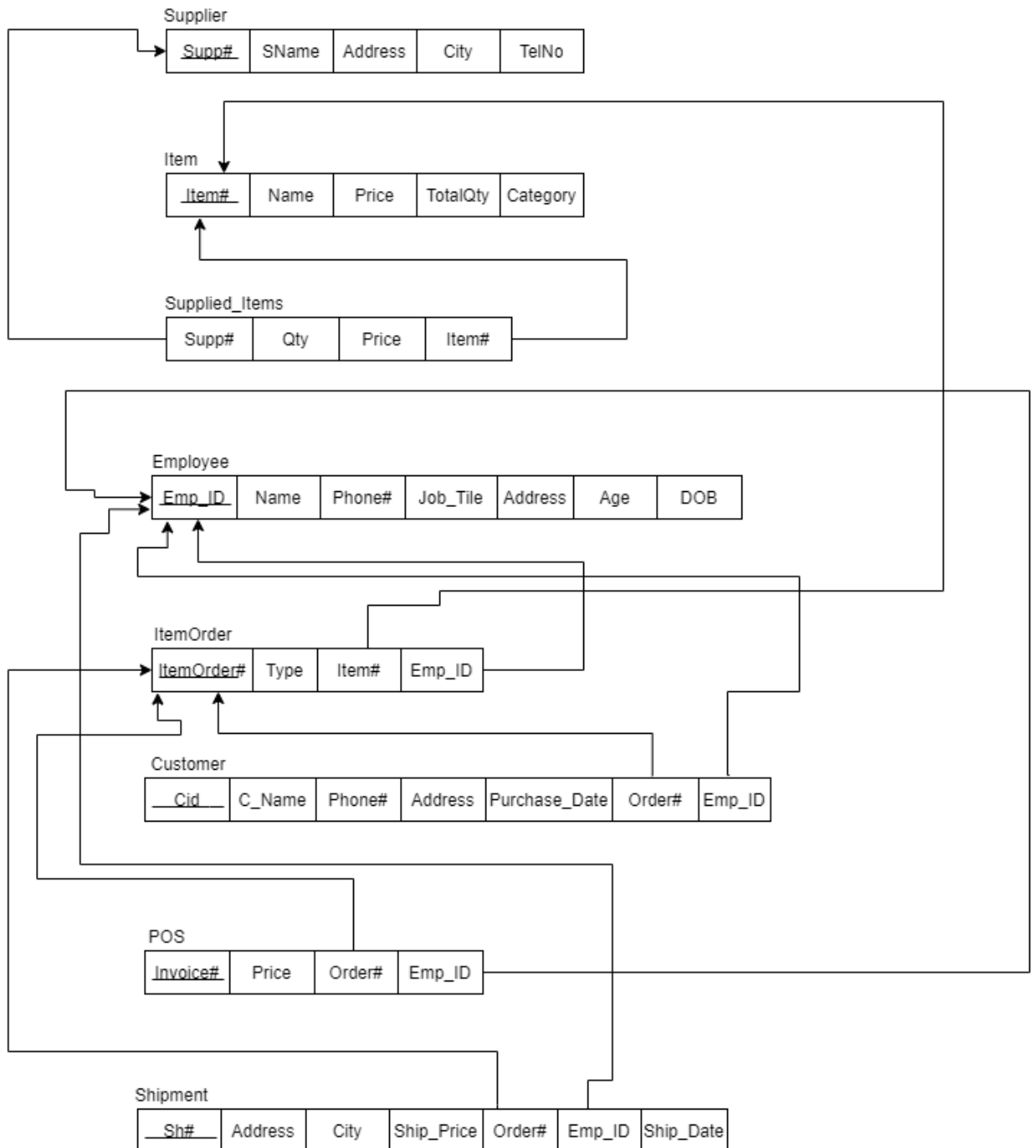
Shipment Foreign Key#02:

Second foreign key in this table is the employee id because employee made shipment to customers when they order something. So, each employee has a unique identifier in this case and both tables are in relationship with each other.

```
SQL>      Alter Table Shipment
2         Add Constraint Shipment_FK2
3         foreign key (Emp_ID)
4         references EmployeeX(Emp_ID);
```

```
Table altered.
```

Relational Schema



Dataset OR insertion of Data in to Tables

1. Supplier Dataset:

```
SQL> insert into Suppliers
  2   values(1, 'Manan', 'Block E House 12', 'Wah Cantt', '9213122145');

1 row created.

SQL>
SQL>      INSERT INTO Suppliers
  2  Values(2,'Versace','72-C Main Commercial Market Satellite Town','Rawalpindi','0514940719');

1 row created.

SQL>
SQL>      INSERT INTO Suppliers
  2  Values(3,'Armani','KiteMarket i8-3 PlotNumber3','Islamabad','0514934516');

1 row created.

SQL>
SQL>      INSERT INTO Suppliers
  2  Values(4,'Levis','32-C B-BLOCK','Rawalpindi','0514430719');

1 row created.

SQL>
SQL>      INSERT INTO Suppliers
  2  Values(5,'Jhon','Westridge','Rawalpindi','0514567129');

1 row created.
```

2. Item Dataset:

```
SQL> insert into Item
  2     values (1, 'bag', 1500, 3, 'Luxury');

1 row created.

SQL>
SQL>     insert into Item
  2     values (2, 'book', 500, 4, 'academic');

1 row created.

SQL>
SQL>     insert into Item
  2     values (3, 'laptop', 50000, 1, 'learning');

1 row created.

SQL>
SQL>     insert into Item
  2     values (4, 'Jeans', 1800, 2, 'Garments');

1 row created.

SQL>
SQL>     insert into Item
  2     values (5, 'Careem', 500, 12, 'Cosmetics');

1 row created.

SQL> insert into Item
  2     values (6, 'Biscuits', 200, 10, 'Snacks');
```

3. Dataset Supplied Item#01:

```
SQL> INSERT INTO SuppliedItems
  2  Values(1,1,60,350);

1 row created.

SQL> INSERT INTO SuppliedItems
  2  Values(1,2,25,500);

1 row created.

SQL>
SQL> INSERT INTO SuppliedItems
  2  Values(1,3,30,150);

1 row created.

SQL>
SQL> INSERT INTO SuppliedItems
  2  Values(2,1,20,300);

1 row created.

SQL> INSERT INTO SuppliedItems
  2  Values(2,2,15,450);

1 row created.

SQL> INSERT INTO SuppliedItems
  2  Values(2,3,20,100);
```

Dataset Supplied Item#02:

```
SQL> INSERT INTO SuppliedItems
      2  Values(2,4,100,50);

1 row created.

SQL>
SQL> INSERT INTO SuppliedItems
      2  Values(3,1,20,350);

1 row created.

SQL>
SQL> INSERT INTO SuppliedItems
      2  Values(3,2,10,600);

1 row created.

SQL>
SQL> INSERT INTO SuppliedItems
      2  Values(3,3,25,125);

1 row created.

SQL>
SQL> INSERT INTO SuppliedItems
      2  Values(3,4,100,75);

1 row created.
```

4. Employee Dataset#01:

```
SQL> insert into EmployeeX
  2      values (1, 'Waqar','923155567110','SalesMan','Adiala Town Rawlpindi',28,'12-Mar-1993');

1 row created.

SQL>
SQL>      insert into EmployeeX
  2      values (2, 'Ali','923155567220','Clerk','Sector E-9 Islamabad',31,'2-May-1990');

1 row created.

SQL>
SQL>      insert into EmployeeX
  2      values (3, 'Hamza','923155568761','Manager','Model Town Wah Cantt',34,'22-Jan-1987');

1 row created.

SQL>
SQL>      insert into EmployeeX
  2      values (4, 'Quassain','923155557891','Shipper','Chaklala Rawalpindi',26,'20-Apr-1995');

1 row created.

SQL> insert into EmployeeX
  2      values (5, 'Hassan','923155569921','SalesMan','Sector G-11 Islamabad',31,'5-Feb-1990');

1 row created.
```

Employee Dataset#02:

```
SQL> insert into EmployeeX
  2      values (6, 'Jameel','923155568761','Customer_representative','Dhalla town Rawlpindi',37,'9-Nov-1985');

1 row created.

SQL>
SQL>      insert into EmployeeX
  2      values ( 7,'Usman','923155566712','Manager','Satellite Town Rawalpindi',28,'19-Dec-1992');

1 row created.
```

5. Dataset Order:

```
SQL> insert into ItemOrder
  2      values (1, 1,'Shipping', 2);

1 row created.

SQL>
SQL>      insert into ItemOrder
  2      values (2, 6,'POS', 4);

1 row created.

SQL>
SQL>      insert into ItemOrder
  2      values (3, 5,'Shipping', 1);

1 row created.

SQL>
SQL>      insert into ItemOrder
  2      values (4, 5,'POS', 7);

1 row created.

SQL>
SQL>      insert into ItemOrder
  2      values (5, 1,'Shipping', 5);

1 row created.
```


6. Dataset Customer:

```
SQL> insert into customerX
  2     values (1,'Daniel',0512389439,'House#03 H.M.C Colony Taxila','3-Mar-2020',3,5);

1 row created.

SQL>
SQL>     insert into customerX
  2     values (2,'Faizan',0515612341,'Street 4 Sector F-8 Islamabad','19-Nov-2020',2,1);

1 row created.

SQL>
SQL>     insert into customerX
  2     values (3,'Nabeel',0518912071,'Phase 2 New City Wah Cantt','8-Aug-2020',1,5);

1 row created.

SQL>
SQL>     insert into customerX
  2     values (4,'',0514571239,'street 7 Sector G-11 Islamabad','2-Apr-2021',4,1);

1 row created.

SQL>
SQL>     insert into customerX
  2     values (5,'Yasir',0519812347,'House#8 Westridge Rawlpindi','25-Feb-2021',3,5);

1 row created.
```

7. Dataset Point of Sales#01:

```
SQL> insert into POS
  2      values (1, 1,1,20000);

1 row created.

SQL>
SQL> insert into POS
  2      values (2, 5,3,1500);

1 row created.

SQL>
SQL> insert into POS
  2      values (3, 1,5,11000);

1 row created.

SQL>
SQL> insert into POS
  2      values (4, 1,2,4500);

1 row created.

SQL>
SQL> insert into POS
  2      values (5, 5,2,4500);

1 row created.
```

Dataset Point of Sales#02:

```
SQL> insert into POS
  2      values (6, 1,6,400);

1 row created.
```

8. Dataset Shipment:

```
SQL> insert into Shipment
  2     values (1,1,'chacha chaudhary house g8/1','islamabad',1,4300);

1 row created.

SQL>
SQL>     insert into Shipment
  2     values (2,3,'Ahmed Khan Garments Store F-8/2','islamabad',3,3000);

1 row created.

SQL>
SQL>     insert into Shipment
  2     values (3,5,'Ali Nasir Food Streets Adiala Road','Rawalpindi',5,4000);

1 row created.

SQL>
SQL>
SQL>     insert into Shipment
  2     values (4,2,'Electronics and Sales Model Town Phase 2','Wah Cantt',1,2100);

1 row created.

SQL>
SQL>
SQL>     insert into Shipment
  2     values (5,6,'Allama Iqbal Town Phase 3','Lahore',4,1800);

1 row created.
```

SQL Statements for Calculating the Profit of Enterprise:

1. Calculating individual Profit:

```
SQL> select ps.price AS "Price 1", p.price "Price 2", s.Ship_Price AS "Price 3", ps.price-p.price AS "Profit from POS",s
.Ship_Price-p.price AS "Profit from Ship", ((ps.price-p.price)+(s.Ship_Price-p.price)) AS "Final Profit"
  2 from POS ps JOIN item p
  3 ON (ps.itemOrder# = p.Item#)
  4 JOIN SHIPMENT s
  5 ON (s.itemOrder# = p.Item#);
```

Price 1	Price 2	Price 3	Profit from POS	Profit from Ship	Final Profit
2500	1500	2100	1000	600	1600
2500	1500	4300	1000	2800	3800
65000	50000	70000	15000	20000	35000
750	500	4000	250	3500	3750

Explanation: Individual Profit is being calculated here for each of the prices. Firstly, sales price is being subtracted with the supplier's price, which gives Profit from POS. And, then similarly shipment's price is being subtracted with the supplier's price which gives us the "Profit from Ship" And then these both prices are being summed and we get an individual profit in each item.

2. Calculating Total Profit of Enterprise through this Dataset:

```
SQL> select SUM(((ps.price-p.price)+(s.Ship_Price-p.price))) AS "Total Profit in the enterprise"  
 2  from POS ps JOIN item p  
 3  ON (ps.itemOrder# = p.Item#)  
 4  JOIN SHIPMENT s  
 5  ON (s.itemOrder# = p.Item#);
```

```
Total Profit in the enterprise  
-----  
                        44150
```

Explanation: Here we have just calculated the total profit enterprise have just earned from the sales so far. By summing up the sales via POS and Shipped.

END