Title of Project: Furniture Stores Data management

In this project we developed a data management system for a retail business. This latter is a furniture store named "Home Furniture". The store has two branches, each with a store manager. With respect to the company in charge of this retail business, both branches are represented by the same manager.

This system helps organizing and controlling all the jobs of the store in the different departments (sales, delivery, and repairs) and recording all the important data for each task.

In more details, this system satisfies the following points:

- ❖ Recording the data of customers and shopping.
- ❖ Recording the data of the stores, departments, employees, and the manager of each department and store.
- ❖ Recording the work of each employee in his department.
- ❖ Accessing the delivery and sales data of all orders.
- ❖ Offering free repairs for his customers.
- ❖ Identifying the employees who participated in all the parts of orders and repairing and dates.

This system links all stores and departments together. It also links all purchased, delivered and repaired items so it becomes easier to reach any information from the saved data.

Tables:

⇒ Store (Store_id ,Store_name,Store_phone ,Store_adress, Staff_id)

Store_id	Store_name	Store_phone	Store_adress	Staff_id
HF111	HomeFurniture SF	1514	Beirut-sin Ifil	11932677
HF222	HomeFurniture CM	1514	Beirut City Mall	11932680
NULL	NULL	NULL	NULL	NULL

- Have a relation one to one with staff to define the store manger

⇒ department (Department_id ,Department_name,Store_id,Staff_id)

◊ fk_department_store foreign key (Store_id)

Department_id	Department_name	Store_id	Staff_id
445	Management	HF111	11932671
446	Sales	HF111	11932677
447	Delivering	HF111	11932677
448	Repairs	HF111	11392677
455	Management	HF222	11932671
456	Sales	HF222	11932680
457	Delivering	HF222	11932680
458	Repairs	HF222	11932680
NULL	NULL	NULL	NULL

⇒ Staff (Staff_id , Staff_FirstName , Staff_LastName , Staff_gender , Staff_phone , Staff_email , Staff_bday ,Department_id,Store_id,Staff_salary,Boss_id)
◊ fk_Staff_department foreign key (Department_id)
◊ fk_Staff_store foreign key (Store_id)
◊ fk_Staff_Boss foreign key (Boss_id)

Staff_id	Staff_FirstName	Staff_LastName	Staff_gender	Staff_phone	Staff_email	Staff_bday	Department_id	Store_id	Staff_salary	Boss_id
11932671	Hassan	Younes	M	3078547	Hassan@gmail.com	1980-10-17	445	NULL	1500	NULL
11932677	Tara	Karan	F	3478526	tara@gmail.com	1990-10-10	445	HF111	1200	11932671
11932680	Sami	Hammoud	M	71032592	sami@gmail.com	1989-02-12	455	HF222	1100	11932671
11932753	Mariam	Raja	F	3047617	mariam@gmail.com	1985-11-03	446	HF111	900	11932677
11932756	Omar	Safah	M	3746122	omar@gmail.com	1993-02-10	446	HF111	950	11932677
11932789	Lina	Zafoun	F	78159357	Lina@gmail.com	1998-11-30	456	HF222	800	11932680
11932791	Hala	Kandil	F	3887167	hala@gmail.com	1985-11-03	456	HF222	900	11932680
11932811	Elie	Barawi	M	303578	elie@gmail.com	1993-02-10	447	HF111	900	11932677
11932823	Karim	Alba	M	81036647	karim@gmail.com	1985-11-03	457	HF222	900	11932680
11932847	Kamal	Bako	M	70647466	kamal@gmail.com	1991-01-20	448	HF111	800	11932677
11932849	Murad	blilo	M	76640006	Murad@gmail.com	1991-12-20	458	HF222	800	11932680
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

$\Rightarrow$ Customer (Customer_ID, Customer_FirstName , Customer_LastName , Customer_phone , Customer_Adresse ,Customer_email)

Customer_ID	Customer_FirstName	Customer_LastName	Customer_phone	Customer_Adresse	Customer_email
666615	Maher	Sharaf	3740658	Beirut Ras Nabeh	Maher@gmail.com
666617	Razan	Wehbe	70689961	Beirut Hamra street	Razan@gmail.com
666620	Alex	Saliba	71032257	Beirut Ashrafyeh	Saliba@gmail.com
666624	Mounir	Khater	81020164	Beirut Basta	mounir@gmail.com
666637	Dana	Jamal	3654663	Beirut DT	dana@gmail.com
666639	Tamara	Audi	3716851	Beirut Mazraa	audi@gmail.com
666648	Lea	Jawde	1647466	Beirut port	lea@gmail.com
666651	Jad	Tawil	1649200	zahle jdita	jad@gmail.com
NULL	NULL	NULL	NULL	NULL	NULL

$\Rightarrow$ Items (Item_Code , Item_Name,Item_Description , Item_Price, Item_color, Item_Qty)

Item_Code	Item_Name	Item_Description	Item_Price	Item_color	Item_Qty
15682047	IMPERA Sitting set	3 seat : W: 221; D: 90/110; H: 81.	1700	white	12
15682059	ARMADA TV unit	W: 180; D: 45. H: 60.	500	oak	20
15682123	ERICA Sitting set	3 seat : W: 212; D: 87/110; H: 82	1500	black	10
15684248	PERLA Master bedroom	Bed 180 cm : W: 186; D: 206; H: 121.	3400	Vinge	27
15684288	KREA Master bedroom	Bed 160 cm : L: 210; W: 190/167; H: 165/36	2900	black	25
15687387	FLORA Young and kids bedroom	Bed 120 cm : L: 205; W: 130; H: 112.	1750	oak	18
15687452	ELITE Dining room	Table : L: 200; W: 110; H: 78.-Chair : W: 47; D...	2450	Vinge	33
15689471	KREA Dining room	Table : L: 166/206; W: 100; H: 79. Chair : W: 4...	1900	Naturel	24
15691874	ESPINA Corner set	Corner : 288*226; D:92 ; H: 87.	2500	Bleu	21
15782011	MILA Consoles & Mirrors	W: 95; D: 87; H: 182	900	oak	30
NULL	NULL	NULL	NULL	NULL	NULL

$\Rightarrow$ Order_list (Order_Code , order_Number, Item_Code, Order_Quantity, Customer_ID, Order_date , Staff_id)
  ◊ fk_Order_list_Customer foreign key (Customer_ID)
  ◊ fk_Order_list_Staff foreign key (Staff_id) → *To define the Sales staff*

◊   fk_Order_list_Itemes foreign key (Item_Code)

Order_Code	order_Number	Item_Code	Order_Quantity	Customer_ID	Order_date	Staff_id
112201	1	15684248	1	666615	2020-07-15	11932756
112201	2	15687452	1	666615	2020-07-15	11932756
112204	1	15687387	3	666617	2020-07-20	11932753
112204	2	15682059	1	666617	2020-07-20	11932753
112205	1	15691874	1	666624	2020-07-21	11932753
112235	1	15689471	1	666637	2020-08-16	11932789
112235	2	15684288	1	666637	2020-08-16	11932789
112256	1	15682123	2	666651	2020-08-30	11932791
112256	2	15782011	1	666651	2020-08-30	11932791
NULL	NULL	NULL	NULL	NULL	NULL	NULL

⇒ Purchased (Purchase_Code , Order_Code , Purchased_amount , Purchased_type)
   ◊   fk_Purchased_Order_list foreign key (Order_Code)

Purchase_Code	Order_Code	Purchased_amount	Purchased_type
4458701	112201	5850	Cash
4458711	112204	5750	Cash
4458710	112235	4800	visa
4458720	112256	3900	Cash
4458725	112205	2500	visa

⇒ Delivery (Delivery_ID , Order_Code , Staff_ID , Delivey_date)
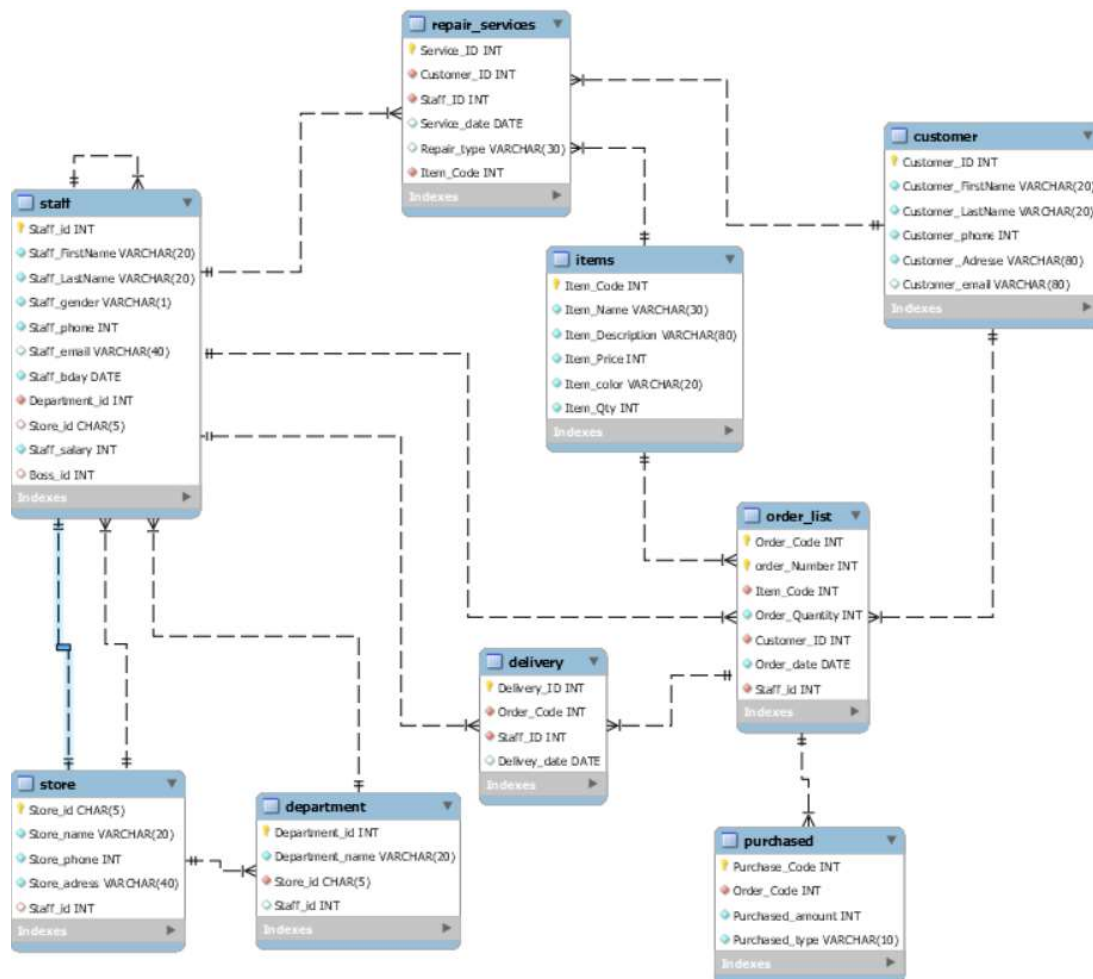   ◊   fk_Delivery_Staff foreign key (Staff_ID) → *to define the deliveries staff*
   ◊   fk_Delivery_Order_list foreign key (Order_Code)

Delivery_ID	Order_Code	Staff_ID	Delivey_date
1221	112201	11932811	2020-07-17
1227	112204	11932811	2020-07-23
1231	112235	11932823	2020-08-20
1233	112205	11932811	2020-08-26
1237	112256	11932823	2020-09-02
NULL	NULL	NULL	NULL

⇒ Repair_Services (Service_ID , Customer_ID , Staff_ID , Service_date , Repair_type,Item_code)
◊ fk_Repair_Services_Customer foreign key (Customer_ID)
◊ fk_Repair_Services_Staff foreign key (Staff_ID) → *to define the repairs staff*
◊ fk_Repair_items foreign key (Item_code)

Service_ID	Customer_ID	Staff_ID	Service_date	Repair_type	Item_Code
992	666617	11932847	2020-10-12	Broken bed	15687387
997	666651	11932849	2020-10-14	Polish	15782011
NULL	NULL	NULL	NULL	NULL	NULL

Diagram :

<u>Queries</u>:

1. Report the customers who have spent more than $5000 in 2020 {Join,">"}

➔ select distinct CUs.Customer_FirstName,OL.Order_Code ,PR.Purchased_amount
from customer CUS, order_list OL ,purchased PR
where OL.Customer_ID=CUS.Customer_ID and PR.Order_Code=OL.Order_Code
and PR.Purchased_amount>5000 ;

Customer_FirstName	Order_Code	Purchased_amount
Maher	112201	5850
Razan	112204	5750

2. List information about customers living in Beirut Ras Nabeh and Basta (customer name, store name and delivery date) {distinct , join ,IN}

➔ select distinct CUS.Customer_FirstName , ST.Store_name , DL.Delivey_date
from customer CUS,store ST,order_list OL,delivery DL , staff
where ST.Store_id=staff.Store_id and OL.Staff_ID=staff.Staff_ID and OL.Order_Code=DL.Order_Code
and OL.Customer_ID=CUS.Customer_ID
and CUS.Customer_Adresse IN ('Beirut Ras Nabeh','Beirut Basta');

Customer_FirstName	Store_name	Delivey_date
Maher	HomeFurniture SF	2020-07-17
Mounir	HomeFurniture SF	2020-08-26
Dana	HomeFurniture CM	2020-08-20

3. Report the names of the customers who bought the sitting set {join,regexp}

➔select CUS.Customer_FirstName ,CUS.Customer_LastName ,IT.Item_Code ,Item_Name
,IT.Item_color ,IT.Item_Description

from customer CUS,order_list OL, items IT
where OL.Customer_ID=CUS.Customer_ID and OL.Item_Code=IT.Item_Code and IT.Item_Name
regexp 'Sitting set';

Customer_FirstName	Customer_LastName	Item_Code	Item_Name	Item_color	Item_Description
Jad	Tawil	15682123	ERICA Sitting set	black	3 seat : W: 212; D: 87/110; H: 82

4. Report the name and the store of employees who earned more than the salary average
{Subqueries,join,AVG,Group by}

→ select staff.Staff_FirstName , staff.Staff_LastName , staff.Staff_salary ,ST.Store_name
from staff , store ST
where staff.store_id=ST.store_id and staff.Staff_salary > (select avg(Staff_salary) from staff)

group by (ST.Store_name);

Staff_FirstName	Staff_LastName	Staff_salary	Store_name
Tara	Karan	1200	HomeFurniture SF
Sami	Hammoud	1100	HomeFurniture CM

5. Report the count of deliveries made by each store {join,count}

→ select distinct   ST.Store_name , count(distinct DL.Delivey_date) as 'Deliveries numbers'
from store ST,order_list OL,delivery DL ,staff
where ST.Store_id=staff.Store_id and OL.Staff_ID=staff.Staff_ID and OL.Order_Code=DL.Order_Code
group by (ST.Store_name);

Store_name	Deliveries numbers
HomeFurniture CM	2
HomeFurniture SF	3

6. Report the name of store selling more than 5 items {SUM}

select ST.Store_name,sum(OL.Order_Quantity) as 'salling qty'
from order_list OL,store ST,staff
where staff.Store_id=ST.Store_id and OL.staff_id=staff.staff_id
group by (ST.Store_name)
HAVING COUNT(*) >= 5;

Store_name	salling qty
HomeFurniture SF	7

7. Report information about the employees who make the maximum amount in each store {join,MAX,groupe by}

select staff.Staff_FirstName,ST.Store_name,max(PR.Purchased_amount)as "Max amount"
from staff ,store ST,order_list OL ,purchased PR
where ST.Store_id=staff.Store_id and OL.Staff_ID=staff.Staff_ID and OL.Order_Code=PR.Order_Code
group by(ST.Store_name);

Staff_FirstName	Store_name	Max amount
Omar	HomeFurniture SF	5850
Lina	HomeFurniture CM	4800

8. Report all orders (order code "112256") for which a delivery is recorded {distinct ,EXISTS,Join}

select distinct CUS.Customer_FirstName , OL.order_code, DEP.Department_name ,
staff.Staff_FirstName ,DL.Delivey_date
from order_list OL,delivery DL ,staff,customer CUS , department DEP
where DL.Staff_ID=staff.Staff_ID and OL.Order_Code=DL.Order_Code and
OL.Customer_ID=CUS.Customer_ID
and staff.Department_id=DEP.Department_id and OL.Order_Code='112256'
 and EXISTS (SELECT * FROM delivery);

Customer_FirstName	order_code	Department_name	Staff_FirstName	Delivey_date
Jad	112256	Delivering	Karim	2020-09-02

9. Report all information about the services provided to the customers {distinct ,join,union, order by}

select distinct CUS.Customer_ID , CUS.Customer_FirstName , CUS.Customer_LastName
,staff.Staff_FirstName ,DEP.Department_name , ST.Store_name ,OL.order_date as 'date'
from customer CUS ,order_list OL , staff ,store ST,department DEP,purchased PR
where OL.Customer_ID=CUS.Customer_ID and staff.Department_id=DEP.Department_id and
staff.Store_id=ST.Store_id and OL.staff_id=staff.staff_id and PR.Order_Code=OL.Order_Code

UNION

select CUS.Customer_ID ,CUS.Customer_FirstName , CUS.Customer_LastName , Staff_FirstName
,DEP.Department_name , ST.Store_name ,RS.Service_date as 'date'
 from customer CUS , staff ,store ST,department DEP ,repair_services RS
where RS.Customer_ID=CUS.Customer_ID and staff.Department_id=DEP.Department_id and
staff.Store_id=ST.Store_id and RS.staff_id=staff.staff_id

UNION
select distinct CUS.Customer_ID , CUS.Customer_FirstName , CUS.Customer_LastName
,staff.Staff_FirstName ,DEP.Department_name , ST.Store_name ,DL.Delivey_date as 'date'

from customer CUS ,order_list OL , staff ,store ST,department DEP,delivery DL
where OL.Customer_ID=CUS.Customer_ID and staff.Department_id=DEP.Department_id and
staff.Store_id=ST.Store_id
and DL.staff_id=staff.staff_id and DL.Order_Code=OL.Order_Code
order by Customer_ID ;

Customer_ID	Customer_FirstName	Customer_LastName	Staff_FirstName	Department_name	Store_name	date
666615	Maher	Sharaf	Omar	Sales	HomeFurniture SF	2020-07-15
666615	Maher	Sharaf	Elie	Delivering	HomeFurniture SF	2020-07-17
666617	Razan	Wehbe	Mariam	Sales	HomeFurniture SF	2020-07-20
666617	Razan	Wehbe	Kamal	Repairs	HomeFurniture SF	2020-10-12
666617	Razan	Wehbe	Elie	Delivering	HomeFurniture SF	2020-07-23
666624	Mounir	Khater	Mariam	Sales	HomeFurniture SF	2020-07-21
666624	Mounir	Khater	Elie	Delivering	HomeFurniture SF	2020-08-26
666637	Dana	Jamal	Lina	Sales	HomeFurniture CM	2020-08-16
666637	Dana	Jamal	Karim	Delivering	HomeFurniture CM	2020-08-20
666651	Jad	Tawil	Hala	Sales	HomeFurniture CM	2020-08-30
666651	Jad	Tawil	Murad	Repairs	HomeFurniture CM	2020-10-14
666651	Jad	Tawil	Karim	Delivering	HomeFurniture CM	2020-09-02

10. Report the items that have not been sold at all in 2020 {NOT IN , Subqueries ,join}

select IT.Item_Code , IT.Item_Name
from items IT
where IT.Item_Code NOT IN
 (select OL.Item_Code
 from order_list OL , items IT
 where OL.Item_Code=IT.Item_Code);

Item_Code	Item_Name
15682047	IMPERA Sitting set
NULL	NULL

11. Increase all dinning room 20% {Regexp ,update}

update items
SET Item_Price = Item_Price*1.2
where Item_Name regexp 'dining room' ;

BEFORE

Item_Code	Item_Name	Item_Description	Item_Price	Item_color	Item_Qty
15687452	ELITE dining room	Table : L: 200; W: 110; H: 78.-Chair : W: 47; D...	2450	Vinge	33
15689471	KREA dining room	Table : L: 166/206; W: 100; H: 79. Chair : W: 4...	1900	Naturel	24
NULL	NULL	NULL	NULL	NULL	NULL

AFTER

Item_Code	Item_Name	Item_Description	Item_Price	Item_color	Item_Qty
15687452	ELITE dining room	Table : L: 200; W: 110; H: 78. -Chair : W: 47; D...	2940	Vinge	33
15689471	KREA dining room	Table : L: 166/206; W: 100; H: 79. Chair : W: 4...	2280	Naturel	24
NULL	NULL	NULL	NULL	NULL	NULL

12. Create view of all the sales in HomeFurniture CM store {distinct,inner join ,View}

Customer_ID	Customer_FirstName	Customer_LastName	sales	Store_name	order_date	Purchased_amount	Purchased_type	Delivery_ID
666637	Dana	Jamal	Lina	HomeFurniture CM	2020-08-16	4800	visa	1231
666651	Jad	Tawil	Hala	HomeFurniture CM	2020-08-30	3900	Cash	1237

CREATE VIEW CMstore AS
select distinct CUS.Customer_ID , CUS.Customer_FirstName , CUS.Customer_LastName
,staff.Staff_FirstName 'sales' , ST.Store_name ,OL.order_date ,PR.Purchased_amount
,PR.Purchased_type , DL.Delivery_ID
from ((((((order_list OL
inner join customer CUS on OL.Customer_ID=CUS.Customer_ID)
inner join staff on OL.staff_id=staff.staff_id)
inner join Store ST on staff.Store_id=ST.Store_id)
inner join department DEP on staff.department_id=DEP.department_id)
inner join purchased PR on PR.Order_Code=OL.Order_Code)
inner join delivery DL on DL.Order_Code=OL.Order_Code)
where staff.Store_id=ST.Store_id and store_name = 'HomeFurniture CM';

The developed system helps saving, in a structured manner, all the data related to the store, employees, customers and purchases. It has shown its efficiency by responding effectively to many tested queries. Data management is essential and such system makes reaching any information an easy issue, since it gives the best tracking and the best control of all the activities in the store.