Name: DAS, GOUROB KUMAR

ID: 20-42482-1

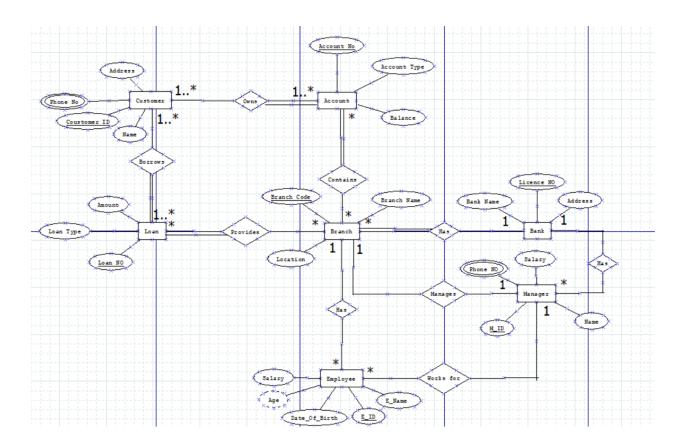
Section: F

BANK MANAGEMENT SYSTEM

In this project we will discuss about a management system of a bank named CCPD. We have used total 7 entites such as BANK, BRANCH, MANAGER, EMPLOYEE, LOAN, ACCOUNT, CUSTOMER. The attributes of BANK are: Bank name, licence_no (Primary key) and address. The bank has many managers and branches. One manager manages one branch. MANAGER and BRANCH also has some attributes. BRANCH has its name, id and location. MANAGER has m_id, m_name, salary, phone no and salary. One branch has many employee. Employees work for one manager who manages the branch. EMPLOYEE has name, id, date of birth, age and salary. One branch has many Account. ACCOUNT carries account no, type and balance. CUSTOMER has name, address, phone no, customer id. One customer can have one loan or many customer can have many loans. LOAN has loan type, amount, loan no. The brunch provides the loan.

Case Study

At first we created a new user and granted all the necessary privileges. We have normalized all the relations between the entities and eliminated all the extra tables. Then we created all the tables with proper constraints and inserted some data into tables. We also created some sequences and used them to insert data into tables. Then we created one simple and one complex view and used them to find out some information. At the very end we run some query to justify our project.



Normalization

1#Customer * Account

Owns(Customer_ID, C_Name, Phone_NO, C_Address, Account_No,Account Type, Balance)

1NF: Phone No is a multivalued attribute

2NF:

Customer_ID C Name Phone NO C Address

Account_NO | Acc type | Balance |

Customer_ID | Account_NO

Customer_ID | Phone_NO

3NF: No transitive dependency

Table for Owns -

Customer_ID | C_Name | Phone_NO | C_Address

Account_NO | Acc type | Balance

Customer_ID | Account_NO

Customer_ID | Phone_NO

2#Customer * Loan

Borrows(Customer_ID, Name, Phone_NO, C_Address, Loan_NO, Loan Type, Amount)

1NF: Phone_No is a multivalued attribute

2NF:

Customer_ID	C Name	Phone NO	C Address
-------------	--------	----------	-----------

Loan_NO	Loan	Amount
	type	

Customer_ID Loan_NO

Customer_ID | Phone_NO

3NF: No transitive dependency

Table for Borrows:-

Customer_ID C_Name Phone_NO C_Address

Loan_NO	Loan	Amount
	type	

Customer_ID Loan_NO

Customer_ID | Phone_NO

3#Loan * Branch

Provides(Loan_NO, Loan type, Amount, Branch_ID, Branch_Name, Location)

1NF: No multivalued attributes.

2NF:

Loan_NO	Loan	Amount
	type	

Branch_ID Branch_Name Location

Loan_NO Branch_ID

3NF: No transitive dependency

Table for Provides-

Loan_NO	Loan	Amount
	type	

Branch_ID Branch_Name Location

Loan_NO Branch_ID

4#Branch * Account

Contains(Branch_ID, Branch_Name, Location , Account_No, Account Type, Balance)

1NF: No multivalued attributes.

2NF:

Account_NO	Acc	Balance
	type	

Branch_ID Branch_Name Location

Account_NO Branch_ID

3NF: No transitive dependency

Table for Contains-

Account_NO	Acc	Balance
	type	

Branch_ID Branch_Name Location

Account_NO Branch_ID

5#Branch * Employees

Has (Branch_ID, Branch_Name, Location, E_ID, E_Name, Salary, DOB, Age)

1NF: No multivalued attributes.

2NF:

E_ID	Branch_ID	E_Name	Salary	DOB	Age

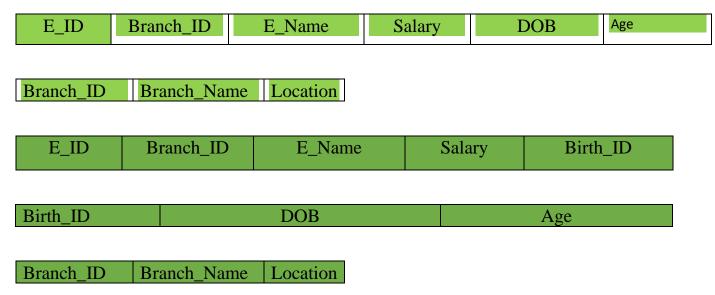
Branch_ID Branch_Name Location

3NF:

E_ID Branch_ID E_Name Salary Birth_ID	ID
---------------------------------------	----

Birth_ID		DOB		Age	
Branch_ID	Branch_Name	Location			

Table for Has-



6#Branch * Bank

Has(Branch_ID, Branch_Name, Location, Licence_NO, Bank_Name, Address)

1NF: No multivalued attributes.

2NF:

Branch ID	Branch Name	Location	Licence NO

Licence_NO Bank_Name Address

3NF: No transitive dependency

Table for Has-

Branch_ID Branch_Name Location Licence_NO	Branch_ID	Branch_Name	Location	Licence_NO
---	-----------	-------------	----------	------------

Licence_NO Bank_Name Address

7#Branch * Manager

Manages(Branch_ID, Branch_Name, Location, M_ID, Name, Salary, Phone_NO)

1NF: Phone_No is a multivalued attribute.

2NF:

Branch_ID Branch_Name Location M_ID

M_ID | Name | Salary | Phone_NO

3NF: No transitive dependency

Table for Manages-

Branch_ID Branch_Name Location M_ID

M_ID Name Salary Phone_NO

8#Manager * Employee

Works For(M_ID, Name, Salary, Phone_NO, E_ID, E_Name, Salary, DOB, Age **1NF:** Phone_No is a multivalued attribute.

2NF:

E_ID E_Name E_Salary DOB Age M_ID

M_ID Name M_Salary Phone_NO

3NF:

M_ID Name M_Salary Phone_NO

E_ID | E_Name | E_Salary | Birth_ID | M_ID

Birth_ID DOB Age

Table for Works For-

M_ID Name M_Salary Phone_NO

E_ID | E_Name | E_Salary | Birth_ID | M_ID

Birth_ID DOB Age

9#Bank * Manager

Has (Licence_NO, Bank_Name, Address, M_ID, Name, Salary, Phone_NO)

1NF: Phone_No is a multivalued attribute.

2NF:

Licence NO	M ID	Name	Salary	Phone NO
Licence_110	111_11	1 valle	Darary	1 110110_110

Licence_NO Bank_Name Address

3NF: No transitive dependency

Table for Has-

7.Branch:

Licence_NO M_ID	Name	Salary	Phone_NO
Licence NO	Bank N	[ame	Address

	Final	Tab	les	
1.Customer:				
Customer_ID	C_Name		Phone_NO	C_Address
2.Account:				
Account_NO		Acc t	ype Balance	
3.Customer_Account:				
Customer	_ID		Ac	count_NO
Customer_ID	Nan	1e	Phone_NO	Address
4.Loan:				
Loan_NO	Loan NO Loan		n type Amount	
5.Customer_Loan				
Custome	r_ID			Loan_NO
Loan_NO		Loai	1 type	Amount
6.Loan_Branch	•			
Loan_NC)		Bı	ranch_ID
Account NO			Acc type	Balance

Branch	n_ID	ch_Name		Location		
8.Account_Branch:						
Account_NO Branch_ID						
Branch_Employee						
E_ID	Branch_ID	E_Nam	e	Salary	Birth_ID	
9.Birth			·			
Birt	h_ID		DOB		Age	
Brane	h_ID	Bra	nch_Nam	e	Location	
10.Bank:						
	ce_NO	Ba	nk_Name		Address	
Branch_Bank:						
Branch_I	D Br	anch_Name	L	ocation	Licence_NO	
11.Manager:						
M_ID Branch_Manag	M_Name	e	M_Salary		Phone_NO	
_		D1. N.		T	MID	
Branch_	וט	Branch_Na	ine	Location	on M_ID	
M-ID	Name	M_Sal	arz.	Phon	e_NO	
Employee_Mar		1V1_Du1	ii y	1 11011	0_110	
E_ID	E_Name	E_Sal	arv	Birth_ID	M_ID	
				-		
Birth_ID DOB Age						
Bank_Manager:						
Licence_NO	M_ID	Nam	ie	M_Salary	Phone_NO	
Lic		Bank_Name		Address		
Branch_ID		Branch_Nam	e		Location	

From table Branch_Bank, Branch_Manager, Bank_Manager:

We can notice there is a transitive dependency between these three table so we have to normalize them again.

12.B_M_Bank:

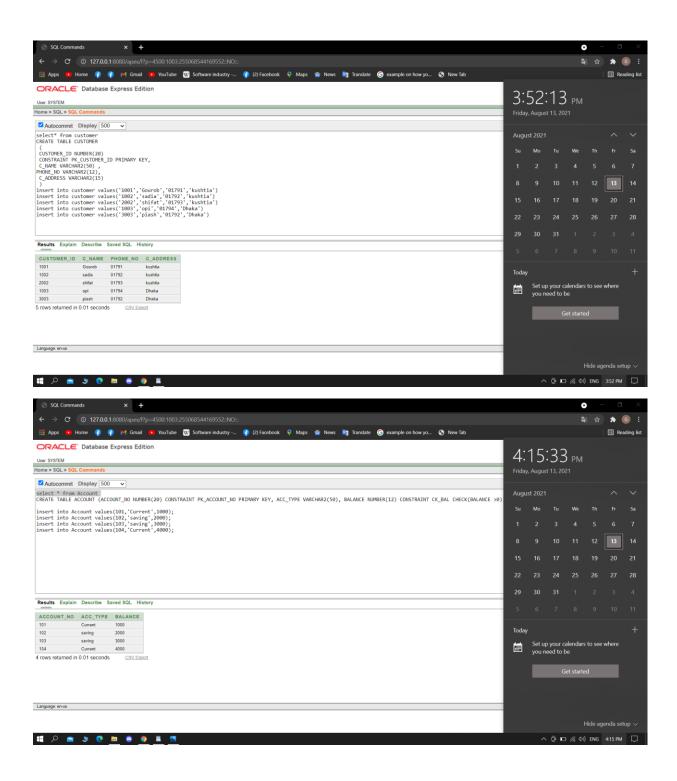
Branch ID M ID Licence NO	Branch ID
---------------------------	-----------

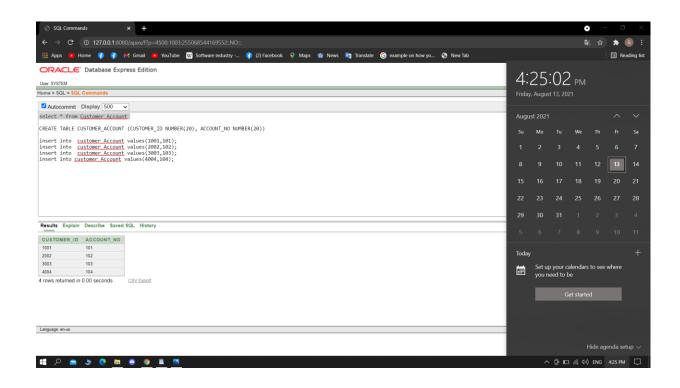
And from table Branch_Employee and Employee_Manager we get,

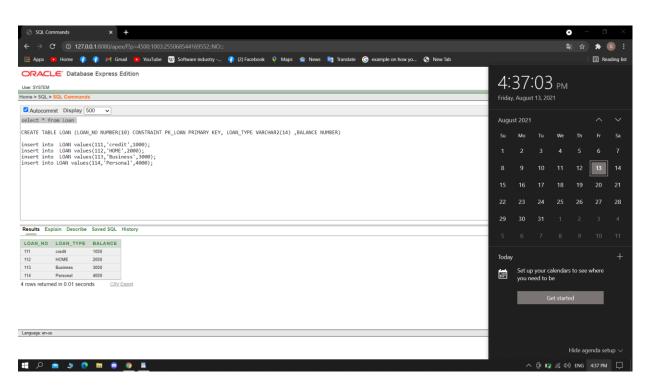
13.B_M_Emp:

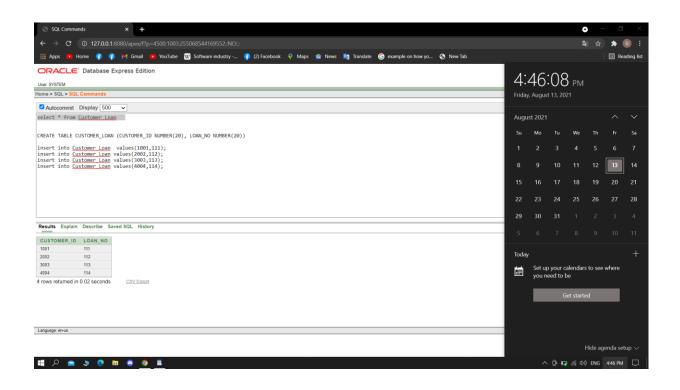
Branch_I	D	M_ID	E_ID	
14.Employee:				
E_ID	E_Name	e E_S	alary Birth_ID	

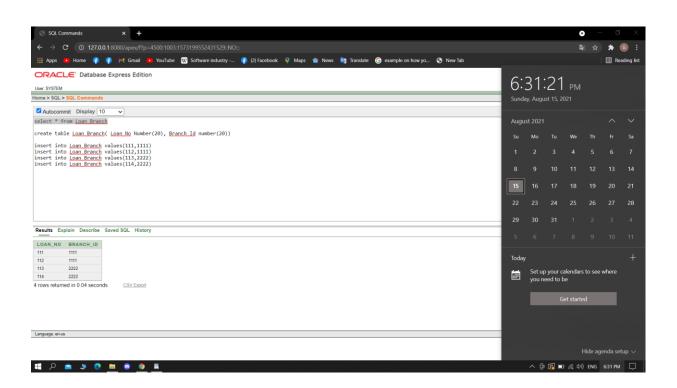
Table Screenshot-

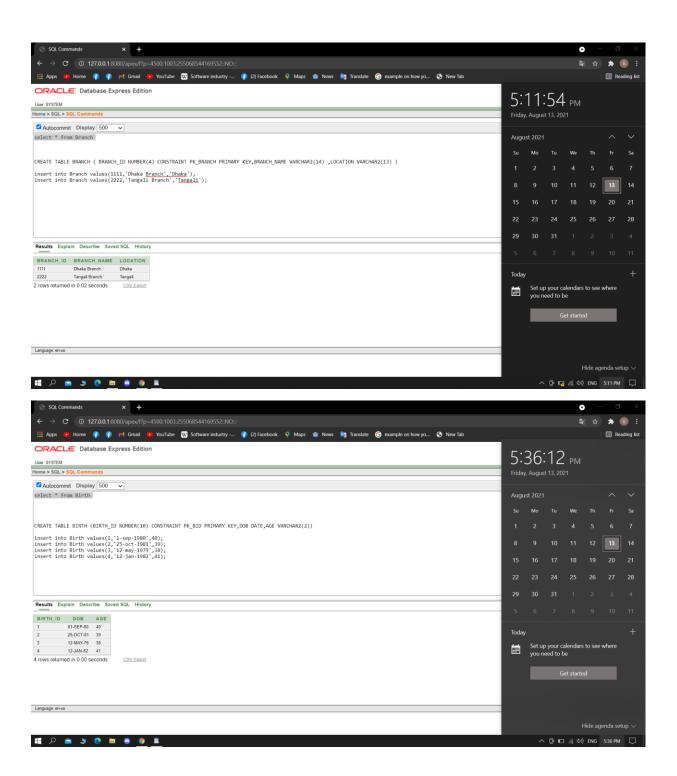


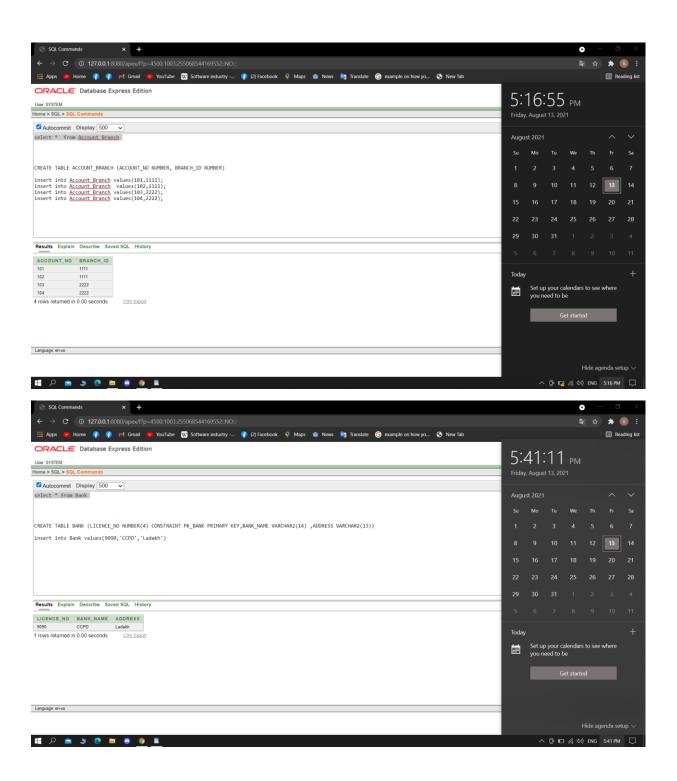


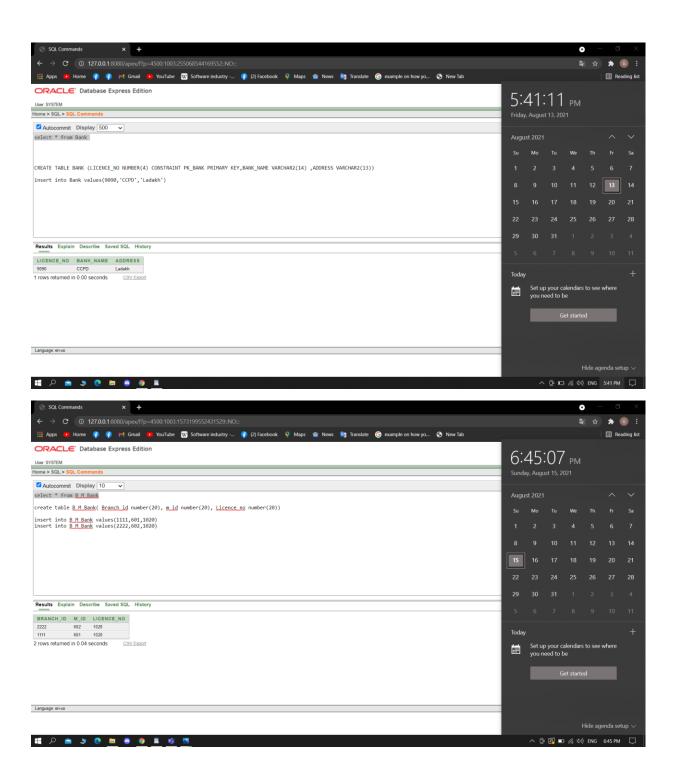


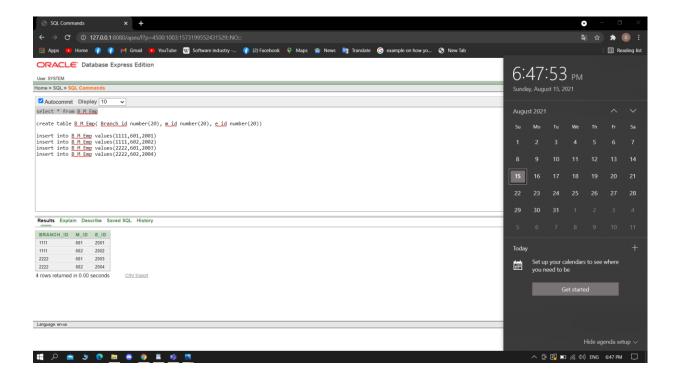












Questions:

- 1. Print customer name whose id is 1003 and lives in Dhaka.
- 2. Print branch name of id 1111.
- 3. Print the phone no of those manager whose name is Ash.
- 4. Print the name of those manager whose salary more than 1760.
- 5. Print the birth id of those person whose age is more than or equal to 40.