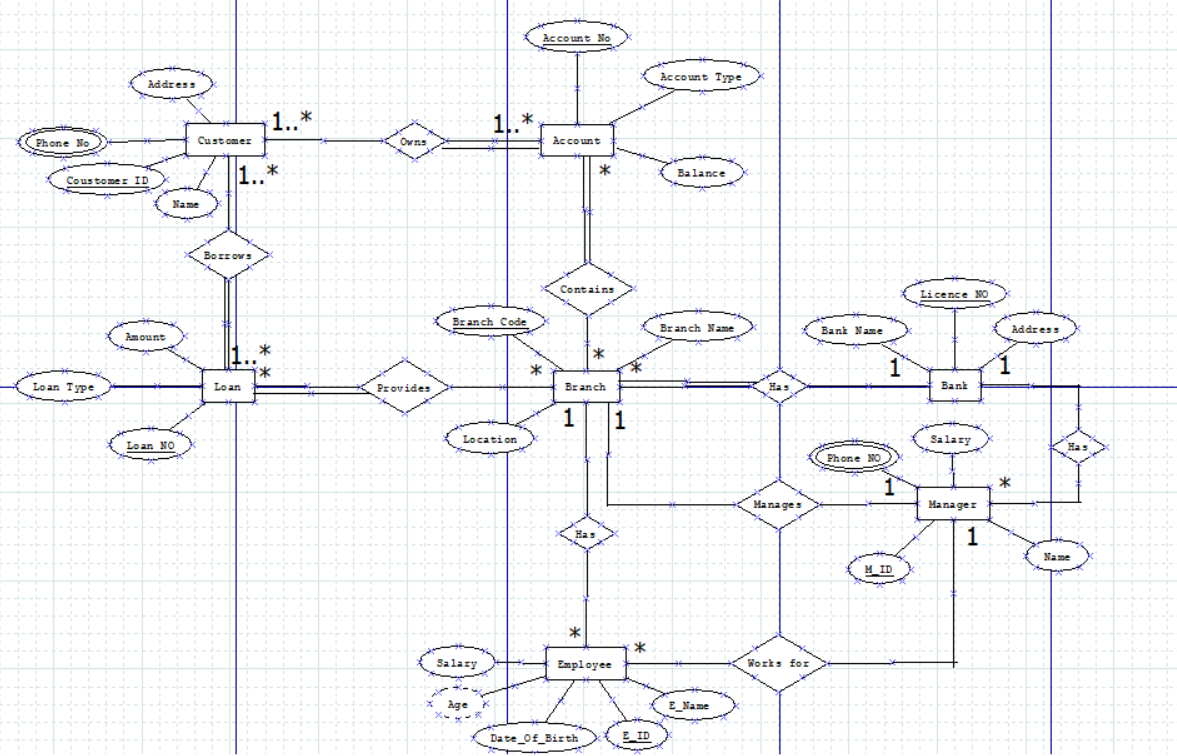
**BANK MANAGEMENT SYSTEM**

In this project we will discuss about a management system of a bank named CCPD. We have used total 7 entities 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 customers 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)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Customer\_ID | C\_Name | Phone\_NO | C\_Address | Account\_NO | Acc type | Balance |
| 1001 | Pritom | 01523  01526 | Dhaka | 101 | Current | 1000 |
| 2002 | Sadia | 01569  01568 | Dhaka | 102 | Saving | 2000 |
| 3003 | Rima | 01542  01541 | Tangail | 103 | Saving | 3000 |
| 4004 | Kabir | 01578  01587 | Tangail | 104 | Current | 4000 |

**1NF:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Customer\_ID | C\_Name | Phone\_NO | C\_Address | Account\_NO | Acc type | Balance |
| 1001 | Pritom | 01523 | Dhaka | 101 | Current | 1000 |
| 1001 | Pritom | 01526 | Dhaka | 101 | Current | 1000 |
| 2002 | Sadia | 01569 | Dhaka | 102 | Saving | 2000 |
| 2002 | Sadia | 01568 | Dhaka | 102 | Saving | 2000 |
| 3003 | Rima | 01542 | Tangail | 103 | Saving | 3000 |
| 3003 | Rima | 01541 | Tangail | 103 | Saving | 3000 |
| 4004 | Kabir | 01578 | Tangail | 104 | Current | 4000 |
| 4004 | Kabir | 01587 | Tangail | 104 | Current | 4000 |

**2NF:**

|  |  |  |  |
| --- | --- | --- | --- |
| Customer\_ID | C\_Name | Phone\_NO | C\_Address |
| 1001 | Pritom | 01523 | Dhaka |
| 1001 | Pritom | 01526 | Dhaka |
| 2002 | Sadia | 01569 | Dhaka |
| 2002 | Sadia | 01568 | Dhaka |
| 3003 | Rima | 01542 | Tangail |
| 3003 | Rima | 01541 | Tangail |
| 4004 | Kabir | 01578 | Tangail |
| 4004 | Kabir | 01587 | Tangail |

|  |  |  |
| --- | --- | --- |
| Account\_NO | Acc type | Balance |
| 101 | Current | 1000 |
| 102 | Saving | 2000 |
| 103 | Saving | 3000 |
| 104 | Current | 4000 |

|  |  |
| --- | --- |
| Customer\_ID | Account\_NO |
| 1001 | 101 |
| 2002 | 102 |
| 3003 | 103 |
| 4004 | 104 |

**3NF :** No transitive dependency

**2#Customer \* Loan**

**Borrows**(Customer\_ID, Name, Phone\_NO, C\_Address, Loan\_NO, Loan Type, Amount)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Customer\_ID | C\_Name | Phone\_NO | C\_Address | Loan\_NO | Loan type | Amount |
| 1001 | Pritom | 01523  01526 | Dhaka | 111 | Credit | 100 |
| 2002 | Sadia | 01569  01568 | Dhaka | 112 | Home | 200 |
| 3003 | Rima | 01542  01541 | Tangail | 113 | Business | 300 |
| 4004 | Kabir | 01578  01587 | Tangail | 114 | Personal | 400 |

**1NF:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Customer\_ID | Name | Phone\_NO | C\_Address | Loan\_NO | Loan type | Amount |
| 1001 | Pritom | 01523 | Dhaka | 111 | Credit | 100 |
| 1001 | Pritom | 01526 | Dhaka | 111 | Credit | 100 |
| 2002 | Sadia | 01569 | Dhaka | 112 | Home | 200 |
| 2002 | Sadia | 01568 | Dhaka | 112 | Home | 200 |
| 3003 | Rima | 01542 | Tangail | 113 | Business | 300 |
| 3003 | Rima | 01541 | Tangail | 113 | Business | 300 |
| 4004 | Kabir | 01578 | Tangail | 114 | Personal | 400 |
| 4004 | Kabir | 01587 | Tangail | 114 | Personal | 400 |

**2NF:**

|  |  |  |  |
| --- | --- | --- | --- |
| Customer\_ID | C\_Name | Phone\_NO | C\_Address |
| 1001 | Pritom | 01523 | Dhaka |
| 1001 | Pritom | 01526 | Dhaka |
| 2002 | Sadia | 01569 | Dhaka |
| 2002 | Sadia | 01568 | Dhaka |
| 3003 | Rima | 01542 | Tangail |
| 3003 | Rima | 01541 | Tangail |
| 4004 | Kabir | 01578 | Tangail |
| 4004 | Kabir | 01587 | Tangail |

|  |  |  |
| --- | --- | --- |
| Loan\_NO | Loan type | Amount |
| 111 | Credit | 1000 |
| 112 | Home | 2000 |
| 113 | Business | 3000 |
| 114 | Personal | 4000 |

|  |  |
| --- | --- |
| Customer\_ID | Loan\_NO |
| 1001 | 111 |
| 2002 | 112 |
| 3003 | 113 |
| 4004 | 114 |

**3NF :** No transitive dependency

**3#Loan \* Branch**

**Provides**(Loan\_NO, Loan type, Amount, Branch\_ID, Branch\_Name, Location)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Loan\_NO | Loan type | Amount | Branch\_ID | Branch\_Name | Location |
| 111 | Credit | 100 | 1111 | Dhaka Branch | Dhaka |
| 112 | Home | 200 | 1111 | Dhaka Branch | Dhaka |
| 113 | Business | 300 | 2222 | Tangail Branch | Tangail |
| 114 | Personal | 400 | 2222 | Tangail Branch | Tangail |

**1NF :** No multivalued attributes.

**2NF:**

|  |  |  |
| --- | --- | --- |
| Loan\_NO | Loan type | Amount |
| 111 | Credit | 100 |
| 112 | Home | 200 |
| 113 | Business | 300 |
| 114 | Personal | 400 |

|  |  |  |
| --- | --- | --- |
| Branch\_ID | Branch\_Name | Location |
| 1111 | Dhaka Branch | Dhaka |
| 2222 | Tangail Branch | Tangail |

|  |  |
| --- | --- |
| Loan\_NO | Branch\_ID |
| 111 | 1111 |
| 112 | 1111 |
| 113 | 2222 |
| 114 | 2222 |

**3NF :** No transitive dependency

**4#Branch \* Account**

**Contains**(Branch\_ID, Branch\_Name, Location , Account\_No, Account Type, Balance)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Branch\_ID | Branch\_Name | Location | Account\_NO | Acc type | Balance |
| 1111 | Dhaka Branch | Dhaka | 101 | Current | 1000 |
| 1111 | Dhaka Branch | Dhaka | 102 | Saving | 2000 |
| 2222 | Tangail Branch | Tangail | 103 | Saving | 3000 |
| 2222 | Tangail Branch | Tangail | 104 | Current | 4000 |

**1NF :** No multivalued attributes.

**2NF:**

|  |  |  |
| --- | --- | --- |
| Account\_NO | Acc type | Balance |
| 101 | Current | 1000 |
| 102 | Saving | 2000 |
| 103 | Saving | 3000 |
| 104 | Current | 4000 |

|  |  |  |
| --- | --- | --- |
| Branch\_ID | Branch\_Name | Location |
| 1111 | Dhaka Branch | Dhaka |
| 2222 | Tangail Branch | Tangail |

|  |  |
| --- | --- |
| Account\_NO | Branch\_ID |
| 101 | 1111 |
| 102 | 1111 |
| 103 | 2222 |
| 104 | 2222 |

**3NF :** No transitive dependency

**5#Branch \* Employees**

**Has** (Branch\_ID, Branch\_Name, Location, E\_ID, E\_Name, Salary, DOB, Age)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Branch\_ID | Branch\_Name | Location | E\_ID | E\_Name | Salary | DOB | Age |
| 1111 | Dhaka Branch | Dhaka | 2001 | Anng | 100 | 1-sep- 1980 | 40 |
| 1111 | Dhaka Branch | Dhaka | 2002 | Katara | 200 | 25-oct-1981 | 39 |
| 2222 | Tangail Branch | Tangail | 2003 | Suki | 300 | 12-may-1979 | 41 |
| 2222 | Tangail Branch | Tangail | 2004 | Zuko | 400 | 12-jan-1982 | 38 |

**1NF :** No multivalued attributes.

**2NF:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| E\_ID | Branch\_ID | E\_Name | Salary | DOB | Age |
| 2001 | 1111 | Anng | 100 | 1-sep- 1980 | 40 |
| 2002 | 1111 | Katara | 200 | 25-oct-1981 | 39 |
| 2003 | 2222 | Suki | 300 | 12-may-1979 | 41 |
| 2004 | 2222 | Zuko | 400 | 12-jan-1982 | 38 |

|  |  |  |
| --- | --- | --- |
| Branch\_ID | Branch\_Name | Location |
| 1111 | Dhaka Branch | Dhaka |
| 2222 | Tangail Branch | Tangail |

**3NF:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| E\_ID | | Branch\_ID | E\_Name | | Salary | | Birth\_ID |
| 2001 | | 1111 | Anng | | 100 | | 1 |
| 2002 | | 1111 | Katara | | 200 | | 2 |
| 2003 | | 2222 | Suki | | 300 | | 3 |
| 2004 | | 2222 | Zuko | | 400 | | 4 |
| Birth\_ID | DOB | | | Age | |
| 1 | 1-sep- 1980 | | | 40 | |
| 2 | 25-oct-1981 | | | 39 | |
| 3 | 12-may-1979 | | | 41 | |
| 4 | 12-jan-1982 | | | 38 | |

|  |  |  |
| --- | --- | --- |
| Branch\_ID | Branch\_Name | Location |
| 1111 | Dhaka Branch | Dhaka |
| 2222 | Tangail Branch | Tangail |

**6#Branch \* Bank**

**Has** (Branch\_ID, Branch\_Name, Location, Licence\_NO, Bank\_Name, Address)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Branch\_ID | Branch\_Name | Location | Licence\_NO | Bank\_Name | Address |
| 1111 | Dhaka Branch | Dhaka | 9090 | CCPD | Ladakh |
| 2222 | Tangail Branch | Tangail | 9090 | CCPD | Ladakh |
| 3333 | Gazipur Branch | Gazipur | 9090 | CCPD | Ladakh |
| 4444 | Kumilla Branch | Kumilla | 9090 | CCPD | Ladakh |

**1NF :** No multivalued attributes.

**2NF:**

|  |  |  |  |
| --- | --- | --- | --- |
| Branch\_ID | Branch\_Name | Location | Licence\_NO |
| 1111 | Dhaka Branch | Dhaka | 9090 |
| 2222 | Tangail Branch | Tangail | 9090 |
| 3333 | Gazipur Branch | Gazipur | 9090 |
| 4444 | Kumilla Branch | Kumilla | 9090 |

|  |  |  |
| --- | --- | --- |
| Licence\_NO | Bank\_Name | Address |
| 9090 | CCPD | Ladakh |

**3NF:** No transitive dependency

**7#Branch \* Manager**

**Manages** (Branch\_ID, Branch\_Name, Location, M\_ID, Name, Salary, Phone\_NO)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Branch\_ID | Branch\_Name | Location | M\_ID | Name | Salary | Phone\_NO |
| 1111 | Dhaka Branch | Dhaka | 601 | Ash | 9000 | 01789 |
| 01798 |
| 2222 | Tangail Branch | Tangail | 602 | Sam | 8000 | 01756 |
| 01765 |
| 3333 | Gazipur Branch | Gazipur | 603 | Ram | 7000 | 01723 |
| 01732 |
| 4444 | Kumilla Branch | Kumilla | 604 | Tom | 8000 | 01712 |
| 01721 |

**1NF:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Branch\_ID | Branch\_Name | Location | M\_ID | Name | Salary | Phone\_NO |
| 1111 | Dhaka Branch | Dhaka | 601 | Ash | 9000 | 01789 |
| 1111 | Dhaka Branch | Dhaka | 601 | Ash | 9000 | 01798 |
| 2222 | Tangail Branch | Tangail | 602 | Sam | 8000 | 01756 |
| 2222 | Tangail Branch | Tangail | 602 | Sam | 8000 | 01765 |
| 3333 | Gazipur Branch | Gazipur | 603 | Ram | 7000 | 01732 |
| 3333 | Gazipur Branch | Gazipur | 603 | Ram | 7000 | 01723 |
| 4444 | Kumilla Branch | Kumilla | 604 | Tom | 8000 | 01712 |
| 4444 | Kumilla Branch | Kumilla | 604 | Tom | 8000 | 01721 |

**2NF:**

|  |  |  |  |
| --- | --- | --- | --- |
| Branch\_ID | Branch\_Name | Location | M\_ID |
| 1111 | Dhaka Branch | Dhaka | 601 |
| 2222 | Tangail Branch | Tangail | 602 |
| 3333 | Gazipur Branch | Gazipur | 603 |
| 4444 | Kumilla Branch | Kumilla | 604 |

|  |  |  |  |
| --- | --- | --- | --- |
| M\_ID | Name | Salary | Phone\_NO |
| 601 | Ash | 9000 | 01789 |
| 601 | Ash | 9000 | 01798 |
| 602 | Sam | 8000 | 01756 |
| 602 | Sam | 8000 | 01765 |
| 603 | Ram | 7000 | 01732 |
| 603 | Ram | 7000 | 01723 |
| 604 | Tom | 8000 | 01712 |
| 604 | Tom | 8000 | 01721 |

**3NF:** No transitive dependency

**8#Manager \* Employee**

**Works For** (M\_ID, Name, Salary, Phone\_NO, E\_ID, E\_Name, Salary, DOB, Age)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| M\_ID | Name | M\_Salary | Phone\_NO | E\_ID | E\_Name | E\_Salary | DOB | Age |
| 601 | Ash | 9000 | 01789 | 2001 | Anng | 100 | 1-sep- 1980 | 40 |
| 01798 |
| 601 | Ash | 9000 | 01789 | 2002 | Katara | 200 | 25-oct-1981 | 39 |
| 01798 |
| 602 | Sam | 8000 | 01756 | 2003 | Suki | 300 | 12-may-1979 | 41 |
| 01765 |
| 602 | Sam | 8000 | 01756 | 2004 | Zuko | 400 | 12-jan-1982 | 38 |
| 01765 |

**1NF:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| M\_ID | Name | M\_Salary | Phone\_NO | E\_ID | E\_Name | E\_Salary | DOB | Age |
| 601 | Ash | 9000 | 01789 | 2001 | Anng | 100 | 1-sep- 1980 | 40 |
| 601 | Ash | 9000 | 01789 | 2001 | Anng | 100 | 1-sep- 1980 | 40 |
| 601 | Ash | 9000 | 01798 | 2002 | Katara | 200 | 25-oct-1981 | 39 |
| 601 | Ash | 9000 | 01798 | 2002 | Katara | 200 | 25-oct-1981 | 39 |
| 602 | Sam | 8000 | 01756 | 2003 | Suki | 300 | 12-may-1979 | 41 |
| 602 | Sam | 8000 | 01756 | 2003 | Suki | 300 | 12-may-1979 | 41 |
| 602 | Sam | 8000 | 01765 | 2004 | Zuko | 400 | 12-jan-1982 | 38 |
| 602 | Sam | 8000 | 01765 | 2004 | Zuko | 400 | 12-jan-1982 | 38 |

**2NF:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| E\_ID | E\_Name | E\_Salary | DOB | Age | M\_ID |
| 2001 | Anng | 100 | 1-sep- 1980 | 40 | 601 |
| 2001 | Anng | 100 | 1-sep- 1980 | 40 | 601 |
| 2002 | Katara | 200 | 25-oct-1981 | 39 | 601 |
| 2002 | Katara | 200 | 25-oct-1981 | 39 | 601 |
| 2003 | Suki | 300 | 12-may-1979 | 41 | 602 |
| 2003 | Suki | 300 | 12-may-1979 | 41 | 602 |
| 2004 | Zuko | 400 | 12-jan-1982 | 38 | 602 |
| 2004 | Zuko | 400 | 12-jan-1982 | 38 | 602 |

|  |  |  |  |
| --- | --- | --- | --- |
| M\_ID | Name | M\_Salary | Phone\_NO |
| 601 | Ash | 9000 | 01789 |
| 601 | Ash | 9000 | 01798 |
| 602 | Sam | 8000 | 01756 |
| 602 | Sam | 8000 | 01765 |

**3NF :**

|  |  |  |  |
| --- | --- | --- | --- |
| M\_ID | Name | M\_Salary | Phone\_NO |
| 601 | Ash | 9000 | 01789 |
| 601 | Ash | 9000 | 01798 |
| 602 | Sam | 8000 | 01756 |
| 602 | Sam | 8000 | 01765 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| E\_ID | E\_Name | E\_Salary | Birth\_ID | M\_ID |
| 2001 | Anng | 1000 | 1 | 601 |
| 2002 | Katara | 2000 | 2 | 601 |
| 2003 | Suki | 3000 | 3 | 602 |
| 2004 | Zuko | 4000 | 4 | 602 |

|  |  |  |
| --- | --- | --- |
| Birth\_ID | DOB | Age |
| 1 | 1-sep-1980 | 40 |
| 2 | 25-oct-1981 | 39 |
| 3 | 12-may-1979 | 41 |
| 4 | 12-jan-1982 | 38 |

**9#Bank \* Manager**

**Has** (Licence\_NO, Bank\_Name, Address, M\_ID, Name, Salary, Phone\_NO)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Licence\_NO | Bank\_Name | Address | M\_ID | Name | Salary | Phone\_NO |
| 9090 | CCPD | Ladakh | 601 | Ash | 9000 | 01789 |
| 01798 |
| 9090 | CCPD | Ladakh | 602 | Sam | 8000 | 01756 |
| 01765 |
| 9090 | CCPD | Ladakh | 603 | Ram | 7000 | 01756 |
| 01765 |
| 9090 | CCPD | Ladakh | 604 | Tom | 8000 | 01712 |
| 01721 |

**1NF:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Licence\_NO | Bank\_Name | Address | M\_ID | Name | Salary | Phone\_NO |
| 9090 | CCPD | Ladakh | 601 | Ash | 9000 | 01789 |
| 9090 | CCPD | Ladakh | 601 | Ash | 9000 | 01798 |
| 9090 | CCPD | Ladakh | 602 | Sam | 8000 | 01756 |
| 9090 | CCPD | Ladakh | 602 | Sam | 8000 | 01765 |
| 9090 | CCPD | Ladakh | 603 | Ram | 7000 | 01756 |
| 9090 | CCPD | Ladakh | 603 | Ram | 7000 | 01765 |
| 9090 | CCPD | Ladakh | 604 | Tom | 8000 | 01712 |
| 9090 | CCPD | Ladakh | 604 | Tom | 8000 | 01721 |

**2NF:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Licence\_NO | M\_ID | Name | Salary | Phone\_NO |
| 9090 | 601 | Ash | 9000 | 01789 |
| 9090 | 601 | Ash | 9000 | 01798 |
| 9090 | 602 | Sam | 8000 | 01756 |
| 9090 | 602 | Sam | 8000 | 01765 |
| 9090 | 603 | Ram | 7000 | 01756 |
| 9090 | 603 | Ram | 7000 | 01765 |
| 9090 | 604 | Tom | 8000 | 01712 |
| 9090 | 604 | Tom | 8000 | 01721 |

|  |  |  |
| --- | --- | --- |
| Licence\_NO | Bank\_Name | Address |
| 9090 | CCPD | Ladakh |

**3NF:** No transitive dependency

**\* Final Tables \***

1.Customer:

|  |  |  |  |
| --- | --- | --- | --- |
| Customer\_ID | C\_Name | Phone\_NO | C\_Address |

2.Account:

|  |  |  |
| --- | --- | --- |
| Account\_NO | Acc type | Balance |

3.Customer\_Account:

|  |  |
| --- | --- |
| Customer\_ID | Account\_NO |

|  |  |  |  |
| --- | --- | --- | --- |
| ~~Customer\_ID~~ | ~~Name~~ | ~~Phone\_NO~~ | ~~Address~~ |

4.Loan:

|  |  |  |
| --- | --- | --- |
| Loan\_NO | Loan type | Amount |

5.Customer\_Loan

|  |  |
| --- | --- |
| Customer\_ID | Loan\_NO |

|  |  |  |
| --- | --- | --- |
| ~~Loan\_NO~~ | ~~Loan type~~ | ~~Amount~~ |

6.Loan\_Branch

|  |  |
| --- | --- |
| Loan\_NO | Branch\_ID |

|  |  |  |
| --- | --- | --- |
| ~~Account\_NO~~ | ~~Acc type~~ | ~~Balance~~ |

7.Branch:

|  |  |  |
| --- | --- | --- |
| Branch\_ID | Branch\_Name | Location |

8.Account\_Branch:

|  |  |
| --- | --- |
| Account\_NO | Branch\_ID |

Branch\_Employee

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| E\_ID | Branch\_ID | E\_Name | Salary | Birth\_ID |

9.Birth

|  |  |  |
| --- | --- | --- |
| Birth\_ID | DOB | Age |

|  |  |  |
| --- | --- | --- |
| ~~Branch\_ID~~ | ~~Branch\_Name~~ | ~~Location~~ |

10.Bank:

|  |  |  |
| --- | --- | --- |
| Licence\_NO | Bank\_Name | Address |

Branch\_Bank:

|  |  |  |  |
| --- | --- | --- | --- |
| Branch\_ID | Branch\_Name | Location | Licence\_NO |

11.Manager:

|  |  |  |  |
| --- | --- | --- | --- |
| M\_ID | M\_Name | M\_Salary | Phone\_NO |

Branch\_Manager:

|  |  |  |  |
| --- | --- | --- | --- |
| Branch\_ID | Branch\_Name | Location | M\_ID |

|  |  |  |  |
| --- | --- | --- | --- |
| ~~M\_ID~~ | ~~Name~~ | ~~M\_Salary~~ | ~~Phone\_NO~~ |

Employee\_Manager:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| E\_ID | E\_Name | E\_Salary | Birth\_ID | M\_ID |

|  |  |  |
| --- | --- | --- |
| ~~Birth\_ID~~ | ~~DOB~~ | ~~Age~~ |

Bank\_Manager:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Licence\_NO | M\_ID | Name | M\_Salary | Phone\_NO |

|  |  |  |
| --- | --- | --- |
| ~~Licence\_NO~~ | ~~Bank\_Name~~ | ~~Address~~ |

|  |  |  |
| --- | --- | --- |
| ~~Branch\_ID~~ | ~~Branch\_Name~~ | ~~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 |

**And from table Branch\_Employee and Employee\_Manager we get,**

13.B\_M\_Emp:

|  |  |  |
| --- | --- | --- |
| Branch\_ID | M\_ID | E\_ID |

14.Employee:

|  |  |  |  |
| --- | --- | --- | --- |
| E\_ID | E\_Name | E\_Salary | Birth\_ID |

**\* QUERIES \***

**User Creation:**

1. CREATE USER PROJECT IDENTIFIED BY PROJECT

**Granting privileges:**

1. GRANT CREATE TABLE, CREATE SEQUENCE, CREATE VIEW TO PROJECT
2. GRANT CONNECT, RESOURCE, UNLIMITED TABLESPACE TO PROJECT

**Table creation:**

1.Customer

CREATE TABLE CUSTOMER (CUSTOMER\_ID NUMBER(20) CONSTRAINT PK\_CUSTOMER\_ID PRIMARY KEY, C\_NAME VARCHAR2(50) ,PHONE\_NO VARCHAR2(12), C\_ADDRESS VARCHAR2(15) )

2.Account:

CREATE TABLE ACCOUNT (ACCOUNT\_NO NUMBER(20) CONSTRAINT PK\_ACCOUNT\_NO PRIMARY KEY, ACC\_TYPE VARCHAR2(50), BALANCE NUMBER(12) CONSTRAINT CK\_BAL CHECK(BALANCE >0))

3.Customer\_Account:

CREATE TABLE CUSTOMER\_ACCOUNT (CUSTOMER\_ID NUMBER(20), ACCOUNT\_NO NUMBER(20))

4.Loan:

CREATE TABLE LOAN (LOAN\_NO NUMBER(10) CONSTRAINT PK\_LOAN PRIMARY KEY, LOAN\_TYPE VARCHAR2(14) ,BALANCE NUMBER)

5.Customer\_Loan:

CREATE TABLE CUSTOMER\_LOAN (CUSTOMER\_ID NUMBER(20), LOAN\_NO NUMBER(20))

6.Loan\_Branch:

CREATE TABLE LOAN\_BRANCH (LOAN\_NO NUMBER(20) NOT NULL, BRANCH\_ID NUMBER(20) CONSTRAINT FK\_BRANCH REFERENCES BRANCH)

7.Branch:

CREATE TABLE BRANCH ( BRANCH\_ID NUMBER(4) CONSTRAINT PK\_BRANCH PRIMARY KEY,BRANCH\_NAME VARCHAR2(14) ,LOCATION VARCHAR2(13) )

8.Account\_Branch:

CREATE TABLE ACCOUNT\_BRANCH (ACCOUNT\_NO NUMBER, BRANCH\_ID NUMBER)

9.Birth:

CREATE TABLE BIRTH (BIRTH\_ID NUMBER(10) CONSTRAINT PK\_BID PRIMARY KEY,DOB DATE,AGE VARCHAR2(2))

10.Bank:

CREATE TABLE BANK (LICENCE\_NO NUMBER(4) CONSTRAINT PK\_BANK PRIMARY KEY,BANK\_NAME VARCHAR2(14) ,ADDRESS VARCHAR2(13))

11.Manager:

CREATE TABLE MANAGER (M\_ID NUMBER(20) CONSTRAINT PK\_MID PRIMARY KEY, M\_NAME VARCHAR2(50) ,PHONE\_NO VARCHAR2(12),SALARY NUMBER CONSTRAINT CK\_SAL CHECK(SALARY >0))

12.B\_M\_Bank:

CREATE TABLE B\_M\_BANK (BRANCH\_ID NUMBER, M\_ID NUMBER, LICENCE\_NO NUMBER)

13. B\_M\_EMP:

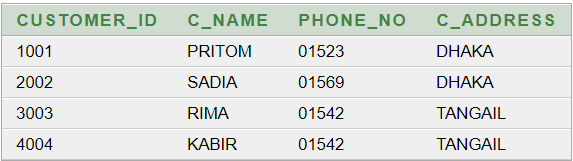
CREATE TABLE B\_M\_EMP (BRANCH\_ID NUMBER, M\_ID NUMBER, E\_ID NUMBER)

14.Employee:

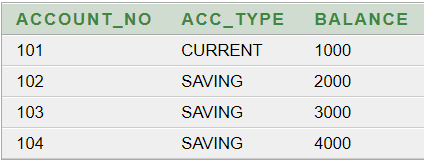
CREATE TABLE EMPLOYEE ( E\_ID NUMBER(4),E\_NAME VARCHAR2(14) ,E\_SALARY NUMBER , BIRTH\_ID NUMBER)

\* INSERTING VALUES \*

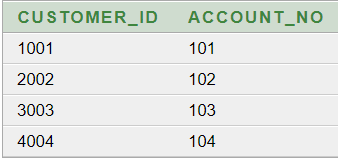
**1.CUSTOMER:**



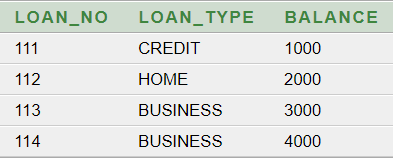
**2.ACCOUNT:**



**3.CUSTOMER\_ACCOUNT :**



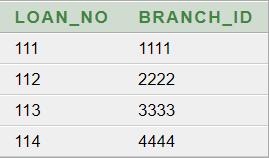
**4.LOAN :**



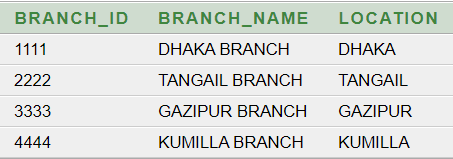
**5. CUSTOMER\_LOAN :**



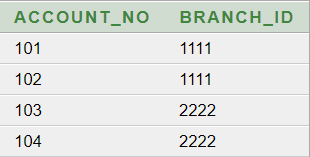
**6.LOAN\_BRANCH:**



**7.BRANCH:**



**8.ACCOUNT\_BRANCH:**



**9.BIRTH**

\*\*INSERTED USING SEQUENCE

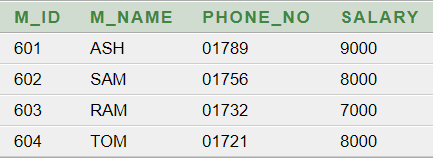
INSERT INTO BIRTH VALUES (BIRTH\_BIRTH\_ID.NEXTVAL,TO\_DATE('12-01-1982','DD-MM-YYYY'),'38')



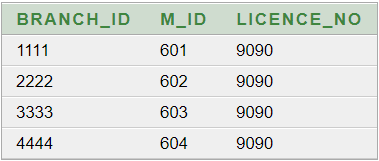
**10.BANK:**



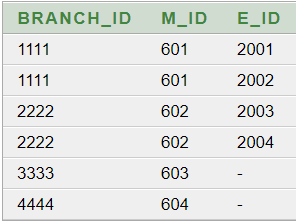
**11.MANAGER:**



**12. B\_M\_BANK:**



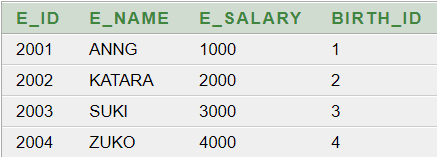
**13.B\_M\_Emp:**



**14.EMPLOYEE**

\*\*INSERTED USING SEQUENCE

\*\*INSERT INTO EMPLOYEE VALUES (EMPLOYEE\_E\_ID.NEXTVAL,'ANNG',1000,1)



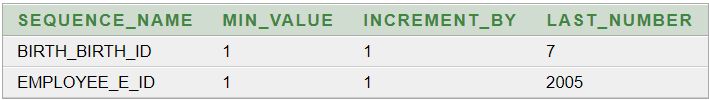
\* SEQUENCE \*

**FOR BIRTH ID:**

CREATE SEQUENCE BIRTH\_BIRTH\_ID INCREMENT BY 1 START WITH 1 NOCACHE NOCYCLE

**FOR EMPLOYEE ID:**

CREATE SEQUENCE EMPLOYEE\_E\_ID INCREMENT BY 1 START WITH 2001 NOCACHE NOCYCLE



**\*\* CURRENT VALUES:**

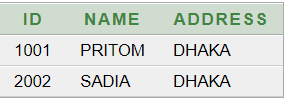
1.SELECT BIRTH\_BIRTH\_ID. CURRVAL AS CURRENT\_VALUE FROM DUAL

2. SELECT EMPLOYEE\_E\_ID. CURRVAL AS CURRENT\_VALUE FROM DUAL

**\* VIEW \***

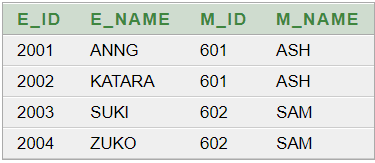
**1.SIMPLE VIEW:**

CREATE VIEW CINFO (ID, NAME, ADDRESS) AS SELECT CUSTOMER\_ID, C\_NAME, C\_ADDRESS FROM CUSTOMER WHERE C\_ADDRESS='DHAKA



**2.COMPLEX VIEW:**

CREATE VIEW EMPINFO AS SELECT E.E\_ID, E.E\_NAME, B.M\_ID, M.M\_NAME FROM EMPLOYEE E, B\_M\_EMP B, MANAGER M WHERE E.E\_ID=B.E\_ID AND B.M\_ID=M.M\_ID



**Simple Queries:**

**1.Using view:**

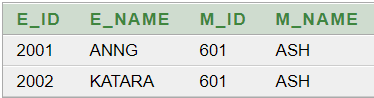
a. Print customer name whose id is 1001 and lives in DHAKA.

Answer: SELECT NAME FROM CINFO WHERE ID IN (1001) AND ADDRESS IN ('DHAKA')



b. Show the employees working for ASH.

Answer: SELECT \* FROM EMPINFO WHERE M\_NAME='ASH'



**2.Using tables:**

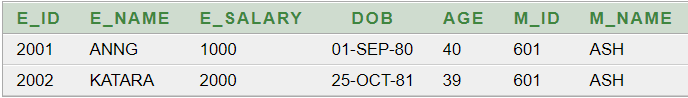
a. Print customer name whose id is 1001 and lives in DHAKA.

Answers: SELECT C\_NAME FROM CUSTOMER WHERE CUSTOMER\_ID=1001 AND C\_ADDRESS='DHAKA'



b. Show the employees working for ASH.

Answers: SELECT E.E\_ID, E.E\_NAME, E.E\_SALARY,B.DOB, B.AGE, M.M\_ID, M.M\_NAME FROM MANAGER M , EMPLOYEE E, BIRTH B, B\_M\_EMP BM WHERE E.BIRTH\_ID=B.BIRTH\_ID AND E.E\_ID=BM.E\_ID AND BM.M\_ID=M.M\_ID AND M.M\_NAME='ASH'



Group Members:

1.Pritom Debnath (20-42414-1)

2.Sadia Ali Sultana (20-42386-1)