

A Project File submitted
for Database Management
System(UCS310) by

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INDEX

S No.	Topic	Page Number
1	Problem Statement	3
2	E-R Diagram	4
3	E-R to Table	5
4	Normalised Table	6
5	PL/SQL commands	6
6	Output Screenshots	11

TOPIC: Banking Complaint and Loan Management System

Project Description:

Database will include details of customers such as Customer Id (Primary Key), Name, Account Number, Date of Birth, Email-ID, Address, Home Branch and Balance. These all are attributes of Customer Entity Set.

Other Entity Set will be of Complaint which will have the following attributes:
Customer ID (Foreign Key)

Current Status

Type of complaint

(Discriminator)No of days

Complaint and Customer Table will have complaint lodge relation between them.

The next Entity set is of Loan Details which have Loan No (Discriminator), LoanDate, Amount, Customer ID(Foreign Key) as attributes.

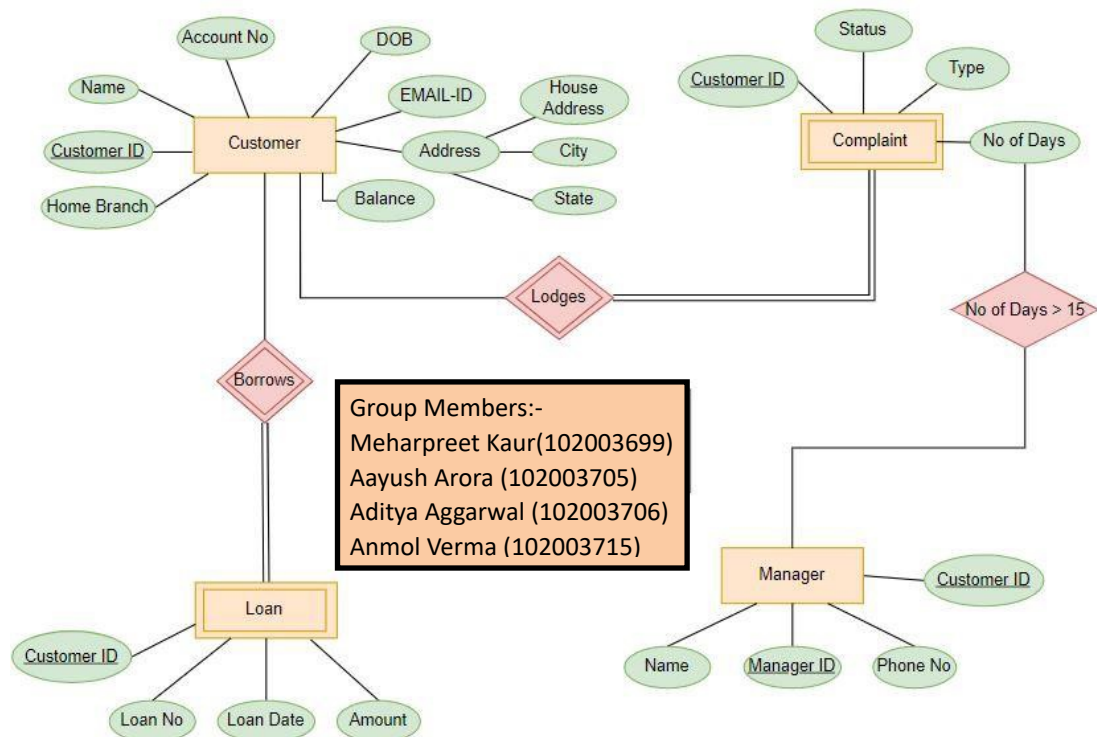
Customer and Loan Table will be having borrow relation between them.

No of days since the complaint has been lodged is considered as an attribute of relation between Complaint and Customer.

If the complaint is not resolved in 15 days, then it will be redirected to higher authority, Manager in our case. Manager have Name, Manager ID (Primary Key)Phone Number, Customer ID(Foreign Key) as attributes.

Loan Table and Complaint Table will have Total Participation (indicated by double line) as shown in ER Diagram.

ER Diagram:



ER DIAGRAM CONTAINS FOLLOWING RELATIONSHIPS:

Entity 1	Relationship	Entity 2	Cardinality
Customer	Lodges	Complaint	1 : N
Complaint	Lodged by	Customer	1 : 1
Customer	Borrows	Loan	1 : N
Loan	Borrowed by	Customer	1 : 1

ER to Tables:

Customer Table:

<u>CUSTOMER_ID</u>	NAME	ACCOUNT NO.	DOB	ADDRESSES	EMAIL-ID	BALANCE	HOME BRANCH
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Complaint Table:

CUSTOMER_ID	TYPE	STATUS (TRUE/FALSE)	NO. OF DAYS
-------------	------	---------------------	-------------

Customer_Id acts as a foreign key.

Customer_Id and type combined acts as discriminator.

Loan Table:

CUSTOMER_ID	LOAN NO.	LOAN DATE	AMOUNT
-------------	----------	-----------	--------

Customer_Id acts as a foreign key.

Customer_Id and LOAN NO. combined acts as discriminator.

Manager Table:

<u>MANAGER_ID</u>	NAME	PHONE NO	CUSTOMER_ID
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Customer_Id acts as a foreign key. Manager_Id acts as a Primary key.

Normalisation:

Customer Table before normalisation :

<u>CUSTOMER_ID</u>	NAME	ACCOUNT NO.	DOB	ADDRESS	EMAIL-ID	BALANCE	HOME BRANCH
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Customer Table after normalisation (1 NF Form) :

<u>CUSTOMER_ID</u>	NAME	ACCOUNT NO.	DOB	CITY	STATE	HOUSE ADDRESS	EMAIL-ID	BALANCE	HOME BRANCH
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SQL commands:

--customer table

create table Customer

```
( customer_id INT,  
  home_branch VARCHAR(50),  
  name VARCHAR(50),  
  email VARCHAR(50),  
  DOB DATE,  
  house_address VARCHAR(50),  
  city VARCHAR(50),  
  state VARCHAR(50),  
  balance  
  INT,acc_no  
  INT,  
  PRIMARY KEY(customer_id)
```

);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (131, 'Huayllati', 'Evey Rose', 'erose0@spotify.com', '06-FEBRUARY-1994', '90517', 'Bonner Lane', 'California', 2846068, 1000);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (496, 'San Carlos', 'Mercie Dackombe', 'mdackombe1@army.mil', '29-APRIL-1992', '2', 'Barnett Trail', 'California', 211334, 2455);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (555, 'Zaolin', 'Giulio Miskimmon', 'gmiskimmon2@drupal.org', '20-MAY-1992', '700', 'Escher Court', 'California', 1885991, 7662);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (237, 'Piraquara', 'Ingram Keeting', 'ikeeting3@printfriendly.com', '27-FEBRUARY-1987', '39', 'Vidon Way', 'California', 3236662, 9827);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (478, 'Áyios Yeóryios', 'Emmie Gartrell', 'egartrell4@rediff.com', '04-MARCH-1991', '47', 'Washington Alley', 'California', 1069704, 3231);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (482, 'Konggar', 'Estevan Shimon', 'eshimon5@alexa.com', '21-APRIL-1989', '41024', 'Fairview Avenue', 'California', 4217430, 9888);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (123, 'Beijiang', 'Jay Ryles', 'jryles6@blog.com', '27-MARCH-1993', '71378', 'Express Lane', 'California', 3726391, 1300);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (972, 'Obubra', 'Flory Clooney', 'fclooney7@pbs.org', '15-JULY-1996', '73', 'Petterle Way', 'California', 4917672, 2311);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (312, 'Féres', 'Charlot Strank', 'cstrank8@uol.com.br', '10-APRIL-1996', '6933', 'Donald Street', 'California', 204066, 1001);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (579, 'Sokyryany', 'Bobine Emslie', 'bemsle9@acquirethisname.com', '06-FEBRUARY-1996', '2', 'Summer Ridge Crossing', 'California', 4288422, 2457);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (53, 'Nanxindian', 'Pansie Stoneley', 'pstoneleya@constantcontact.com', '18-MAY-1989', '60209', 'Sullivan Avenue', 'California', 4151444, 7663);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (759, 'Pinamalayan', 'Donni McSweeney', 'dmcsweeneyb@sciencedirect.com', '28-APRIL-1988', '92', 'Paget Point', 'California', 3032477, 9829);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (427, 'Yevlakh', 'Micah Tomkins', 'mtomkinsc@taobao.com', '31-DECEMBER-1988', '6', 'Crownhardt Drive', 'California', 2885458, 3232);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (968, 'Tbng Manchey', 'Bernardina Blankau', 'bblankaud@drupal.org', '27-FEBRUARY-1992', '3', 'Golden Leaf Junction', 'California', 2576207, 1002);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (712, 'Firmat', 'Pennie Sliman', 'pslimane@harvard.edu', '09-APRIL-1989', '2248', 'Mesta Street', 'California', 1956571, 1003);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (60, 'Abut', 'Herve Slimings', 'hslimingsf@ask.com', '29-MAY-1995', '7857', 'Havey Lane', 'California', 4285790, 1004);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (96, 'Cijeungjing Kaler', 'Dolph Curteis', 'dcurteisg@nymag.com', '15-MARCH-1988', '5730', 'Gateway Place', 'California', 1999536, 1005);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (108, 'Evansville', 'Caitlin Lux', 'cluxh@sciencedaily.com', '24-APRIL-1989', '44', 'Kenwood Park', 'California', 3394978, 1006);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (266, 'Sinarbakti', 'Reinaldo Putland', 'rputlandi@irs.gov', '07-JULY-1991', '8', 'Sheridan Parkway', 'California', 1985368, 1007);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (458, 'Sopo', 'Inessa Ginglell', 'iginglellj@wordpress.com', '04-MAY-1990', '51', 'Lakeland Road', 'California', 1536181, 1008);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (844, 'Jawhar', 'Pablo Francescuccio', 'pfrancescucciok@cpanel.net', '14-FEBRUARY-1993', '5', 'Blaine Park', 'California', 1538025, 1009);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (852, 'Kozloduy', 'Myrwyn Diegan', 'mdieganl@daily motion.com', '27-MAY-1990', '65', 'Bay Hill', 'California', 1261715, 2000);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (753, 'Svyetlahorsk', 'Lenka Durbridge', 'ldurbridgem@dmoz.org', '22-APRIL-1991', '669', 'Mayfield Point', 'California', 1184117, 2001);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (946, 'Stopnica', 'Lance Shasnan', 'lshasnann@g.co', '23-MARCH-1990', '060', 'Maple Circle', 'California', 3168015, 2002);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (343, 'Ocoruro', 'Hamilton Chatell', 'hchatello@netvibes.com', '05-FEBRUARY-1989', '84', 'Sachtjen Point', 'California', 1152027, 2005);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (92, 'Hanyuan', 'Mikkel Reef', 'mreefp@w3.org', '30-MAY-1995', '81', 'Jay Point', 'California', 1540937, 2006);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (785, 'Serzedo', 'Vivien Brass', 'vbrassr@squidoo.com', '20-APRIL-1988', '3453', 'Lunder Junction', 'California', 3914293, 2007);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (250, 'Ujazzd', 'Dalt Wakeling', 'dwakelings@mtv.com', '22-MAY-1989', '87', 'Miller Circle', 'California', 2757376, 2008);

insert into Customer (customer_id, home_branch, name, email, DOB, house_address, city, state, balance, acc_no) values (52, 'Barrie', 'Winonah Ship', 'wshipt@google.co.uk', '13-FEBRUARY-1992',

'26499', 'Norway Maple Drive', 'California', 497033,2009);

--Complaint Table

create table

```
Complaint( Status
VARCHAR(50),
customer_id INT,
type VARCHAR(100),
no_of_days INT,
foreign key(customer_id) references
Customer(customer_id),primary key(customer_id,type)
);
```

```
insert into Complaint (Status,customer_id,type,no_of_days) values ('false',785,'debit card',3);
insert into Complaint (Status,customer_id,type,no_of_days) values ('true',52,'transaction
issues',7);insert into Complaint (Status,customer_id,type,no_of_days) values ('false',108,'credit
card',14); insert into Complaint (Status,customer_id,type,no_of_days) values ('false',266,'debit
card',16);
insert into Complaint (Status,customer_id,type,no_of_days) values ('false',946,'behaviour issues
withthe staff',1);
insert into Complaint (Status,customer_id,type,no_of_days) values ('true',60,'transaction
issues',12);insert into Complaint (Status,customer_id,type,no_of_days) values ('true',250,'debit
card',20);
insert into Complaint (Status,customer_id,type,no_of_days) values ('false',427,'credit card',2);
insert into Complaint (Status,customer_id,type,no_of_days) values ('true',968,'behaviour issues
withthe staff',5);
insert into Complaint (Status,customer_id,type,no_of_days) values ('true',712,'debit card',11);
insert into Complaint (Status,customer_id,type,no_of_days) values ('true',96,'transaction
issues',13);insert into Complaint (Status,customer_id,type,no_of_days) values ('true',844,'credit
card',5);
insert into Complaint (Status,customer_id,type,no_of_days) values ('true',343,'transaction issues',7);
```

--LOAN Table

create table LOAN (

```
Loan_number
INT,Loan_date
DATE,
Loan_amount INT,
customer_id INT,
foreign key(customer_id) references
Customer(customer_id),primary
key(customer_id,Loan_number)
);
```

```
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (52, '29-MAY-
2012', 499995,131);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (60, '21-
APRIL-2016', 381695,496);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (96, '04-JULY-
2019', 398073,555);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (123, '15-MAY-
2013', 101992,237);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (131, '25-
APRIL-2017', 12929,478);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (250,
'18-DECEMBER-2015', 395558,482);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (266, '09-MAY-
2018', 133980,123);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (312, '14-
APRIL-2019', 69153,972);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (482, '10-
```



```

DECEMBER-2018', 269001,312);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (496, '02-MAY-
2017', 65446,579);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (753, '06-JULY-
2012', 223039,53);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (946, '26-JULY-
2010', 350521,759);
insert into LOAN (Loan_number, Loan_date, Loan_amount,customer_id) values (972, '10-MAY-
2017', 470133,427);

```

```

create table manager
(name varchar(50),
manager_id INT,
phone_no INT,
customer_id INT,
foreign key(customer_id) references
Customer(customer_id),primary key(customer_id)
);

```

```

--CUSTOMER CANNOT OPEN A BANK ACCOUNT ON SUNDAY
CREATE OR REPLACE TRIGGER Customer_SUNDAY
BEFORE INSERT OR UPDATE OR DELETE ON CUSTOMER
BEGIN
    IF RTRIM(UPPER(TO_CHAR(SYSDATE,'DAY')))= 'SUNDAY' THEN
        RAISE_APPLICATION_ERROR(-20022,'NO OPERARTION CAN BE PERFORMED ON
SUNDAY')
    ;END IF;
END;

```

```

--LOAN CANNOT BE GIVEN ON SUNDAY
CREATE OR REPLACE TRIGGER LOAN_SUNDAY
BEFORE INSERT OR UPDATE OR DELETE ON LOAN
BEGIN
    IF RTRIM(UPPER(TO_CHAR(SYSDATE,'DAY')))= 'SUNDAY' THEN
        RAISE_APPLICATION_ERROR(-20022,'NO OPERARTION CAN BE PERFORMED ON
SUNDAY')
    ;END IF;
END;

```

```

--COMPLAINT CANNOT BE LODGED ON SUNDAY
CREATE OR REPLACE TRIGGER Complaint_SUNDAY
BEFORE INSERT OR UPDATE OR DELETE ON Complaint
BEGIN
    IF RTRIM(UPPER(TO_CHAR(SYSDATE,'DAY')))= 'SUNDAY' THEN
        RAISE_APPLICATION_ERROR(-20022,'NO OPERARTION CAN BE PERFORMED ON
SUNDAY')
    ;END IF;
END;

```

```

--IF NEW BALANCE IS LESS THAN 0, IT WILL RAISE A WARNING
CREATE OR REPLACE TRIGGER UPDATE_balance
BEFORE UPDATE ON Customer
FOR EACH ROW
BEGIN
    IF :NEW.balance<0 THEN

```

```
        RAISE _APPLICATION_ERROR(-20000,'NEW BALANCE CANNOT BE LESS THAN 0');
    END IF;
END;
```

```
--IF LOAN AMOUNT BECOMES 0, LOAN RECORD IS
DELETEDCREATE OR REPLACE TRIGGER LOAN_AMT
AFTER UPDATE ON LOAN
FOR EACH ROW
BEGIN
    IF :NEW.loan_amount= 0 THEN
        DELETE FROM LOAN WHERE Loan_amount =
        0;END IF;
END;
```

```
--REDIRECTING COMPLAINT TO MANAGER IF 15 DAYS HAS BEEN PASSED
DECLARE
CURSOR C1 IS SELECT * FROM COMPLAINT;
REC C1%ROWTYPE;
BEGIN
OPEN
C1;LOOP
    FETCH C1 INTO REC;
    EXIT WHEN C1%NOTFOUND;
    IF REC.no_of_days > 15 and status LIKE 'true' THEN
        INSERT INTO MANAGER(NAME, MANAGER_ID, PHONE_NO, CUSTOMER_ID)
VALUES('Nikhil', 555, 7837986701, REC.Customer_ID);
    END IF;
END LOOP;
CLOSE C1;
END;
```

```
--TO SEE PENDING COMPLAINTS OF CUSTOMERS WITH NO OF DAYS>15
SELECT * FROM MANAGER;
```

```
--TOTAL LOAN GIVEN BY BANK
CREATE OR REPLACE FUNCTION TOTAL_LOAN RETURN NUMBER IS
s NUMBER;
BEGIN
Select sum(LOAN_AMOUNT) into s from
LOAN;RETURN(s);
END;
```

```
DECLARE
C
NUMBER
BEGIN
C:=TOTAL_LOAN();
DBMS_OUTPUT.PUT_LINE('TOTAL LOAN '||C);
END;
```

```
--CALCULATES TOTAL LOAN TAKEN BY A CUSTOMER
DECLARE
TOTAL NUMBER;
PROCEDURE TOTAL_LOAN_CUST( CUSTID IN NUMBER) IS
BEGIN
SELECT SUM(*) INTO TOTAL FROM LOAN
```

```

GROUP BY LOAN.CUSTOMER_ID
WHERE
CUSTID=LOAN.CUSTOMER_ID;BEGIN
TOTAL_LOAN_CUST(131);
DBMS_OUTPUT.PUT_LINE('TOTAL LOAN AMOUNT IS '||TOTAL);
END;

```

```

--CHECKING WHETHER A PARTICULAR CUSTOMER HAS TAKEN LOAN OR NOT
DECLARE
CHECK_LOAN
EXCEPTIONBEGIN
IF NOT EXISTS ( SELECT * FROM LOAN WHERE CUSTOMER_ID = 92)
THENRAISE CHECK_LOAN
END IF;
EXCEPTION
WHEN CHECK_LOAN THEN
DBMS_OUTPUT.PUT_LINE('NO LOAN RECORD
FOUND');END;

```

OUTPUT SCREENSHOTS:-

