FODBMS NORMALIZATION PROJECT REPORT ON

MEMBERSHIP CANCELLATION FORM

Submitted in Partial Fulfilment for the Course

of

FODBMS

in Term-3

For

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SUBMITTED TO:

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Normalization

Normalization is the process of efficiently organizing data in a database. There are two goals of the normalization process: eliminating redundant data (for example, storing the same data in more than one table) and ensuring data dependencies make sense (only storing related data in a table). Both of these are worthy goals, as they reduce the amount of space a database consumes and ensure that data is logically stored.

Original form – Membership Cancellation Form

Membership_ID	Enrollment_date	Customer_ID	First Name	Last Name	E-mail	Address	Country	State	City	Pincode	Service_ID	Description	No.of months left	price_per_month	Total	Refund_Amount
3011	05-02-2021	11	suchit	katyal	sk@gmail.com	hno-201, sector 37	india	haryana	faridabad	121003	101	Movies	3	100	300	540
	05-02-2021										202	songs	3	50	150	540
	05-02-2021										303	podcasts	3	30	90	540
3022	17-02-2021	12	anisha	siwas	as@gmail.com	hno-12, sector 4	india	delhi	new delhi	220077	202	songs	5	50	250	370
	17-02-2021										303	podcasts	4	30	120	370
3055	20-02-2021	14	kartik	mohan	km@gmail.ocm	hno-27, block A	india	haryana	gurugram	121788	101	Movies	6	100	600	780
	20-02-2021										303	podcasts	6	30	180	780
3033	27-02-2021	17	ravi	sharma	rs@yahoo.in	hno-68, block M	india	delhi	south delhi	220099	202	songs	2	50	100	100

First Normal Form:

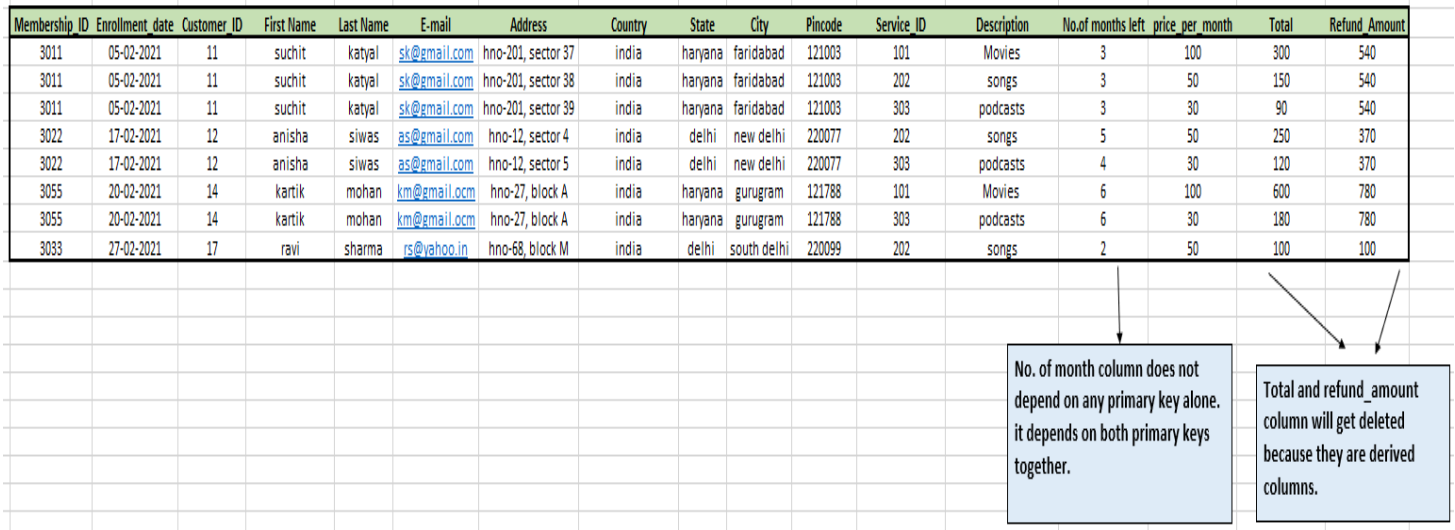
Membership_ID	Enrollment_date	Customer_ID	First Name	Last Name	E-mail	Address	Country	State	City	Pincode	Service_ID	Description	No.of months left	price_per_month	Total	Refund_Amount
3011	05-02-2021	11	suchit	katyal	sk@gmail.com	hno-201, sector 37	india	haryana	faridabad	121003	101	Movies	3	100	300	540
3011	05-02-2021	11	suchit	katyal	sk@gmail.com	hno-201, sector 38	india	haryana	faridabad	121003	202	songs	3	50	150	540
3011	05-02-2021	11	suchit	katyal	sk@gmail.com	hno-201, sector 39	india	haryana	faridabad	121003	303	podcasts	3	30	90	540
3022	17-02-2021	12	anisha	siwas	as@gmail.com	hno-12, sector 4	india	delhi	new delhi	220077	202	songs	5	50	250	370
3022	17-02-2021	12	anisha	siwas	as@gmail.com	hno-12, sector 5	india	delhi	new delhi	220077	303	podcasts	4	30	120	370
3055	20-02-2021	14	kartik	mohan	km@gmail.ocm	hno-27, block A	india	haryana	gurugram	121788	101	Movies	6	100	600	780
3055	20-02-2021	14	kartik	mohan	km@gmail.ocm	hno-27, block A	india	haryana	gurugram	121788	303	podcasts	6	30	180	780
3033	27-02-2021	17	ravi	sharma	rs@yahoo.in	hno-68, block M	india	delhi	south delhi	220099	202	songs	2	50	100	100

Membership_ID is first primary key.

Service_ID is second primary key.

1. In no cell we should be having multiple elements or a table.
2. We have chosen 2 primary keys that are:
    - Membership_ID
    - Service_ID

Second Normal Form:



Membership_ID	Enrollment_date	Customer_ID	First Name	Last Name	E-mail	Address	Country	State	City	Pincode	Service_ID	Description	No.of months left	price_per_month	Total	Refund_Amount
3011	05-02-2021	11	suchit	katyal	sk@gmail.com	hno-201, sector 37	india	haryana	faridabad	121003	101	Movies	3	100	300	540
3011	05-02-2021	11	suchit	katyal	sk@gmail.com	hno-201, sector 38	india	haryana	faridabad	121003	202	songs	3	50	150	540
3011	05-02-2021	11	suchit	katyal	sk@gmail.com	hno-201, sector 39	india	haryana	faridabad	121003	303	podcasts	3	30	90	540
3022	17-02-2021	12	anisha	siwas	as@gmail.com	hno-12, sector 4	india	delhi	new delhi	220077	202	songs	5	50	250	370
3022	17-02-2021	12	anisha	siwas	as@gmail.com	hno-12, sector 5	india	delhi	new delhi	220077	303	podcasts	4	30	120	370
3055	20-02-2021	14	kartik	mohan	km@gmail.ocm	hno-27, block A	india	haryana	gurugram	121788	101	Movies	6	100	600	780
3055	20-02-2021	14	kartik	mohan	km@gmail.ocm	hno-27, block A	india	haryana	gurugram	121788	303	podcasts	6	30	180	780
3033	27-02-2021	17	ravi	sharma	rs@yahoo.in	hno-68, block M	india	delhi	south delhi	220099	202	songs	2	50	100	100

1. No. of month column does not depend on any primary key alone. it depends on both primary keys together.
2. Total and refund_amount column will get deleted because they are derived columns.
3. The above will split into 3 parts

These columns depend on membership_id primary key

Membership_ID	Enrollment_date	Customer_ID	First Name	Last Name	E-mail	Address	Country	State	City	Pincode
3011	05-02-2021	11	suchit	katyal	sk@gmail.com	hno-201, sector 37	india	haryana	faridabad	121003
3022	17-02-2021	12	anisha	siwas	as@gmail.com	hno-12, sector 4	india	delhi	new delhi	220077
3055	20-02-2021	14	kartik	mohan	km@gmail.ocm	hno-27, block A	india	haryana	gurugram	121788
3033	27-02-2021	17	ravi	sharma	rs@yahoo.in	hno-68, block M	india	delhi	south delhi	220099

Service_ID	Description	price_per_month
101	Movies	100
202	songs	50
303	podcasts	30

Membership_ID	Service_ID	No.of months left
3011	101	3
3011	202	3
3011	303	3
3022	202	5
3022	303	4
3055	101	6
3055	303	6
3033	202	2

Description and price_per_month depend on service_id

Third Normal Form:

The tables can be further broken in 2 according to the primary keys.

Membership_ID	Enrollment_date
3011	05-02-2021
3022	17-02-2021
3055	20-02-2021
3033	27-02-2021

Customer_ID	First Name	Last Name	E-mail	Address	Country	State	City	Pincode
11	suchit	katyal	sk@gmail.com	hno-201, sector 37	india	haryana	faridabad	121003
12	anisha	siwas	as@gmail.com	hno-12, sector 4	india	delhi	new delhi	220077
14	kartik	mohan	km@gmail.ocm	hno-27, block A	india	haryana	gurugram	121788
17	ravi	sharma	rs@yahoo.in	hno-68, block M	india	delhi	south delhi	220099

2 tables will be created for the 3rd normal form as there are 2 primary keys.

Service_ID	Description	price_per_month
101	Movies	100
202	songs	50
303	podcasts	30

Membership_ID	Service_ID	No.of months left
3011	101	3
3011	202	3
3011	303	3
3022	202	5
3022	303	4
3055	101	6
3055	303	6
3033	202	2

These four are the final set of our tables. We will make our ERD according to these tables only

SQL CODES

/* Bottom-up approach to data modelling. Normalization of membership cancellation form and creating entity relationship diagram for same. */

```
create database if not exists MCF ;

use MCF;
```

/* creating required tables. */

```
create table membership ( membership_ID varchar(4) primary key,
                    enrollment_date DATE,
                    ) ;

insert into membership values ('3011','2022-01-05') ;
insert into membership values ('3022','2022-01-17') ;
insert into membership values ('3055','2022-01-20') ;
```

```
insert into membership values ('3033','2022-01-27') ;


create table customer ( customer_ID char(5) primary key,
                        first name varchar(20),
                        last name varchar(20),
                        e-mail varchar(20)
                        adderess varchar(40)
                        country varchar(20)
                        state  varchar(20)
                        city varchar(20)
                        pincode int )  ;



insert into customer values ('11','suchit','katyal','sk@gmail.com','hno-201, sector
37','india','haryana','faridabad','121003') ;

insert into customer values ('12','anisha','siwas','as@gmail.com','hno-12, sector 4','india','delhi','new
delhi','220077') ;

insert into customer values ('14','kartik','mohan','km@gmail.com','hno-27, block
A','india','haryana','gurugram','121788') ;

insert into customer values ('17','ravi','sharma','rs@yahoo.in','hno-68, block M','india','delhi','south
delhi','220099') ;


create table services ( service_ID varchar(3) primary key,
                        description varchar(25)
                        price_per_month  int )  ;


insert into services values ('101','Movies',100) ;

insert into services values ('202','songs',50) ;

insert into services values ('303','podcasts',30) ;


create table time_period ( membership_ID char(4),
                          service_ID char(3)
                          number_of_months_left int
```

```
                primary key (membership_ID, service_ID ) )  ;

insert into time_period values ('3011','101',3) ;
insert into time_period values ('3011','202',3) ;
insert into time_period values ('3011','303',3) ;
insert into time_period values ('3022','202',5) ;
insert into time_period values ('3022','303',4) ;
insert into time_period values ('3055','101',6) ;
insert into time_period values ('3055','303',6) ;
insert into time_period values ('3033','202',2) ;
```

/* creating required relationship tables and stating assumptions for each table.

Assumption for relationship_membership_table.

1. Every memebership_ID is unique. */

```
create table relationship_membership_customer ( membership_ID char(4),
                                customer_ID char(5),
                                primary key ( membership_ID ),
                                foreign key (membership_ID) references membership (membership_ID),
                                foreign key (customer_ID) references customer (customer_ID) );

insert into relationship_membership_customer values ( '3011' , '11' ) ;
insert into relationship_membership_customer values ( '3022' , '12' ) ;
insert into relationship_membership_customer values ( '3055' , '14' ) ;
insert into relationship_membership_customer values ( '3033' , '17' ) ;

/* Assumption relationship_customer_services.
1. A member can purchase various services and a service can be purchased by multiple members. */

create table relationship_customer_services ( customer_ID char(5),
                                service_ID varchar(3),
```

primary key (customer_ID, service_ID),

foreign key (customer_ID) references customer (customer_ID),

foreign key (service_ID) references services (service_ID));

insert into relationship_customer_services values ('11' , '101') ;

insert into relationship_customer_services values ('11' , '202') ;

insert into relationship_customer_services values ('12' , '101') ;

insert into relationship_customer_services values ('14' , '303') ;

Final ERD using Workbench