Music Management Application

I. MEMBERS

Name	NUID	Work done by Teammates
Bo Liu	001057068	Modified tables and redefined ER diagram, Designed Security and Business Rules
Tianyu Wei	001371254	Modified tables and redefined ER diagram, Designed Security and Business Rules
Pooja Vaikos	001065096	Modified tables and redefined ER diagram, Designed Security and Business Rules
Vraj Gandhi	001443543	Modified tables and redefined ER diagram, Designed Security and Business Rules

II. PROBLEM STATEMENT

Nowadays, many music applications orient to listeners only, which leads to the lack of interaction between producers and normal users. Therefore, this project is aimed to bridge the gap and enrich the functions of music application.
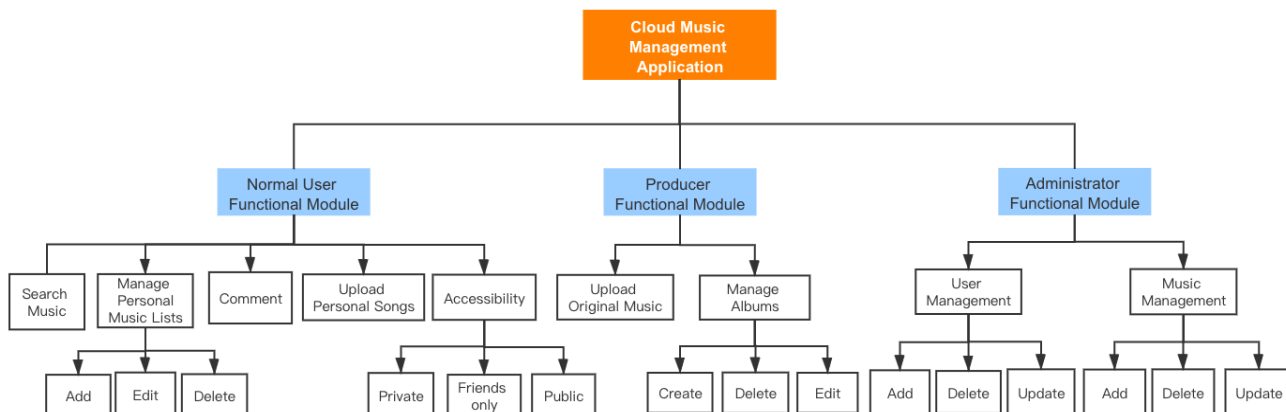
III. **ROLE PARTITION**

Normal user: refers to all listeners using this application, have the lowest
accessibility.

Producer: refers to professional singers and composers. Application
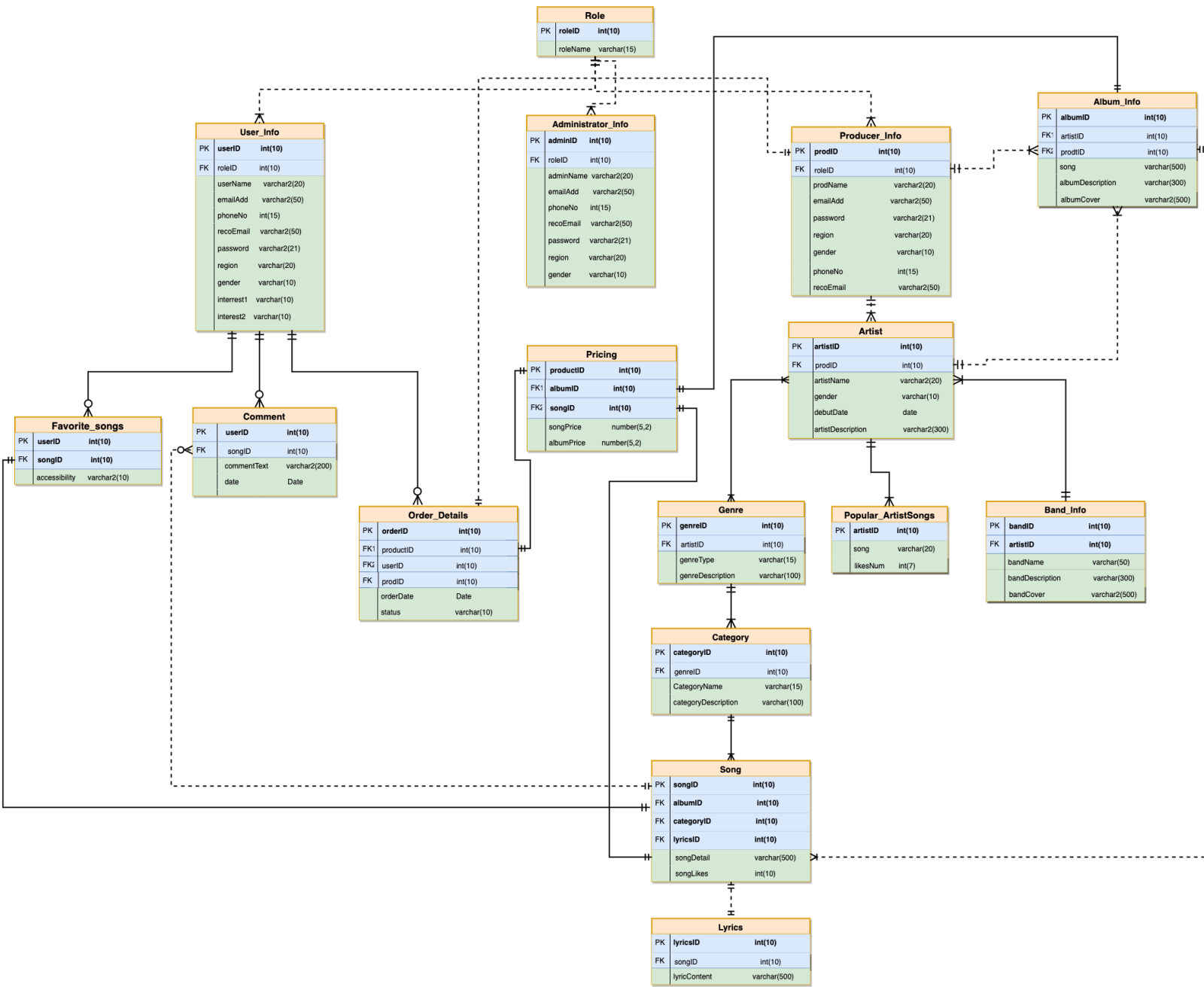enables them.

Administrator: responsible for all account management, have the highest
Accessibility.

IV. **OBJECTIVES**

a. Terminate the conventional way of music listening and design creative functions to improve user experience. User can be a listener, commentator and producer simultaneously.

b. Professional producers can post new music and album in a more efficient and convenient way.

c. Users can share music lists they love to someone else or keep them in private.

V. E-R DIAGRAM

a. Logical Model

Role

PK	roleID	int(10)
	roleName	varchar(15)

User_Info

PK	userID	int(10)
FK	roleID	int(10)
	userName	varchar2(20)
	emailAdd	varchar2(50)
	phoneNo	int(15)
	recoEmail	varchar2(50)
	password	varchar2(21)
	region	varchar(20)
	gender	varchar(10)
	interrest1	varchar(10)
	interest2	varchar(10)

Administrator_Info

PK	adminID	int(10)
FK	roleID	int(10)
	adminName	varchar2(20)
	emailAdd	varchar2(50)
	phoneNo	int(15)
	recoEmail	varchar2(50)
	password	varchar2(21)
	region	varchar(20)
	gender	varchar(10)

Producer_Info

PK	prodID	int(10)
FK	roleID	int(10)
	prodName	varchar2(20)
	emailAdd	varchar2(50)
	password	varchar2(21)
	region	varchar2(20)
	gender	varchar(10)
	phoneNo	int(15)
	recoEmail	varchar2(50)

Album_Info

PK	albumID	int(10)
FK1	artistID	int(10)
FK2	prodtID	int(10)
	song	varchar(500)
	albumDescription	varchar(300)
	albumCover	varchar2(500)

Pricing

PK	productID	int(10)
FK1	albumID	int(10)
FK2	songID	int(10)
	songPrice	number(5,2)
	albumPrice	number(5,2)

Artist

PK	artistID	int(10)
FK	prodID	int(10)
	artistName	varchar2(20)
	gender	varchar(10)
	debutDate	date
	artistDescription	varchar2(300)

Favorite_songs

PK	userID	int(10)
FK	songID	int(10)
	accessibility	varchar2(10)

Comment

PK	userID	int(10)
FK	songID	int(10)
	commentText	varchar2(200)
	date	Date

Order_Details

PK	orderID	int(10)
FK1	productID	int(10)
FK2	userID	int(10)
FK	prodID	int(10)
	orderDate	Date
	status	varchar(10)

Genre

PK	genreID	int(10)
FK	artistID	int(10)
	genreType	varchar(15)
	genreDescription	varchar(100)

Popular_ArtistSongs

PK	artistID	int(10)
	song	varchar(20)
	likesNum	int(7)

Band_Info

PK	bandID	int(10)
FK	artistID	int(10)
	bandName	varchar(50)
	bandDescription	varchar(300)
	bandCover	varchar2(500)

Category

PK	categoryID	int(10)
FK	genreID	int(10)
	CategoryName	varchar(15)
	categoryDescription	varchar(100)

Song

PK	songID	int(10)
FK	albumID	int(10)
FK	categoryID	int(10)
FK	lyricsID	int(10)
	songDetail	varchar(500)
	songLikes	int(10)

Lyrics

PK	lyricsID	int(10)
FK	songID	int(10)
	lyricContent	varchar(500)

VI. TABLE STRUCTURES

a. Role Table

Attributes	Type	Default Value	NULL?	Description
RoleID(PK)	INT(10)	No	No	Primary key ID of every role in this application. 1 refers to "User",2 refers to "Producer",3 refers to "Administrator"
roleName	VARCHAR2(15)	No	No	The name of each role.

b. User_Info Table

Attributes	Type	Default Value	NULL?	Description
UserID(PK)	Int(10)	No	No	User ID of User
Roles_ID(FK)	Int(10)	1	No	Role ID of User
userName	Varchar2(20)	No	No	User Name
emailAdd	Varchar2(20)	No	No	Email Id of User
recoEmail	Varchar2(50)	No	No	User e-mail for recovery
Password	Varchar2(20)	No	No	Password
Phone No.	Int(12)	No	Yes	Phone no. of User
region	Varchar2(20)	No	Yes	Region that user is belong to
gender	Varchar2(10)	No	Yes	User's gender
interest1	Varchar(10)	No	Yes	Interests user has
interest2	Varchar(10)	No	Yes	Interests user has

c. Favorite_Songs Table

Attributes	Type	Default Value	NULL?	Description
UserID(PK)	Int(10)	No	No	User ID
roles_ID(FK)	Int(10)	1	No	Role ID of User
accessibility	Varchar2(10)	No	No	Public, private, Friends only

d. Comment Table

Attributes	Type	Default Value	NULL?	Description
UserID(PK)	Int(10)	No	No	User ID
Song ID(FK)	Int(10)	No	No	Song ID
CommentsText	Varchar2(200)	No	No	Comments Text
Date	Date	No	No	Date of the posted Comment

e. Producer_Info Table

Attributes	Type	Default Value	NULL?	Description
ProdID(PK)	INT(10)	No	No	Primary key The unique ID of each producer.
RoleID(FK)	VARCHAR2(15)	2	No	Foreign key The role ID of producer company.
prodName	VARCHAR2(20)	No	No	Brand name of each producer.
prodEmail	VARCHAR2(50)	No	No	Email information of each producer.
Recovery Email	Varchar2(20)	No	No	Recover email in case of forgetting the password
Password	Varchar2(20)	No	No	Password
region	Varchar2(20)	No	Yes	Region that producer is belong to
gender	Varchar2(10)	No	Yes	Producer's gender

f. Artist Table

Attributes	Type	Default Value	NULL?	Description
ArtistID(PK)	INT(10)	No	No	Primary key The unique ID of each artist.
BandID(FK)	INT(10)	No	Yes	Foreign key The band ID of each artist(if not in a band, the band ID is null)
ProdID(FK)	VARCHAR2(20)	No	No	Foreign key

Attributes	Type	Default Value	NULL?	Description
				The producer ID of each artist.
artistName	VARCHAR2(20)	No	No	The personal name of each artist.
gender	VARCHAR(10)	No	Yes	The gender of the artist 0 refers to "man" 1 refers to "female" 2 refers to "others"
debutDate	DATE	No	No	The time of artist having first performance to public.
artistDescription	VARCHAR2(300)	No	Yes	Introduction of each artist.

g. Genre Table

Attributes	Type	Default Value	NULL?	Description
GenreID(PK)	INT(10)	No	No	Primary key The unique ID for each song genre. 0 refers to "Indian" 1 refers to "American" 2 refers to "Japanese" 3 refers to "Chinese" Etc.
ArtistID(FK)	INT(10)	No	No	Foreign key The artist ID of each artist.
genreType	VARCHAR(15)	No	No	The genre name(Indian, Chinese,etc)
genreDescription	VARCHAR2(100)	No	Yes	The description of each genre type.

h.Category Table

Attributes	Type	Default Value	NULL?	Description
categoryID(PK)	INT(10)	No	No	Tells us about the mood of song
genreID(FK)	INT(10)	No	No	Links to genre it comes into
CategoryName	VARCHAR(15)	No	No	Eg: Romantic, Sad, Motivation, Happy etc

CategoryDescription	VARCHAR (100)	No	Yes	Why the song is into that category

i. Song Table

Attributes	Type	Default Value	NULL?	Description
SongID(PK)	INT(10)	No	No	ID of songs
AlbumID(FK)	INT(10)	No	No	AlbumID of the song belongs to
CategoryID(FK)	INT(10)	No	No	Which category song belongs to
LyricsID(FK)	INT(10)	No	No	LyricsID of the song belongs to
SongDetail	VARCHAR(20)	No	No	Details information of song
songLikes	INT(10)	No	Yes	The amount of likes the song gets

j. Album_Info Table

Attributes	Type	Default Value	NULL?	Description
AlbumID(PK)	INT(10)	No	No	Unique value that links to artist and producer
ArtistID(FK1)	INT(10)	No	No	Unique ID to show the artist in that album
Producer(FK2)	INT(10)	No	No	Unique ID to show the producer of that album
Song	VARCHAR(20)	No	No	Name of the song
albumDescription	VARCHAR(300)	No	No	Brief information of making of the album
albumCover	VARCHAR2(500)	No	Yes	URL link for video

k.Band_Info Table

Attributes	Type	Default Value	NULL?	Description
BandID(PK)	INT(10)	No	No	Unique ID for different bands
BandName	Varchar(50)	No	No	Name of the band
bandDescription	VARCHAR(300)	No	Yes	How was it formed
BandCover	VARCHAR(500)	No	Yes	URL link for Vedio

l. Administrator_Info Table

Attributes	Type	Default Value	NULL?	Description
AdminID(PK)	Int(10)	No	No	The ID of administrator in active
RoleID(FK)	Int(10)	3	No	Represents the role of user

userName	Varchar2(20)	No	No	The name of administrator
emailAdd	Varchar2(50)	No	No	E-mail of administrator
phoneNo	Int(15)	No	Yes	Phone number of administrator
recoEmail	Varchar2(50)	No	No	The E-mail address for recovery use
password	Varchar2(50)	No	No	The password for administrator to access the system
region	Varchar(20)	No	No	Country the administrator is originally from
gender	Varchar(10)	No	Yes	The gender of administrator

m. Order Details Table:

Attributes	Type	Default Value	NULL?	Description
OrderID(PK)	Int(10)	No	No	The order Id of purchased items
ProductID(FK)	Int(10)	No	No	Product ID of charged items
UserID(FK)	Int(10)	No	No	User id of the user that has purchased an item
ProdID(FK)	Int(10)	No	No	Producer ID who has purchased/sold any item
orderDate	date	No	No	Order date
Status	Varchar(10)	No	No	Processing, pending, completed

n. Popular_ArtistSongs Table

Attributes	Type	Default Value	NULL?	Description
ArtistID(PK)	Int(10)	No	No	The ID of artist who is in active
song	Varchar(20)	No	No	The name of song that is listing for
likesNum	Int(7)	No	No	The number of likes the song gets

o.Pricing Table

Attributes	Type	Default Value	NULL?	Description
ProductID(PK)	Int(10)	No	No	The ID of new transaction
AlbumID(FK)	Int(10)	No	No	The ID of album

SongID(FK)	Int(10)	No	No	Song ID for any Song
songPrice	Number(5,2)	0	No	Price that can be charged for a song
albumPrice	Number(5,2)	0	No	Price that can be charged for an album

p. Lyrics Table:

Attributes	Type	Default Value	NULL?	Description
LyricsID(PK)	Int(10)	No	No	The ID for new lyrics
SongID(FK)	Int(10)	No	No	Song ID for any Song
lyricsContent	Varchar(500)	No	No	Lyrics of any song

VII) Business Rules:

- ➢ **Rules for all Tables:**
- • All the primary keys in the table must be of 10 digits as all the primary keys are integers - **Check Constraint.**
- • Names should only contain alphabets. Numbers or special characters are not allowed- **Check Constraint.**
- • All the Passwords should be a combination of one capital word, at least one number and special characters from &, @, ! and should be at least 6 characters long and no longer than 21 characters - **Check Constraint.**
- • Recovery email is mandatory, and email should be in the format %@%. ___ - **Check Constraint.**
- • Phone number is optional and can be NULL.
- • **Pricing Table:**
  - ♦ **Attributes: songPrice and albumPrice - NOT NULL Constraint**
    - ▪ Any song is charged for $X and the entire album is charged $Y depending on the producer or admin.
    - ▪ These fields can be set to 0 as default but not negative value or NULL.
- • **Artist Table:**
  - ♦ **Attribute : debutDate -CHECK Constraint**

- It should be a past date or present date but not future one.

VIII) Security Rules:

- Permissions for each role:
  - Administrator :
    - Has a Read, Write and modify access to every table besides User_Info and Producer_Info.
    - Highest session level
  - Producer :
    - Has a read and write access to Artist, Genre, Band_Info, Album_Info and Song table. (Not Modify because he can only upload his work)
    - Second session level
  - User :
    - Has a Read and Write access to User_Info, Favorite_songs, Comments and Order_details table, has a read only access to Song table.
    - Lowest session level