
MUSICBASE

Final Project

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UOIT

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Introduction

Music is an essential art and as time passes, new songs are released. At this time, music creation is in a great state and websites like “YouTube” and “Vevo” facilitate music playback after you sign a contract with a publisher to create the song. Content creation is very important but at the same time, content discovery is vital to finding the newly and previously released songs. The lack of options when it comes to content discovery is what we are hoping to solve with our MusicBase project.

MusicBase is a music discovery website that allows users to enter any/all of the following to determine matching results: artist name, album name, song name, genre, date released (song) and more. The website first retrieves the user input through a text input box. The user is also expected to select what information they expect to see. Then, queries the database for information relating to the input. It then displays the relevant albums/songs. For example, if a user types in “J Cole” in the search box and selects Artist as the query type, the website will output all songs that are made by “J Cole” and output information about that song such as Cover Art and YouTube Link. In another case, if a user inputs just the name of an album such as “Watch the Throne” and selects the “Albums Songs” query, the website will output all songs in album “Watch the Throne” and also provide information such as song length, rating, and release date. In order to get access to this search feature, the user will need to login or register with an account.

As touched on earlier, MusicBase is intended to provide users with a centralized and organized way of discovering new music. Aside from supporting a large database of music, our goal is to provide excellent clarity and ease of use for the user. We want user of the website to be able to easily find what they want and move on to another query. This is going to be implemented with a friendly, simple interface. The main page will just initially consist of an input text box then allow the user to enter more information with additional input text boxes. The focus on a simple, clean user interface is going to help distinguish our website from similar sites. Currently, there are other music discovery options but most have clunky user interfaces and require time to figure out how to use. Another differentiator includes MusicBase being an online website meaning it can be accessed from any computer with no additional software needing to be downloaded. It is not something you have to install on your computer such as “iTunes”.

The project will be divided into three main phases: Phase 1 Proposal, Phase 2: SQL Coding and Phase 3 website development & database implementation. Refer to chart 1 and 2 below for more detailed information on project planning.

In phase 1 all the research related to the project will be done for the project and proposal will be created for the project. The phase 1 was completed in 14 days. The phase 2 will mainly deal with the design and coding for the SQL in my SQL, this part will roughly take 17- 20 days. Phase 3 was developed using PHP, CSS, HTML, and JSON. This phase took roughly 20 days to finish.

Our passion for music is what initially fueled discussion about creating a better solution to music discovery. We hope with a large database, clean interface and features such as music playback we can solve this content discovery problem but at the same time facilitate content playback.

Project Planning



















 Task Mode	Task Name	Duration	Start	Finish	Predecessors
	Online Music Library	51 days?	Mon 22/09/14	Mon 01/12/14	
	Phase 1	14 days	Mon 22/09/14	Thu 09/10/14	
	Research	6 days	Mon 22/09/14	Mon 29/09/14	
	Proposal	8 days	Tue 30/09/14	Thu 09/10/14	3
	Phase 2	17 days?	Fri 10/10/14	Mon 03/11/14	
	creation realation schema	3 days	Fri 10/10/14	Tue 14/10/14	4
	creating table and sample data	3 days	Wed 15/10/14	Fri 17/10/14	6
	writing Sql code related to the project	3 days	Mon 20/10/14	Wed 22/10/14	7
	Writing View statment	5 days	Thu 23/10/14	Wed 29/10/14	8
	Error checking and testing	3 days	Thu 30/10/14	Mon 03/11/14	9
	Creating ER diagram	11 days?	Mon 20/10/14	Mon 03/11/14	7
	Phase 3	20 days	Tue 04/11/14	Mon 01/12/14	
	Software requirment	2 days	Tue 04/11/14	Wed 05/11/14	11,10
	Software desgin	4 days	Thu 06/11/14	Tue 11/11/14	13
	Coding in HTML	5 days	Wed 12/11/14	Tue 18/11/14	14
	Coding in Javascript	6 days	Wed 19/11/14	Wed 26/11/14	15
	Error checking and testing	3 days	Thu 27/11/14	Mon 01/12/14	16

Chart 1

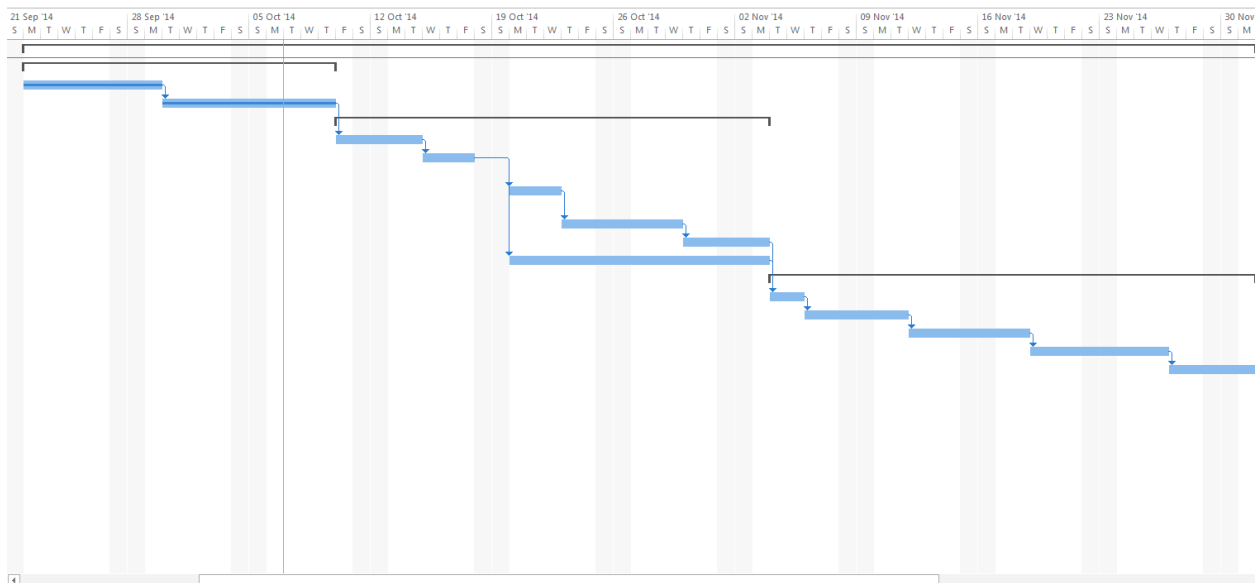
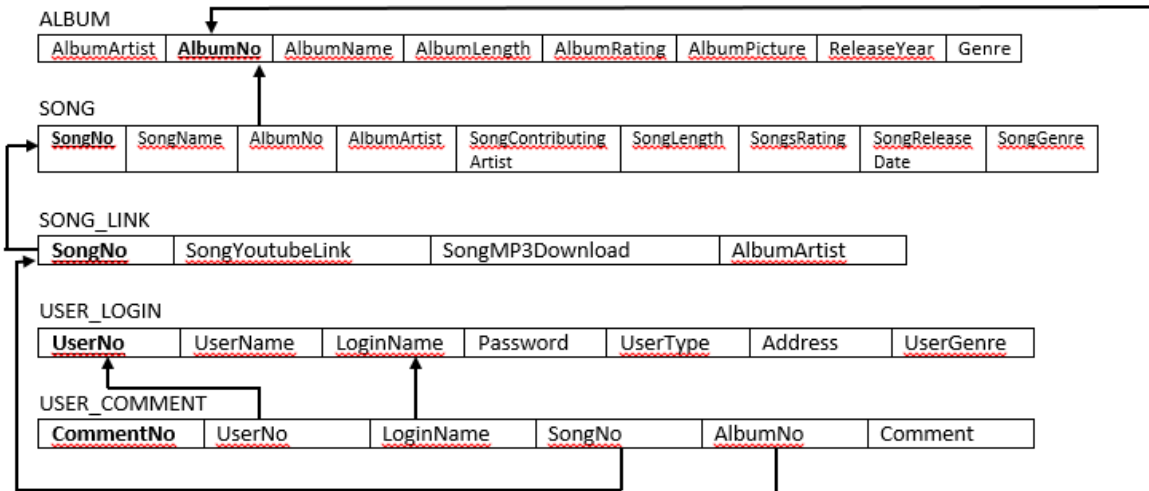


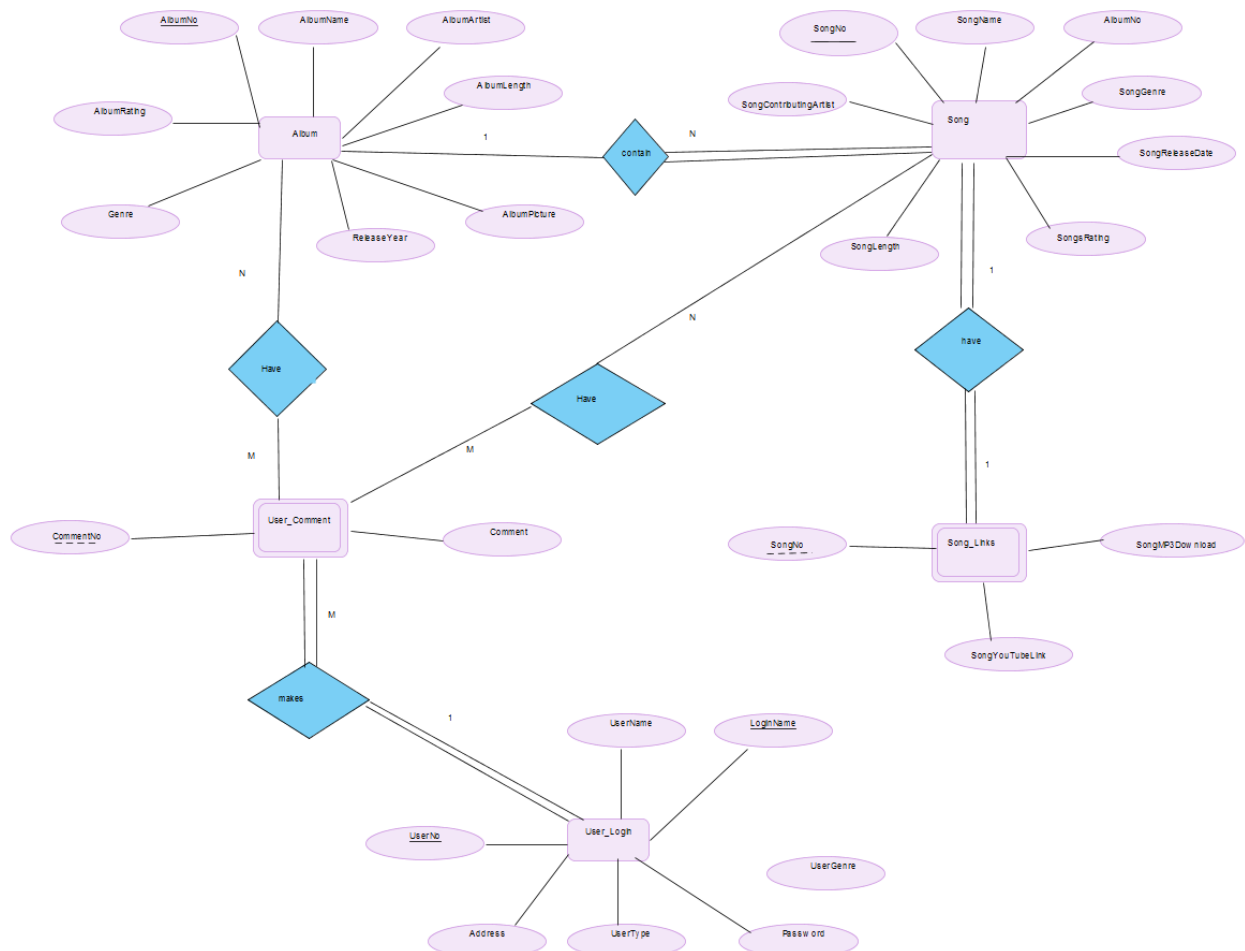
Chart 2

Design Diagrams

Relational Schema



ER Diagram



Design & Implementation

Figure 1 is the main page for your website which provide user with feature like twitter news, latest music hits in various genre, interaction with the various users by leaving comments and user can search your diverse database easily.

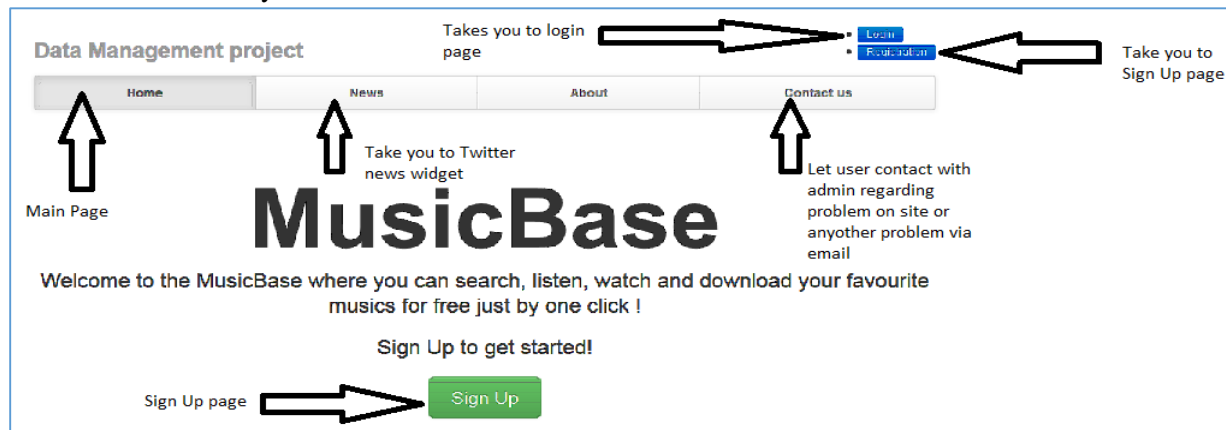


Figure 1

As user enter the website they enter the welcome page where they are asked to sign up to use the websites. As the user enter the website they need to register they can either click on the green Sign up button or click the blue button where they will be taken to the sign up page shown in the figure 1. This will add the user to the user database. User need to put at least put the user name, Login name and password to register and hit the blue submit button. It is not necessary for the user to put the address and the genre of song they like to register. Figure 4 show the php code of how the user are entered in the database. As default the as the user register to your website will be logged in to use your website as shown in figure 5. Now user are provide with the option of search the database with the various filters. User are provide with the search option like Artist, Album release year, Song release year, User comment, song comment, Album songs, Songs by rating, Song by genre, Top songs by genre and Song links.

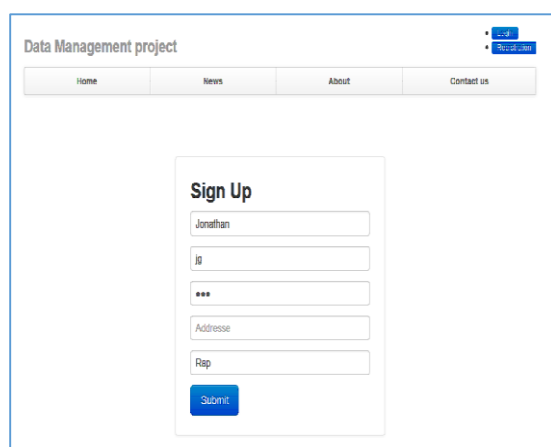


Figure 2

```

25 // SQL query to insert new registered users
26 $query=mysqli_query($db, "INSERT INTO user_login (UserName,LoginName>Password,UserType,Address,UserGenre) values ('$username','$loginName','$password','$userType','$address','$user_genre')");
27
28 if($query){
29     $error= "Success";
30     include('login.php');
31 }
32 else
33 {
34     $error = "Error:" + die (mysqli_error($db));
35 }

```

Figure 3

When the user select the Artist and enters the favorite artist name in the search text box then the user can search the database for the artist songs. User doesnot need to enter the whole artist name we use like stament to serarch the whole database which has some character that are similar to the user entered in the search text box. For song year and rating we do not use the like statement because we want the result that are exact match to year and rating. In the section below we will dicuss more about the query and result of the query. As the registered user are able to to tune into your twitter widget which allow them to view the entertainment news as shown in figure 5. About us tab allows us to introduces your company to the user and the contact us tab allow user to write the email to the administator about the problem in the site or any kind of mis conduct on the site.

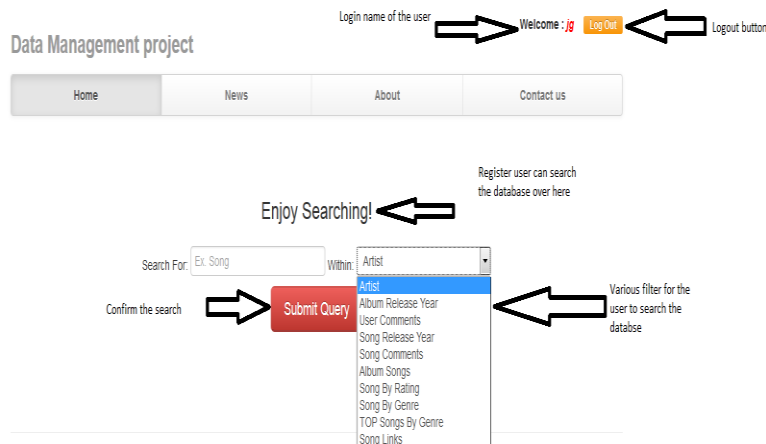


Figure 4

Queries

****All CREATE & INSERT statements for each table are in the tableFinal folder; Please refer to the README.txt file additional details****

Query 1:

Find all the songs by the artist in the table. Displays the Name, Album, Artist, Contributing Artist, Picture, Youtube Link and MP3 Download Link.

```
20 if($_POST['filter1'] == "QUERY1"){
21
22 // select command to view results
23 $sqlCommand = " SELECT AlbumPicture,SongName,AlbumName,a.AlbumArtist,SongContributingArtist,SongYoutubeLink,SongMP3Download
24 FROM Album AS a INNER JOIN Song AS s ON a.AlbumNo=s.AlbumNo
25 INNER JOIN Song_Link AS sl ON s.SongNo=sl.SongNo
26 WHERE s.SongContributingArtist like '%$searchquery%' OR a.AlbumArtist like '%$searchquery%' ";
27
28 // SQL query to fetch information of registered users and finds user match.
29 $results = mysqli_query($db, $sqlCommand) or die(mysqli_error($db));
30
31 $count = mysqli_num_rows($results); // mysqli_num_rows return the # of rows from the query
32
33 if ($count >= 1) { // if found at least one row in the database do the function
```

Query 2:

Find albums that are released on the specified release year. Displays the Album name, Artist, Time Length of Album, Album Rating, Genre and Release Year.

```
79
80 if($_POST['filter1'] == "QUERY2"){
81
82 // select command to view results
83 $sqlCommand = " SELECT AlbumPicture,AlbumName,AlbumArtist,AlbumLength,AlbumRating,Genre,ReleaseYear
84 FROM Album
85 WHERE ReleaseYear= ANY(SELECT ReleaseYear
86 FROM Album
87 WHERE ReleaseYear='$searchquery') ";
88
89 // SQL query to fetch information of registered users and finds user match.
```

Query 3:

Show all comments from the specified user. Displays the Comment along with the song name that has the comment.

```
141
142
143 if($_POST['filter1'] == "QUERY3"){
144
145 // select command to view results
146 $sqlCommand = " SELECT Comment, s.SongName
147 FROM User_Comment AS uc INNER JOIN Song AS s ON uc.SongNo=s.SongNo
148 WHERE uc.UserNo = (SELECT UserNo
149 FROM User_Login
150 WHERE LoginName='$searchquery') ";
151
152 // SQL query to fetch information of registered users and finds user match.
153 $results = mysqli_query($db, $sqlCommand) or die(mysqli_error($db));
```

Query 4

Finds the songs name ,length, artist rating and release date for the songs and arrange them in the descending order of the rating

```
191 // select command to view results
192 $sqlCommand = " SELECT SongName, SongLength, s.SongArtist, SongsRating ,SongReleaseDate
193 FROM Song s
194 WHERE SongReleaseDate= ('$searchquery')
195 Order By SongsRating DESC ";
196
197 // SQL query to fetch information of registered users and finds user match.
198 $results = mysqli_query($db, $sqlCommand) or die(mysqli_error($db));
199
```


Query 5

Finds all comments that a user made for a specified song. Displays the login name and the associated comment.

```
246 // select command to view results
247 $sqlCommand = " SELECT LoginName, Comment
248                 FROM User_Comment AS uc
249                 WHERE EXISTS(Select* FROM Song WHERE SongName like '%$searchquery%' AND SongNo=uc.SongNo) ";
250
251 // SQL query to fetch information of registered users and finds user match.
252 $results = mysqli_query($db, $sqlCommand) or die(mysqli_error($db));
253
254 $count = mysqli_num_rows($results); // mysqli_num_rows return the # of rows from the query
255
```

Query 6

Finds all songs by the specified album name in the table. Displays the name of the song, time length of the song, album name it was from, the song artist, rating of the song, and release date.

```
// select command to view results
$sqlCommand = " SELECT SongName, SongLength, AlbumName, s.SongArtist, SongsRating, SongReleaseDate
                 FROM Song s LEFT JOIN Album a
                 ON s.AlbumNo=a.AlbumNo
                 WHERE a.AlbumName like '%$searchquery%'
                 UNION
                 SELECT SongName, SongLength, AlbumName, s.SongArtist, SongsRating, SongReleaseDate
                 FROM Song s RIGHT JOIN Album a
                 ON s.AlbumNo=a.AlbumNo
                 WHERE a.AlbumName like '%$searchquery%' ";
```

Query 7

Find the songs with the specific rating for the user.

```
351
352 if($_POST['filter1'] == "QUERY7"){
353
354 // select command to view results
355 $sqlCommand = " SELECT SongName, SongArtist, SongLength, SongsRating
356                 FROM Song
357                 WHERE SongsRating like '%$searchquery%' ";
358
359 // SQL query to fetch information of registered users and finds user match.
360 $results = mysqli_query($db, $sqlCommand) or die(mysqli_error($db));
361
```

Query 8

Finds all songs from the specified genre. Displays the name of the song, name of the album it's from, the artist of the album and time length of the song.

```
403 $sqlCommand = " SELECT SongName, AlbumName, a.AlbumArtist, SongLength
404                 FROM Song s, Album a
405                 WHERE s.SongGenre like '%$searchquery%' AND s.AlbumNo=a.AlbumNo ";
406
407 // SQL query to fetch information of registered users and finds user match.
408 $results = mysqli_query($db, $sqlCommand) or die(mysqli_error($db));
409
```

Query 9

Finds all songs that are in the specified genre and have a rating between the specified ranges. Displays the song name, album name, artist of the song, song rating and the time length of the song.

```
453 // select command to view results
454 $sqlCommand = " SELECT AlbumPicture, SongName, AlbumName, s.SongArtist, SongsRating, SongLength
455                 FROM Song s, Album a
456                 WHERE ((s.SongsRating BETWEEN 4 AND 5 ) AND s.SongGenre Like '%$searchquery%')
457                 AND s.AlbumNo=a.AlbumNo ";
458
```

Query 10

Find song links with the specified song name. This displays the Youtube link, MP3 download link, and the song number.

```
510
511 if($_POST['filter1'] == "QUERY10"){
512
513 // select command to view results
514 $sqlCommand = " SELECT *
515 FROM Song_Link AS s1 , Song As s2
516 WHERE SongName like '%$searchquery%' AND s1.SongNo=s2.SongNo ";
517
```

Query Results

Query 1







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Enjoy Searching!

Search For: Within:

[Submit Query](#)

Album Cover	Song Name	Album Name	Album Artist	Contributing Artist	Youtube Link	MP3 Download
	Nothing Lasts Forever	Cole World	J Cole		https://www.youtube.com/watch?v=J24ZNLFP1Q	
	God's Gift	Cole World	J Cole		https://www.youtube.com/watch?v=sRt1QwCCMD0	
	Rise And Shine	Cole World	J Cole		https://www.youtube.com/watch?v=qLSaCNM9Mnc	
	Lost Ones	Cole World	J Cole		https://www.youtube.com/watch?v=y-vQ_VsTkn0	
	In The Morning	Cole World	J Cole	Drake	https://www.youtube.com/watch?v=vsQLE_bgM3I	
	Mr. Nice Watch	Cole World	J Cole	Jay Z	https://www.youtube.com/watch?v=22stBCR6RU	

Query 2




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Album Cover	Album Name	Album Artist	Album Length	Album Rating	Genre	Release Year
	Nothing Was The Same	Drake	59:22	4	Hip Hop	2013
	The Marshall Mathers LP 2	Eminem	78:13	4	Rap	2013
	Born Sinner	J Cole	59:47	5	Hip Hop	2013

Query 3

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Enjoy Searching!

Search For: Within:

Comment	Song Name
Catchy song but didnt like the beat.	All the Shine
Ew taylor swift, dissapointing.	Blank Space
Good collaboration song	Murder to Excellence
Sucks rap > rock	Radioactive

Query 4

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Enjoy Searching!

Search For: Within:

Song Name	Song Length	Song Artist	Song Rating	Song Release Date
TESTING	4:44		5	2013
Pound Cake	7:14	Drake	5	2013
Own It	4:12	Drake	5	2013
Asshole	4:27	Eminem	5	2013
So Much Better	4:21	Eminem	5	2013
Born Sinner	3:29	J Cole	5	2013
Let Nas Down	4:37	J Cole	5	2013
Crooked Smile	4:39	J Cole	5	2013
She Knows	4:57	J Cole	5	2013
Power Trip	4:01	J Cole	5	2013

Query 5

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Enjoy Searching!

Search For: Within:

[Submit Query](#)

Login Name	Comment
Sam	Ew taylor swift, dissapointing.
Prash	Henry real love Taylor swift
Srm	Henry would die for Taylor swift
Administer	herny never get enough of Taylor swift songs

Query 6

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Enjoy Searching!

Search For: Within:

[Submit Query](#)

Song Name	Song Length	Album Name	Song Artist	Song Rating	Song Release Date
Born Sinner	3:29	Born Sinner	J Cole	5	2013
Let Nas Down	4:37	Born Sinner	J Cole	5	2013
Crooked Smile	4:39	Born Sinner	J Cole	5	2013
Forbidden Fruit	4:29	Born Sinner	J Cole	3	2013
Rich Niggaz	4:36	Born Sinner	J Cole	4	2013
She Knows	4:57	Born Sinner	J Cole	5	2013
Runaway	5:15	Born Sinner	J Cole	4	2013
Trouble	4:18	Born Sinner	J Cole	3	2013
Power Trip	4:01	Born Sinner	J Cole	5	2013
Villuminati	5:08	Born Sinner	J Cole	4	2013

Query 7

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Enjoy Searching!

Search For: Within:

Song By Rating

Submit Query

Song Name	Song Artist	Song Length	Song Rating
Nothing Lasts Forever	J Cole	4:49	5
Mr. Nice Watch	J Cole	3:58	5
Welcome to New York	Taylor Swift	3:32	5
TESTING		4:44	5
Who Dat	J Cole	3:58	5
Beautiful	Akon	3:51	5
Pound Cake	Drake	7:14	5
Own It	Drake	4:12	5
Asshole	Eminem	4:27	5
So Much Better	Eminem	4:21	5
Dedications	Imagine Dragons	3:05	5

Query 8

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Enjoy Searching!

Search For: Within:

Song By Genre

Submit Query

Song Name	Album Name	Album Artist	Song Length
Nothing Lasts Forever	Cole World	J Cole	4:49
God's Gift	Cole World	J Cole	3:33
Rise And Shine	Cole World	J Cole	4:35
Lost Ones	Cole World	J Cole	4:24
In The Morning	Cole World	J Cole	3:55
Mr. Nice Watch	Cole World	J Cole	3:58
Sideline Story	Cole World	J Cole	3:58
Lights Please	Cole World	J Cole	3:28
Cant Get Enough	Cole World	J Cole	3:48
Dollar and A Dream III	Cole World	J Cole	4:43

Query 9

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Enjoy Searching!

Search For: Within:

Submit Query

Album Cover	Song Name	Album Name	Song Artist	Song Rating	Song Length
	Nothing Lasts Forever	Cole World	J Cole	5	4:49
	God's Gift	Cole World	J Cole	4	3:33
	Rise And Shine	Cole World	J Cole	4	4:35

Query 10

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Enjoy Searching!

Search For: Within:

Submit Query

Song Name	YouTube Link	MP3 Download
Nothing Lasts Forever	https://www.youtube.com/watch?v=Jz4ZNLFP1Q	

REST/JSON Implementation

```
/**
 * Return a list of users encoded as JSON
 */
$app->get('/getSongs', function () {
    $db_user = 'abooddy';
    $db_pass = '123';
    $db_name = 'musicbase';
    $users = array();

    // Connect to mysql
    $mysqli = new mysqli("localhost", $db_user, $db_pass, $db_name);

    // check connection
    if ($mysqli_connect_errno()) {
        printf("Connect failed: %s\n", mysqli_connect_error());
        exit();
    }

    /* Get the list of users in an array */
    if ($stmt = $mysqli->prepare("SELECT songName FROM song"))
    {
        /* execute query */
        $stmt->execute();

        /* bind result variables */
        $stmt->bind_result($username);

        // add each user
        while ($stmt->fetch())
        {
            array_push($users, $username);
        }

        /* close statement */
        $stmt->close();
    }

    // Encode the array of users as JSON
    echo json_encode($users);
});
```

Figure 5

Figure 5 and 6 represents our implementation of the REST/JSON API. In our project, we used JSON to output the data that is stored in our database. For example, figure 5 shows the getSongs API which can be obtained using <http://localhost/finalDP/api/getSongs>. This then outputs all the song name data in the database. We also included a JSON API for getting user comments. It is used with the getComment call.

Another implementation of this JSON API would be to extend this into a future mobile app that we develop. Of course, all this data can also be used by a third-party that has access to our APIs.

Analysis

In order to add the songs in the database we first need to create the album in the album database. Every songs has to have the song link in order for the song to exist in the database it is total participation. User login table is the separate table which is not related to any table in the database. User login table is used only for login and to maintain the user comments. User comment has the partial relationship with the songs and albums database because all the user will not comment on the song or album on your website.

```
["Nothing Lasts Forever","God's Gift","Rise And Shine","Lost Ones","In The Morning","Mr. Nice Watch","Sideline Story","Lights Please","Cant Get Enough","Dollar and A Dream III","I Know Places","Bad Blood","Shake It Off","This Love","Clean","Out of the Woods","Style","Blank Space","Welcome to New York","TESTING","Who Dat","The Sweet Escape","Beautiful","The Motion","All Me","Pound Cake","Worst Behaviour","Own It","Tuscan Leather","Headlights","The Monster","Asshole","Survival","So Much Better","Bad Guy","On Top Of The World","Every Night","Hear Me","Amsterdam","Demons","Radioactive","Why I Love You","Murder to Excellence","Who Gon Stop Me","Welcome to the Jungle","Thats My Bitch","New Day","Gotta Have It","Otis","Niggas in Paris","Lift Off","No Church in the Wild","That Power","Sunrise","You See Me","Kids","Hold You Down","Les","Backpackers","Heartbeat","All the Shine","Bonfire","Fire Fly","Outside","Born Sinner","Let Nas Down","Crooked Smile","Forbidden Fruit","Rich Niggaz","She Knows","Runaway","Trouble","Power Trip","Villuminati"]
```

Figure 6

Future

Future Development for customer interface:

- 1) We would like to develop our customer interface to have more features and flexibility when using the website.
- 2) When a user logs into the website, it will search for the songs in the genre they like and it will also provide the top songs for the recent year and weekly.
- 3) Users will be able to put the rating and comment on their favorite songs.
- 4) Users will be able to receive the email update about the recent new release or the songs for their favorite artist.

Future Development for the administrator interface:

- 1) Add songs or album to database from the website.
- 2) Drop or delete the user from the database.
- 3) Remove the inappropriate comments by the user.
- 4) Update the website contents.

Conclusion & Contributions Made

Overall it has been a great experience working on this database project. We now have more knowledge when it comes to database development and implementation. While going from phase to phase, it was necessary to make changes. A lot of these changes can be seen from the transition from Phase 2 into the final phase. Since we initially implemented the database using Visual Studio 2013, it was necessary to modify the syntax for every CREATE and INSERT statement along with the queries and views itself. The Visual Studio implementation can still be found in the tableFINAL folder and within the QUERYs_views.sql file. We were able to learn and improve upon our mistakes and were able to successfully complete this final project with a working prototype. The working prototype we have today will be expanded upon as discussed in the Future section of this report.

Introduction	Henry
Project Planning	Henry, Abdullah
Design Diagrams	Prashakar, Saurabh
Design & Implementation	Henry, Saurabh, Prashakar, Abdullah
Queries	Henry, Saurabh, Prashakar, Abdullah
REST/JSON API	Saurabh, Abdullah
Analysis	Prashakar, Saurabh
Future Ideas	Henry, Prashakar
Conclusion	Henry, Saurabh, Prashakar, Abdullah