1. INTRODUCTION

The mini project that we are planning to do is to make a website which is already in use and very popular amongst all age groups. A large number of people use the website everyday for their entertainment i.e. for listening unlimited songs. The name of the website is SPOTIFY. This is the place where you can get all varieties of songs ranging from latest EDM tracks or latest Hindi bollywood songs to old 80's or 90's. One can also make a playlist of their favorite songs or also listen to songs according to various moods (e.g. romantic, hip-hop, party etc).

Spotify provides access to over 50 million tracks. Users can also search for music by various available options such as artists, albums or genre and create, edit and share playlists. Spotify is available in most of Europe and the Americas, Australia, New Zealand, and parts of Africa and Asia, and on most modern devices, including Windows, macOS, and Linux computers, and iOS, and Android smart phones and tablets. To download unlimited songs users need to be a spotify subscriber by paying a particular yearly charge for it. As of July 2019, it had 232 million monthly active users, including 108 million paying subscribers. Spotify is a Swedish media-services provider founded in 2006. The company's primary business is its audio streaming platform that provides DRM protected music and podcasts from record labels and media companies. As a premium service, basic features are free with advertisements or automatic music videos, while additional features, such as improved streaming quality, are offered via paid subscriptions.

1.1 PROBLEM STATEMENT

Design a web application for a music website which will serve its users through various facilities. The sole purpose of creating this website is that the users can enjoy free music without the need of downloading any songs. The website should be responsive so that users do not face problem viewing the same website in different devices like Mobile, Tablet, Computer or a Laptop. The web contents should be well stretched and compressed according to the screen size.

1.2 REQUIREMENTS

Music sometimes is called the meaning of life. There are different types of music genres where we can connect our mind and our feelings. Music can help to reach the darkest corner in our hearts, can touch it and even make it brighten.

Music helps us to find ourselves. It can reach our feelings and even change them. For example, music is able to reduce stress, caused by the outside world made stress, which is felt every day. Music can help to reach the deepest spots in our minds, for example, our memories, emotions. In addition to, music can change our thoughts about the world. Sometimes music helps to make through depression, bad mood or sadness. With it, we can feel our inside world.

1.3 SCOPE

The guiding principles of the website are that the users get to listen to their favorite songs without downloading them. People can enjoy unlimited music, can also create playlists of their favorite songs. The website is for all those people who are music lovers who love to listen to songs in their free time or while travelling or whenever they are getting bored. The website has songs for all types of genres i.e. rock, pop, hip-hop, etc.

2. REQUIREMENT ANALYSIS

In earlier days people used to download songs from the internet and then listen to songs or share songs using Bluetooth and then listen to their favorite songs. Things have changed, now the user only needs to use a music website or an app to freely enjoy their songs with the only pre requisite is an internet connection. While travelling or while getting bored or for parties this is the website people look for. Day by day the popularity of these websites is increasing and the no of users are also increasing.

These applications are amongst the ones users are most accustomed to. They are what is commonly associated with music apps in general. Such apps like Sound cloud, Spotify and Apple Music are among the most prominent and widely used music player apps.
The primary purpose of the music streaming application is to play music available in the databases of the service, compose custom playlists and suggest similar stuff.
The central element of user engagement is the availability of the music the particular user likes to listen to and ability to discover more music that sounds like that. In order to do that, music streaming apps implement a recommender engine that matches the expressed preferences and sentiments of the users and the database with relevant specification.
This type of personalization involves deep categorization - the music can be sorted by time period, genre, performer association (solo albums of the band members). It can also be categorized by more ephemeral characteristics such as mood (happy, sad, romantic), tone (dark, brooding, sunshiny) or pace (fast, slow, waltz) of the compositions.
The other important component of music streaming apps is social networking - custom playlists can be used as a promotional or educational tool. It can also be shared with friends via social media platforms.

3. DESCRIPTION

All websites run on three components: the server, the database, and the client. The client is simply the browser a person is using to view a site, and it's where client side technology is unpacked and processed. The server is at a remote location anywhere in the world-housing data, running sites backend architecture, processing a request, and sending pages to the browser. The client is anywhere your users are viewing your site: mobile devices, laptops, or desktop computers. Server side scripting is executed by a web server, client side scripting is executed by a browser.

The description of the project is written in the following points:

3.1 CLIENT SIDE

Client end scripts are embedded in a websites HTML markup code, which is housed on the server in a language that's compatible with, or compiled to communicate with, the browser. The browser temporarily downloads that code, and then, apart from the server, processes it. If it needs to request additional information in response to user clicks, mouse hovers, etc. (called events), a request is sent back to the server.

The languages used at the client side in the website are as follows:

HTML5:

1) **Form Features:**

HTML5 includes many new features that make web forms much easier to write, and more powerful and consistent across the Web. This article gives a brief overview of some of the new form controls and functionalities that have been introduced. [1]
Placeholder: A common usability trick in web forms is to have placeholder content in text entry fields — for instance, to give more information about the expected type of information we want the user to enter — which disappears when a user starts entering a value or when the form control gets focus. We can now simply use the placeholder attribute. [1]
Required: One of the most common aspects of form validation is the enforcement of required fields not allowing a form to be submitted until certain pieces of information have been entered. This can now simply be achieved by adding the required attribute to an input, select or text area element. [1].
Along with above html5 special feature we have also used html form features like input type='text', 'password', 'submit'.

2) The Embed Audio element:

The HTML <audio> element is used to embed sound content in documents. It may contain one or more audio sources, represented using the src attribute or the <source> element: the browser will choose the most suitable one. It can also be the destination for streamed media, using a Media Stream.
This element's attributes include the global attributes.
Current Time:
Reading current Time returns a double-precision floating-point value indicating the current playback position, in seconds, of the audio. If the audio's metadata isn't available yet—thereby preventing you from knowing the media's start time or duration—current Time instead indicates, and can be used to change, the time at which playback will begin. Otherwise, setting current Time sets the current playback position to the given time and seeks the media to that position if the media is currently loaded.
src
There are different audio element properties, methods and events which can be used to play and pause the song.
The URL of the audio to embed. This is subject to HTTP access controls. This is optional; you may instead use the <source> element within the audio block to specify the audio to embed. [2]

CSS3:

1) Flex-box:

The CSS3 flex box is used to make the elements behave predictably when they are used with different screen sizes and different display devices. It provides a more efficient way to layout, align and distribute space among items in the container.
It is mainly used to make CSS3 capable to change its items width and height to best fit for all available spaces. It is preferred over block model.
The flex container properties are:

- flex-direction
- flex-wrap
- flex-flow
- justify-content
- align-items
- align-content[3]

2) **Media- Queries:**

Media queries in CSS3 extended the CSS2 media types idea: Instead of looking for a type of device, they look at the capability of the device.

Media queries can be used to check many things, such as:

- width and height of the viewport
- width and height of the device
- Orientation (is the tablet/phone in landscape or portrait mode?)
- resolution

Using media queries are a popular technique for delivering a tailored style sheet to desktops, laptops, tablets, and mobile phones (such as iPhone and Android phones). [4]

3) **CSS pseudo-class:**

A CSS pseudo-class is a keyword added to a selector that specifies a special state of the selected element(s). For example, : hover can be used to change a button's color when the user's pointer hovers over it. Pseudo-classes let you apply a style to an element not only in relation to the content of the document tree, but also in relation to external factors like the history of the navigator (: visited, for example), the status of its content (like: checked on certain form elements), or the position of the mouse (like: hover, which lets you know if the mouse is over an element or not). [5]

JAVASCRIPT

JavaScript is a lightweight, interpreted programming language. It is designed for creating network-centric applications. It is complimentary to and integrated with Java. JavaScript is very easy to implement because it is integrated with HTML. It is open and cross-platform. A Document object represents the HTML document that is displayed in that window. The Document object has various properties that refer to other objects which allow access to and modification of document content. The way document content is accessed and modified is called

the Document Object Model, or DOM. The Objects are organized in a hierarchy. This hierarchical structure applies to the organization of objects in a Web document.

Prompt Dialog Box: The prompt dialog box is very useful when you want to pop-up a text box to get user input. Thus, it enables you to interact with the user. The user needs to fill in the field and then click OK. This dialog box is displayed using a method called prompt() which takes two parameters: (i) a label which you want to display in the text box and (ii) a default string to display in the text box. This dialog box has two buttons: OK and Cancel. If the user clicks the OK button, the window method prompt( ) will return the entered value from the text box. If the user clicks the Cancel button, the window method prompt( ) returns null. [6]

Confirmation Dialog Box: A confirmation dialog box is mostly used to take user's consent on any option. It displays a dialog box with two buttons: OK and Cancel. If the user clicks on the OK button, the window method confirm( ) will return true. If the user clicks on the Cancel button, then confirm( ) returns false. You can use a confirmation dialog box as follows. [6]

J-Query

JQuery Selectors:

JQuery selectors allow you to select and manipulate HTML element(s).

JQuery selectors are used to "find" (or select) HTML elements based on their name, id, classes, types, attributes, values of attributes and much more. It's based on the existing css selectors, and in addition, it has some own custom selectors. All selectors in jQuery start with the dollar sign and parentheses: $().we have used different in-built functions such as hide( ) and show( ) to hide the contents of the web page .Also the different functions of the jQuery are used to change the css style and different attributes of the html elements. Different jQuery functions used are click(),

To change the css styles of the different html .css(//changed css styles) is used.

For Ex:

.val() method is used to get the contents of the html elements.

AJAX

AJAX stands for Asynchronous JavaScript and XML. AJAX is a new technique for creating better, faster, and more interactive web applications with the help of XML, HTML, CSS, and Java Script. In short; AJAX is about loading data in the background and display it on the webpage, without reloading the whole page.

- AJAX is the art of exchanging data with a server, and updating parts of a web page - without reloading the whole page.
- jQuery provides several methods for AJAX functionality
- With the jQuery AJAX methods, you can request text, HTML, XML, or JSON from a remote server using both HTTP Get and HTTP Post - And you can load the external data directly into the selected HTML elements of your web page!

One of the JQuery AJAX methods is mentioned below:

JQuery $.post() Method:

The $.post () method requests data from the server using an HTTP POST request.

Syntax: $.post(URL, data, callback);

The required URL parameter specifies the URL you wish to request. The optional data parameter specifies some data to send along with the request. The optional callback parameter is the name of a function to be executed if the request succeeds. The following example uses the $.post() method to send some data along with the request:[7]

3.2 SERVER SIDE

Server side scripting is a technique used in web development which involves employing scripts on a web server which produce a response customized for each users (clients) request to the website. The alternative is for the web server itself to deliver a static web page. Server side scripting is distinguished from client side scripting where embedded scripts, such as JavaScript, are run client side in a web browser, but both techniques are often used together.

The language used at the server side in the website is PHP.

PHP:

PHP (recursive acronym for PHP: Hypertext Preprocessor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML.
PHP provides **mysql_connect()** function to open a database connection. This function takes five parameters and returns a MySQL link identifier on success or FALSE on failure.

Syntax

```
connectionmysql_connect (server, user, passwd, new_link);
```

1	**Server** Optional − The host name running the database server. If not specified, then the default value will be **localhost: 3306**.
2	**User** Optional − The username accessing the database. If not specified, then the default will be the name of the user that owns the server process.
3	**Passwd** Optional − The password of the user accessing the database. If not specified, then the default will be an empty password.
4	**new_link** Optional − If a second call is made to mysql_connect() with the same arguments, no new connection will be established; instead, the identifier of the already opened connection will be returned.

You can disconnect from the MySQL database anytime using another PHP function **mysql_close()**.

Page 1-Login page

When the user enters his/her username and password the details will be checked with the database and if the username and password which are entered are valid then the user will be

redirected to the home page of the website and if the details entered are not matching with the database then a message will be displayed which says invalid username/password.

Page 2-Home Page/Browse option

Whenever any of these pages open, a list of 10 albums is randomly displayed from the album table. When any of these albums are selected it is redirected to that particular album page in which all songs belonging to that particular album will be displayed and any of the songs can be played.

Page 3-Search Page

When the user types a particular song name or album name or artists name the pattern will be searched in all the three tables of database i.e. songs, albums or artists and all the matching results will be displayed.

Page 4-Your Music

Whenever an existing user logs into the website and clicks the your music option the existing playlists that is which were earlier created by the user will be displayed (all the details of the playlist for a particular user is retrieved from the database).Also if the user creates a new playlist the corresponding changes will be done in the database playlist table.

Page 5-User Details

The user details will display the email-id of that user and also if the user wants to change the password the changes can be done and the same will be reflected in the database table.

3.3 Database

The database used in the project was MySQL database.

MySQL is one of the most popular Open Source SQL database management systems. It is very inexpensive and competes with enterprise level offerings from other vendors. MySQL was designed and optimized for web development applications.

MySQL database was connected to the website using server side programming language PHP. There are seven tables in the database that are

1) Albums – This table will mainly consist of the name of the album i.e. the title, the name of the artist to which this album belongs and the name of the genre i.e. whether it is a rock album or a hip hop album or some other genre. The other two attributes are id for each and every album and the artwork path attribute where the images for that particular album are stored.

2) Artists – This table will only have two attributes that is id and name of the artist.

3) Genres – Again this table will have only two attributes that is id and genre type i.e. rock, pop, hip hop, etc.

4) Playlists – This table will have four attributes the first one is id which is a common attribute for all the tables, the second attribute is name of the playlist which is given by the user, the third one is owner name the name of the user who creates this playlist and lastly date created the date at which the playlist was created.id is the only one attribute which is auto incremented rest all other attributes are user defined and entered by the user on the website.

5) Playlist Songs – this table will have id as their auto incremented attribute then next attribute will be the song id which is referenced from the songs table and playlist id which is referenced with the playlist table so that the songs which the users choose will go into proper playlist on the website as well as in the database.

6) Songs – By default id will be the first attribute followed by name of the song or you can say title. The next attribute is the artist name, then the album name, followed by genre to which it belongs, then comes the duration of the song , the path of the folder where the song is stored and the plays is an attribute which defines the no of times that song has already been played. Whenever a new song is to be added into the database all these attributes need to be entered for successfully adding the song.

7) Users – first attribute is id which is auto incremented. Now this table has all the user details that is the attributes are username, first name, last name, email-id, password, sign-up date (the date on which the user created his account) and last attribute is profile picture.

3.4 Description of Each Page

Our website consists of 5 web pages which are as follows:

Page 1-login/signup page

In order to use the music website the user must be a registered user for which he needs to create an account on the website. The sign up page helps the user to create an account. For the users who are visiting the website for the first time will have an option to create an account using the sign up page where the user needs to enter all the basic details such as name, email-id, password, etc and once the user creates an account he/she will be directed to the home page of our music website. And if the user already has an account he/she can directly login by entering his username and password. The technologies used in building login/signup page are:

1) HTML5
2) CSS3
3) PHP
4) JAVASCRIPT

HEADER

A header is created which is static for all the pages in which the first thing displayed is our logo that is the music website logo which redirects us to the home page of the website. After which there are four buttons available i.e. SEARCH, BROWSE, YOUR MUSIC (the user can create or view his/her own playlists) and USERNAME (a new page will be opened which consists of user details and a logout option).

Page 2-Home Page

As soon as the user clicks the login button that is after entering his login details he is directed to the home page of the music website where albums will be displayed randomly. On the left side there is bar where there is a search option where any album can be searched or any song can be searched. below the search option there is a browsing option which when clicked will display the songs randomly after which YOUR MUSIC option is present in which the user can create a new playlist and also already created playlist will be displayed and the lastly the name of the user is displayed which when clicked two options are displayed one is the user details and other is an option to logout. The technologies used in building the home page are:

1) HTML5
2) CSS3
3) PHP
4) JAVASCRIPT

Page 3- Search Page

When the user wants to search for a particular album or song or artist he can click on the search option after which a new window is displayed on which the user can enter the songs name or whatever he wants to search. As soon as the user types a particular alphabet we have kept a delay of 2 seconds after which all the results matching with the specified pattern will be displayed. The results will include all the matching patterns from albums, artist and songs list. The technologies used in building the search page are:
1) HTML5
2) CSS3
3) PHP
4) JAVASCRIPT
5) AJAX

Page 4-Your Music

When your music option is clicked a new page is opened and the playlist will be displayed. The user can create a new playlist and already existing playlists will also be displayed and when already created playlist will be opened there is an option to delete it as well. New songs can be added as well as deleted from the playlist.

The technologies used in building your music page are:
1) HTML5
2) CSS3
3) PHP
4) JQUERY

Page 5-User Details

The new page will consist of user name and two options i.e. user details and logout option. The user details will have all the details of the user and also an option to change password and the last option is to logout.

The technologies used in building the user details page are:
1) HTML5
2) CSS3
3) PHP
4) JAVASCRIPT

FOOTER

In our website there is a footer which is divided into three sections i.e. left, right and center. The left section consists of an image which displays the image of the music album which is currently being played and the name of the album which is being played and the name of the artists. The right section has the controls for volume that is the volume can be increased or decreased accordingly. In the middle section audio controls is displayed in which we have used audio elements in which we have several options that is we can repeat the ongoing song, go to the next song or we can also go to the previous song. We can also jump to any part of the song by just sliding on the slider. Also the songs can be reshuffled.

WHEN AN ALBUM IS CLICKED:

When a particular album is selected the album details are displayed on a new page. The details will include the album name, artist's name, and the number of songs will be displayed. The songs which are displayed all will have an option of getting added to existing playlists and also can be played directly from here or from the playlist.

4. HARDWARE AND SOFTWARE REQUIREMENTS

4.1 SOFTWARE REQUIREMENTS

The software's which were required for building the website were:

- A text editor to create program for the website(like sublime text, atom)
- An address where the website can be found(known as a domain)
- Xampp (to run backend)

4.2 HARDWARE REQUIREMENTS

The hardware requirements are as follows:

- A machine (Laptop or desktop) on which the code can be written.
- At least 4GB RAM and dual core processor.

5. SNAPSHOTS OF THE WEBSITE

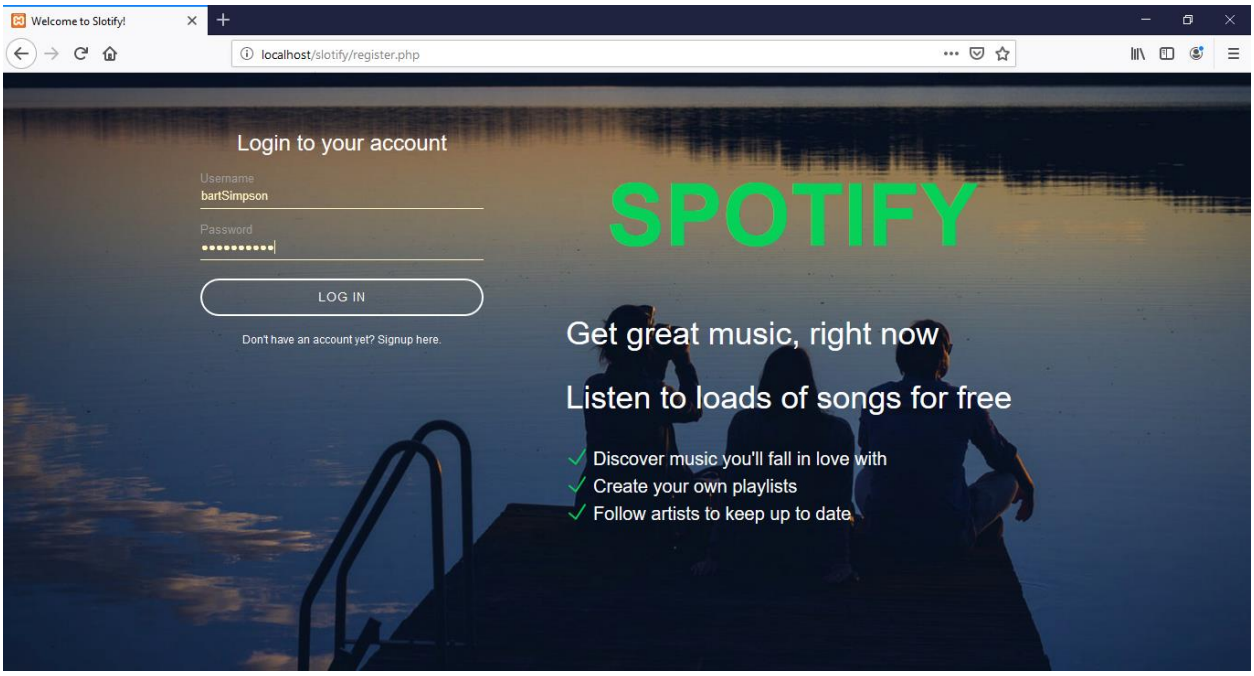

FIG 5.1: LOGIN PAGE

When an already existing user wants to visit the music website and enjoy music.

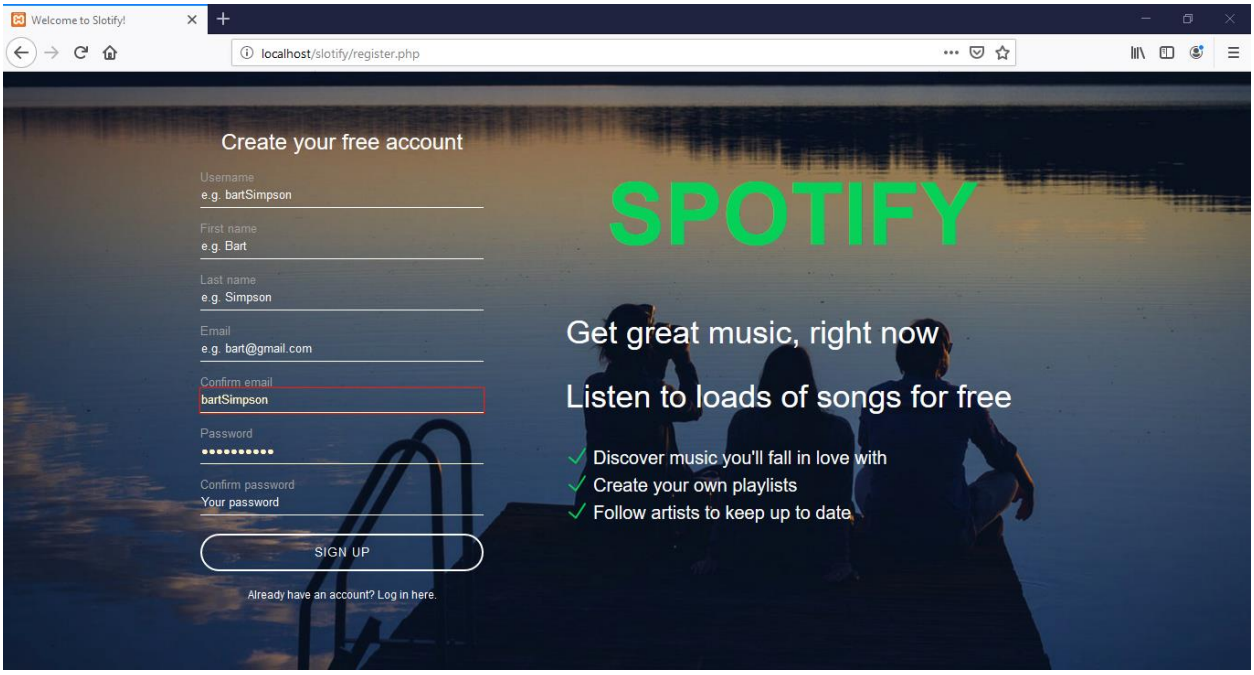

FIG 5.2:SIGN-UP PAGE

When the user visits the webiste for the first time the user has to create an account.

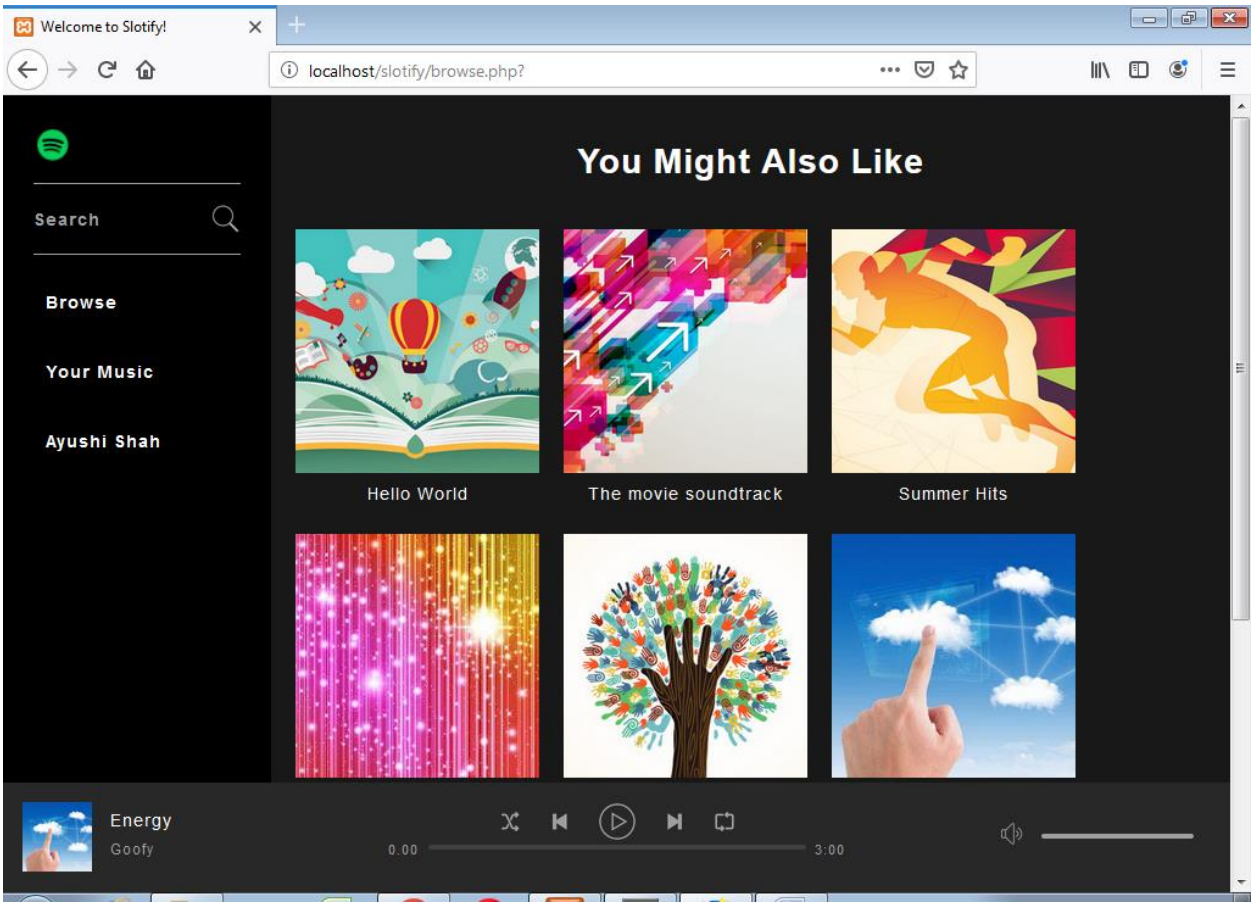

FIG 5.3:HOME PAGE

This is the home page of the website which has various services for the users.

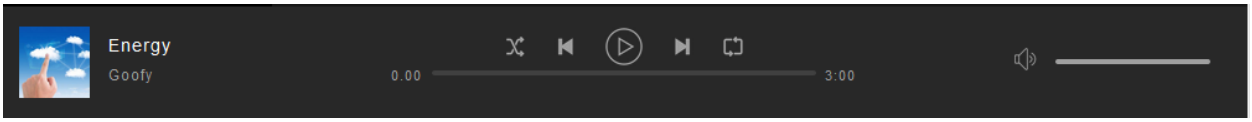

FIG 5.4:FOOTER

This footer will be static for all pages and will display the details of the song that is currently being played and also various functions like fast forward, play the next song, increase or decrease the volume, repeat, shuffle, etc.

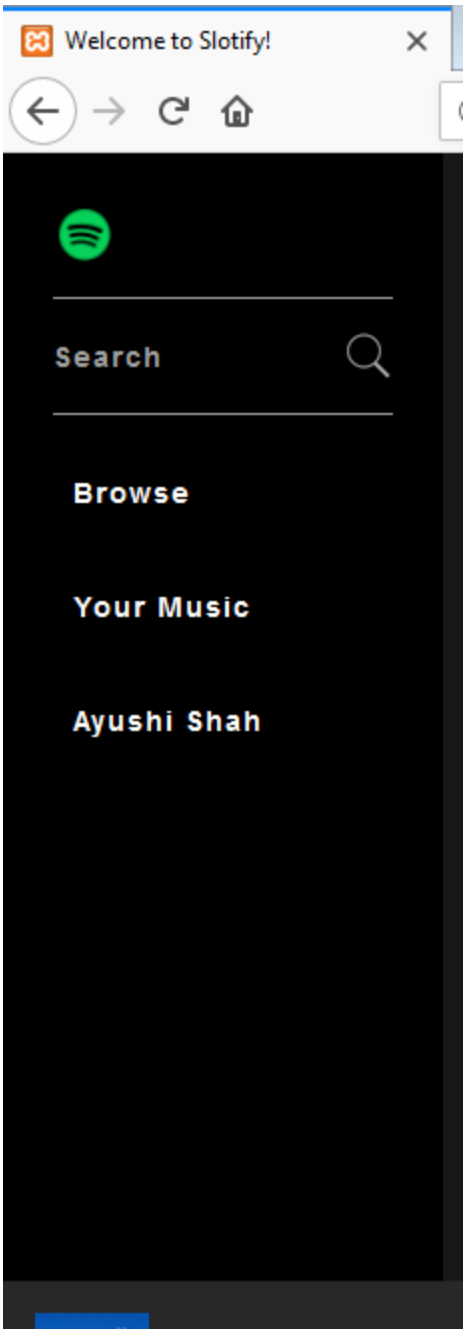

FIG 5.5:HEADER

The header is static for all the pages that is if any of the options are clicked the header along with the footer will remain as it is.

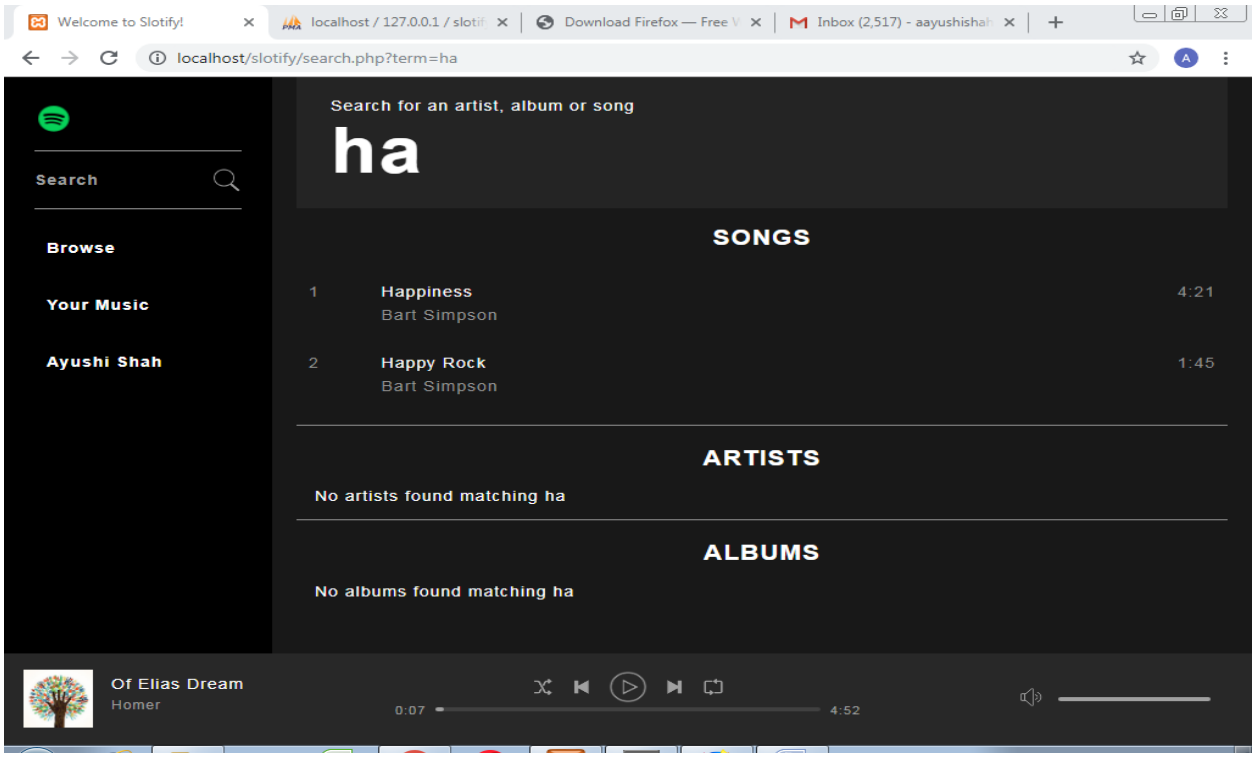

FIG 5.6:When the SEARCH button is clicked.

Whatever the user types in the search bar all the results matching the typed pattern will be displayed.

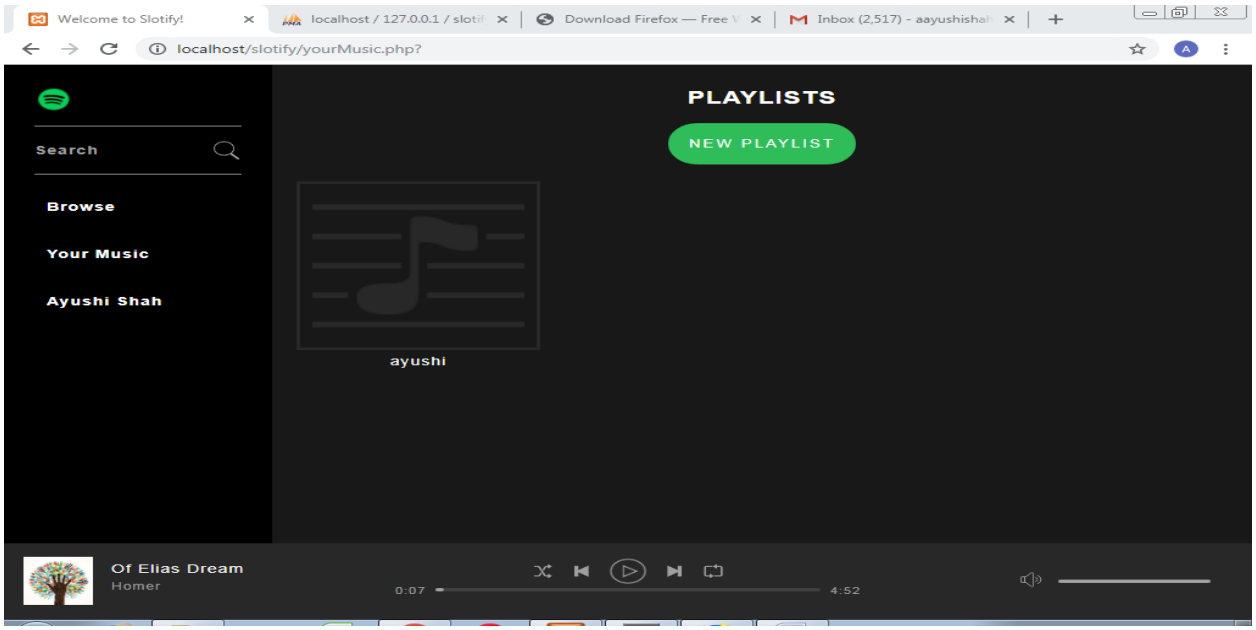

FIG 5.7:When YOUR MUSIC option is chosen.

All the playlists which are created by the user will be displayed.

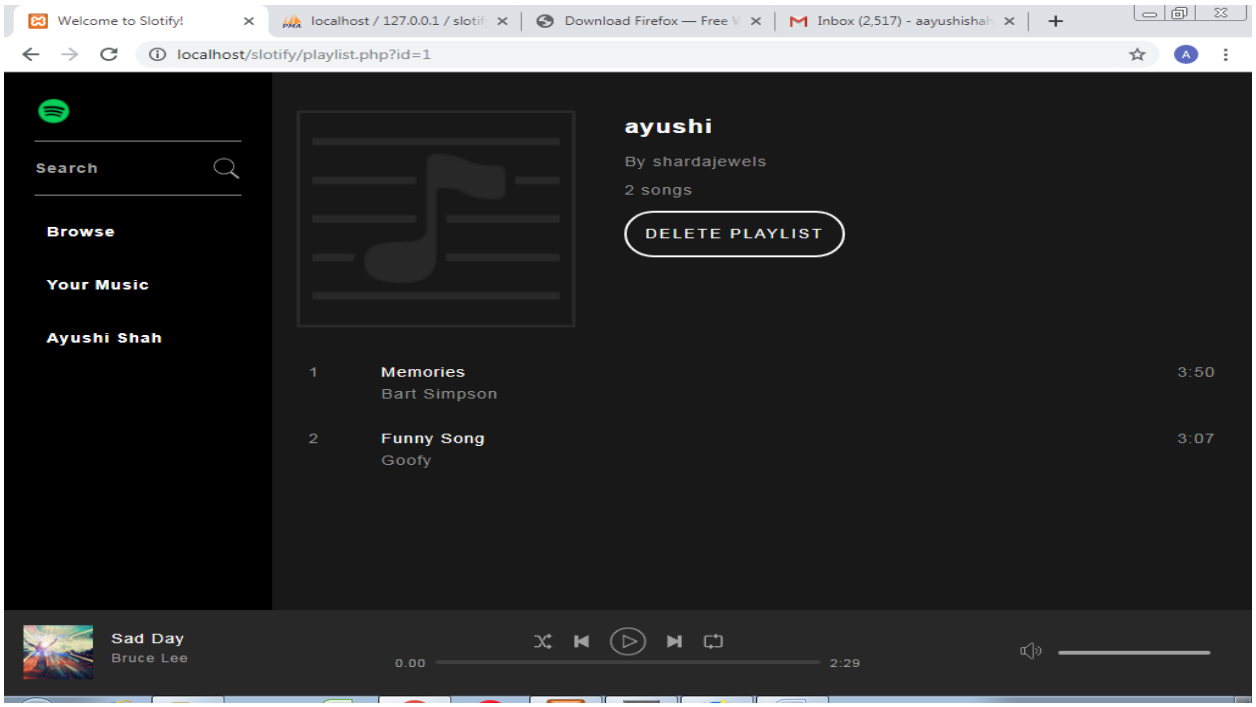

FIG 5.8:When the user clicks on any of the already existing playlists.

All the songs which were added by the user are displayed which can be deleted as well.

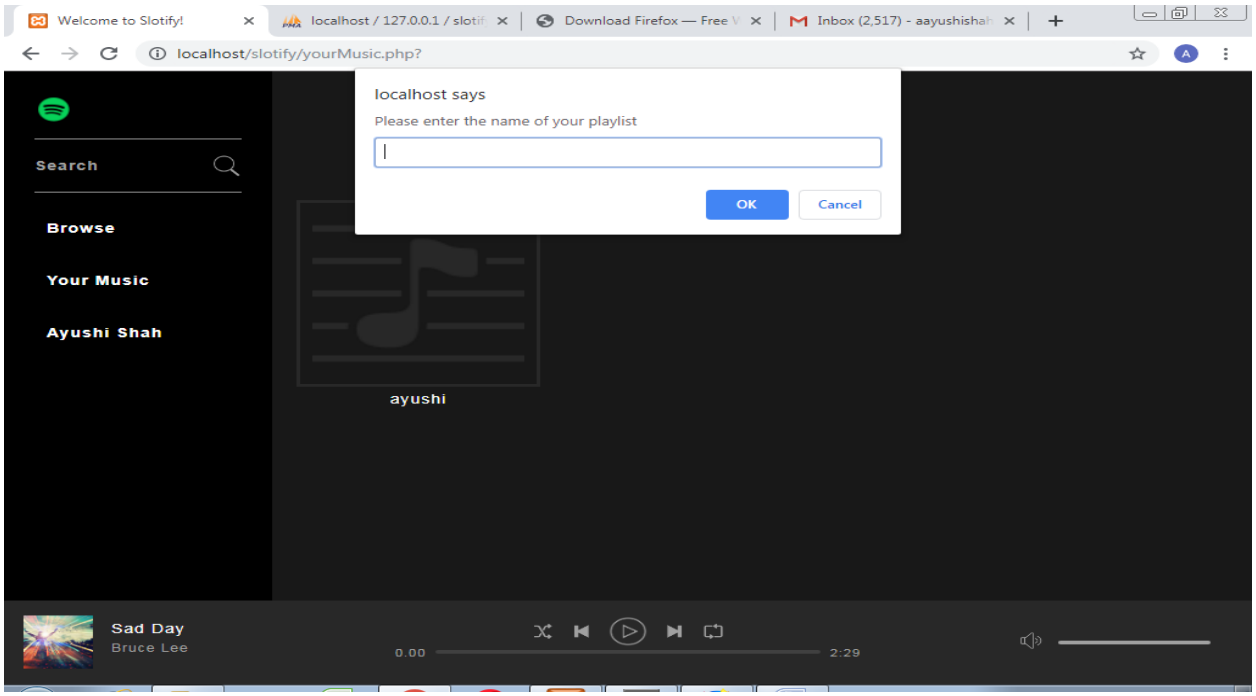

FIG 5.9:When the user wants to create a new playlist.

The user has to enter the name of the playlist and a new playlist will be created.

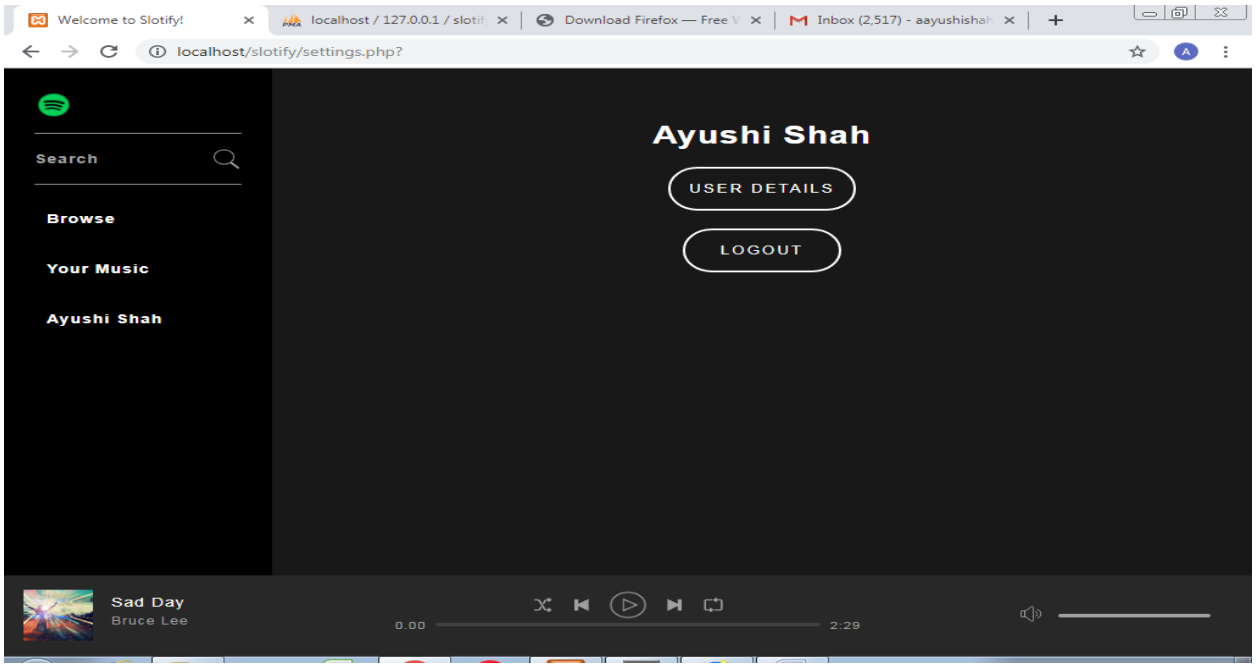

FIG 5.10:When the user clicks on his/her username.

The user can view the account details or log out from the account.

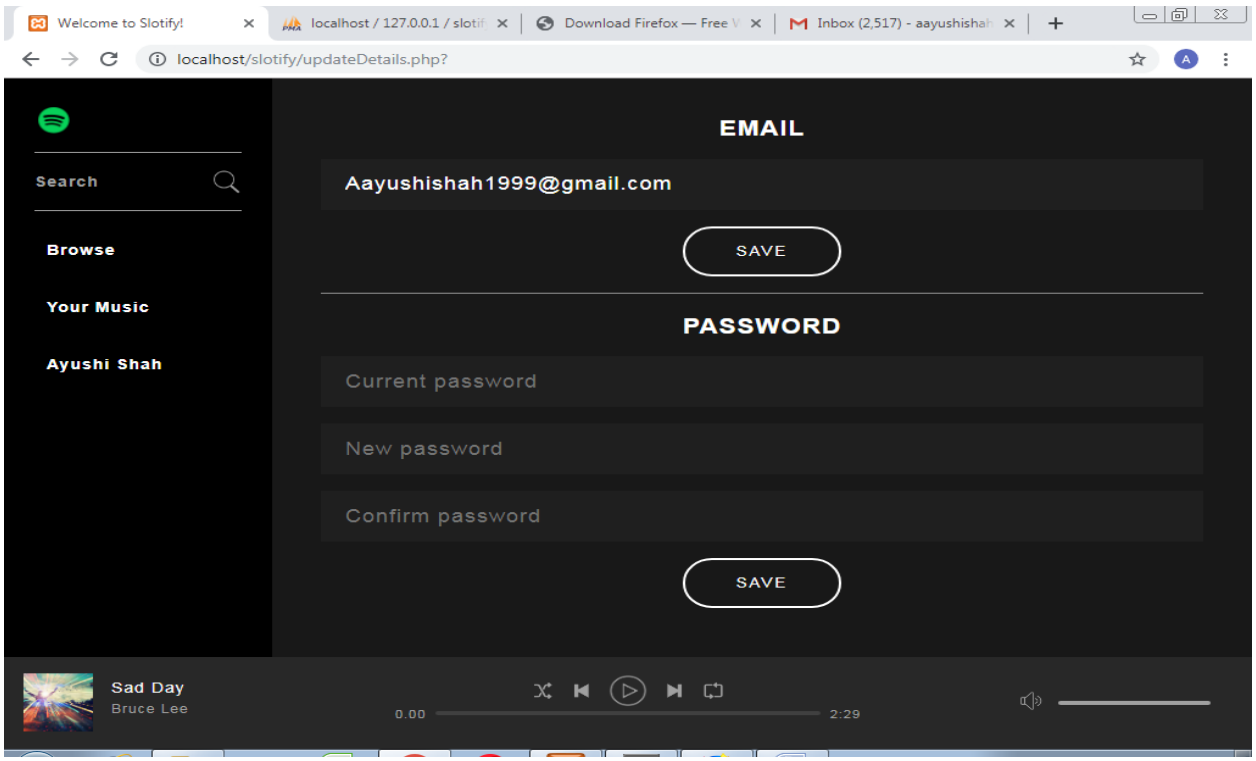

FIG 5.11:When the user clicks on user details.

If the user wants to change the password it can be done using this option.

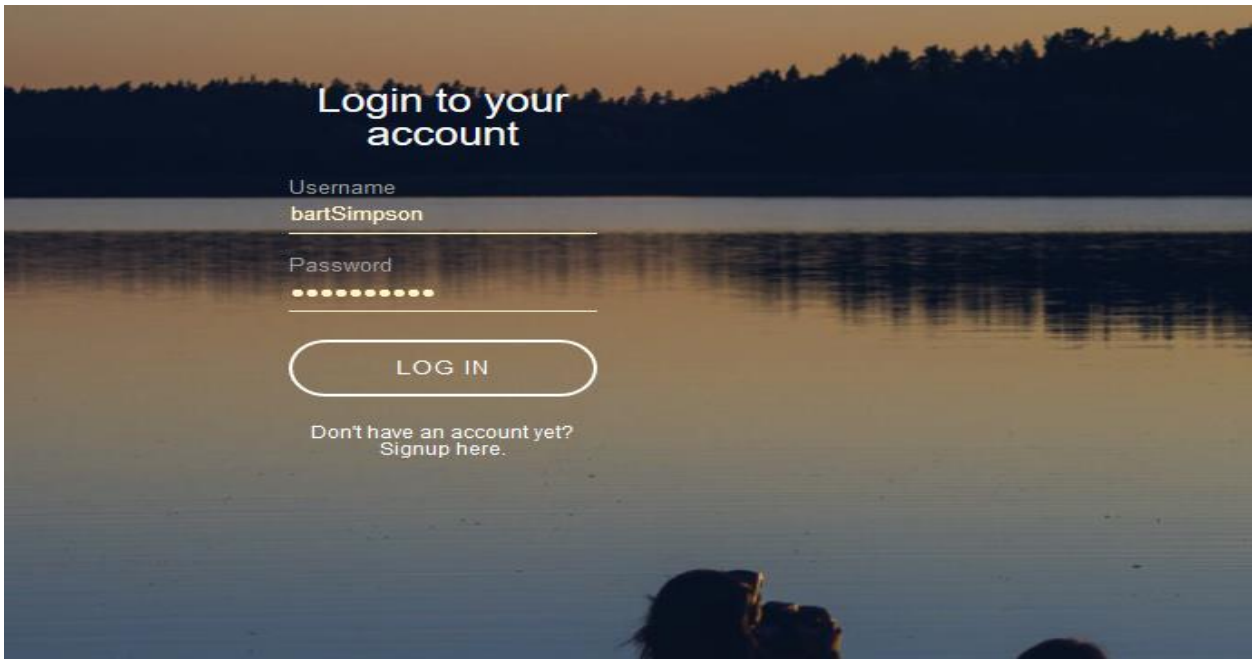

FIG 5.12: When the same website is opened on ipad.

The look of the website will change when opened on ipad.

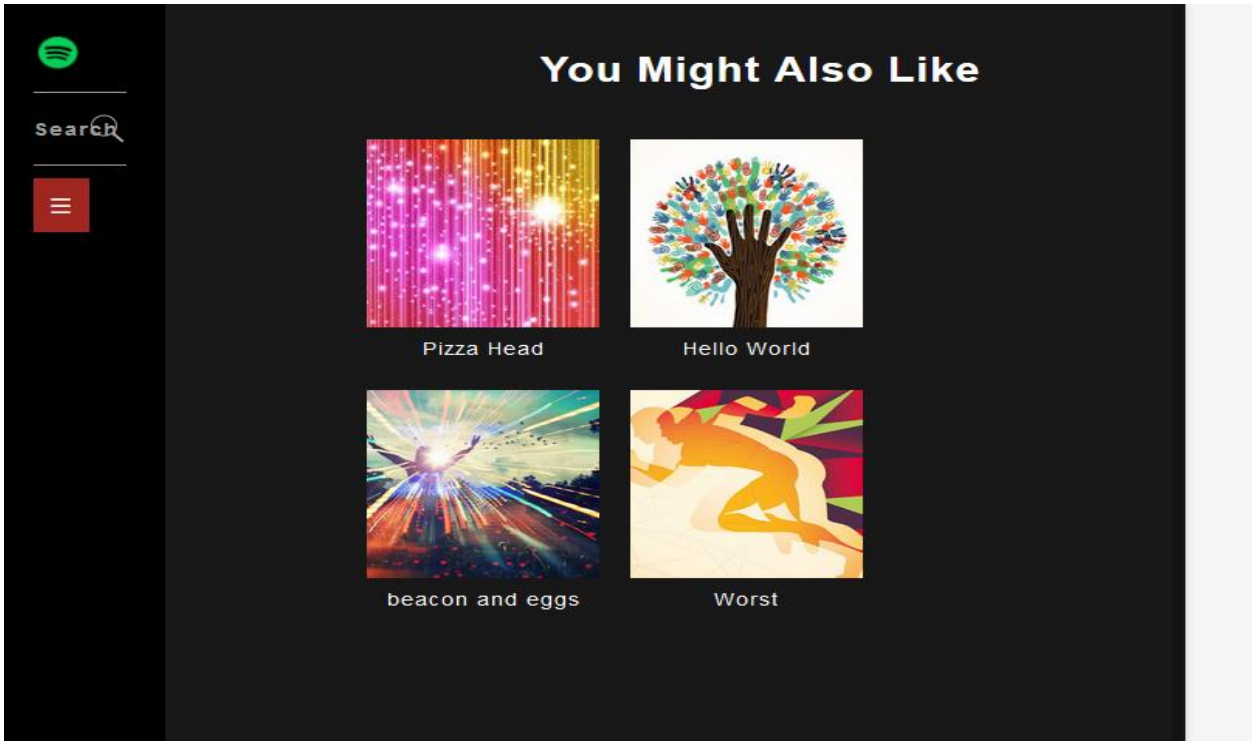

FIG 5.13:The home page will have a hamburger option which will include browse, your music options and user details.

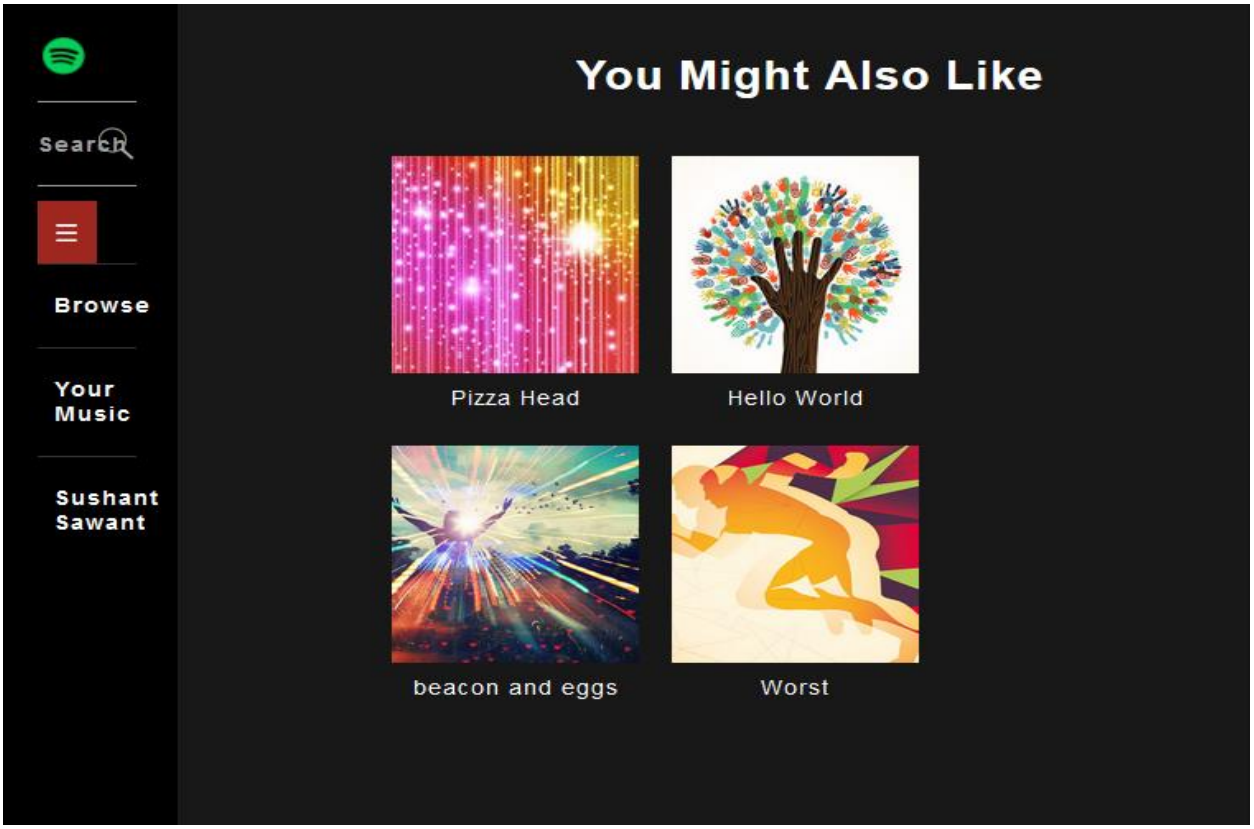

FIG 5.14: When the hamburger menu is clicked.

When the same website is opened on ipad the side bar will not have all the functionalities displayed. When the hamburger menu is clicked all of them will be displayed.