

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
THE UNIVERSITY OF TEXAS AT ARLINGTON**

**SYSTEM REQUIREMENTS SPECIFICATION
CSE 4316: SENIOR DESIGN I
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**THE UNDER ACHIEVERS
SYNTHIFY**

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1 PRODUCT CONCEPT

Synthify is a music player that allows a user to bring all of their content from different platforms & services (YouTube, Spotify, SoundCloud, etc.) into one place

1.1 PURPOSE AND USE

Synthify will allow users to sign in with different providers to fetch their content from the respective platforms. This will allow them to have all their content in one place. Synthify required users to provide their login information for each service that they want to connect to. If a user does not have an account with one of the music services that can be connected with Synthify and he/she wants to start using that service, he/she has to meet the requirement of that service.

1.2 INTENDED AUDIENCE

Synthify is open to anyone who wants to use the service. There is no hard Terms of Service for using the platform. However, the associated services that users will be signed in with to get their content have their own Terms of Service. We align our product with those respective Terms of Service and should a consumer choose to our product, they must also follow those terms.

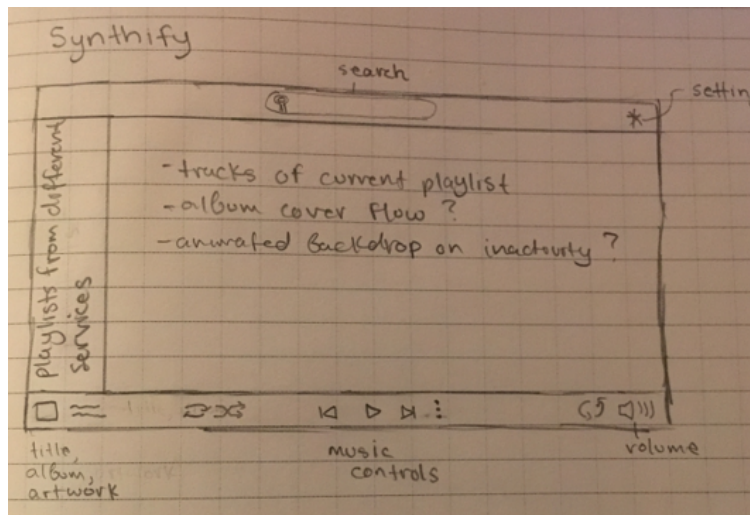


Figure 1: conceptual drawing

2 PRODUCT DESCRIPTION

This section provides the reader with an overview of Synthify. The primary operational aspects of the product, from the perspective of end users, maintainers and administrators, are defined here. The key features and functions found in the product, as well as critical user interactions and user interfaces are described in detail.

2.1 FEATURES & FUNCTIONS

Synthify.me will get playlists from a user from each platform, and bring them all together and have the playlists unified under one service. The service will auto-update after a certain amount of time to make sure it's consistent with any playlist changes that the user may have done on the respective platform. The "look and feel" of Synthify.me is similar to Spotify's dashboard. Users should expect to listen to music from each platform they have signed up for.

2.2 EXTERNAL INPUTS & OUTPUTS

Synthify will utilize the various other streaming services' APIs to retrieve the user's playlists. Assuming these playlists are retrieved, the application will stream the music content using YouTube. The music will only be streaming when a user clicks the play button on a song or playlist. The external output will be music being played on the device the user is currently using.

2.3 PRODUCT INTERFACES

The look of Synthify is similar to Spotify's dashboard. Each song and playlist will have a play button that the user is able to click to start the song or playlist.

3 CUSTOMER REQUIREMENTS

Synthify.me will get playlists from a user from each platform, and bring them all together and have the playlists unified under one service. The service will auto-update after a certain amount of time to make sure it's consistent with any playlist changes that the user may have done on the respective platform. The "look and feel" of Synthify.me is similar to Spotify's dashboard. Users should expect to listen to music from each platform they have signed up for.

3.1 SELECT A SONG FROM A PLAYLIST

3.1.1 DESCRIPTION

The system shall allow a user to select a song from a playlist.

3.1.2 SOURCE

Mary Huerta

3.1.3 CONSTRAINTS

NA

3.1.4 STANDARDS

NA

3.1.5 PRIORITY

Critical

3.2 USER SIGN IN

3.2.1 DESCRIPTION

The user shall authenticate themselves with their credentials i.e. their email and password they signed up with.

3.2.2 SOURCE

Mary Huerta

3.2.3 CONSTRAINTS

Invalid emails and invalid passwords will be checked. If the user types in an email that does not exist do not let them sign in.

3.2.4 STANDARDS

NA

3.2.5 PRIORITY

Critical

3.3 USER SIGN UP

3.3.1 DESCRIPTION

User shall sign up with their email, a password, any music services they use and their name.

3.3.2 SOURCE

Mary Huerta

3.3.3 CONSTRAINTS

Emails have to have an "@" character and if the email has already been used by another user the system will not let them register as a new user. User must have an email.

3.3.4 STANDARDS

NA

3.3.5 PRIORITY

Critical

3.4 UPDATE PLAYLISTS

3.4.1 DESCRIPTION

The system shall utilize AJAX to check if the play list has changed on the service and get updated play lists after a certain amount of time.

3.4.2 SOURCE

Mary Huerta

3.4.3 CONSTRAINTS

The system can not update playlists by calling of the APIs too frequently or it will be given a 429 status code. Thus there should be a set constraint on how much the system can call any of the APIs. User must be registered to at least one of the services to be shown any playlist.

3.4.4 STANDARDS

NA

3.4.5 PRIORITY

Critical

3.5 SHOW PLAYLISTS FROM DIFFERENT SERVICES

3.5.1 DESCRIPTION

The system shall display playlists from different music services like Youtube, Spotify, and SoundCloud

3.5.2 SOURCE

Mary Huerta

3.5.3 CONSTRAINTS

User must be registered to at least one of the services to be shown any playlist. Users must also have playlists on the services that can be updated and shown.

3.5.4 STANDARDS

NA

3.5.5 PRIORITY

High

3.6 SEARCH FOR SONGS

3.6.1 DESCRIPTION

The system shall allow users to search for songs in their playlists.

3.6.2 SOURCE

Mary Huerta

3.6.3 CONSTRAINTS

User must be registered to at least one of the services to be shown any playlist. If there is no song that matches the search terms then the user will be shown a message that they're term didn't match a song.

3.6.4 STANDARDS

NA

3.6.5 PRIORITY

High

3.7 CHANGE THE VOLUME

3.7.1 DESCRIPTION

The system shall allow users to change the volume of the song they are listening to

3.7.2 SOURCE

Mary Huerta

3.7.3 CONSTRAINTS

If the system is playing a song it must change the volume dynamically. If the system isn't playing a song the next song played will have the volume the user requested. Speakers/Headphones are required to hear differences in volume.

3.7.4 STANDARDS

NA

3.7.5 PRIORITY

Critical

3.8 THE SYSTEM SHALL PLAY A SONG

3.8.1 DESCRIPTION

The song shall be streamed from a URL

3.8.2 SOURCE

Kolten Sturgill

3.8.3 CONSTRAINTS

NA

3.8.4 STANDARDS

NA

3.8.5 PRIORITY

Critical

3.9 REPLAY SONGS

3.9.1 DESCRIPTION

The system shall allow users to replay a song.

3.9.2 SOURCE

Mary Huerta

3.9.3 CONSTRAINTS

If the system isn't playing a song the next song played will be repeated.

3.9.4 STANDARDS

NA

3.9.5 PRIORITY

low

3.10 ADD MUSIC SERVICE

3.10.1 DESCRIPTION

The system shall allow users to add music services (YouTube Music, Spotify, Soundcloud) to their account.

3.10.2 SOURCE

Mary Huerta

3.10.3 CONSTRAINTS

Users must have an account with the music service before adding a service to their Synthify.me account.

3.10.4 STANDARDS

NA

3.10.5 PRIORITY

Critical

3.11 DISPLAY CURRENT SONG TITLE

3.11.1 DESCRIPTION

The system shall display the current song title the user is listening to.

3.11.2 SOURCE

Mary Huerta

3.11.3 CONSTRAINTS

If the system isn't playing a song no song title will be displayed.

3.11.4 STANDARDS

NA

3.11.5 PRIORITY

High

3.12 DISPLAY CURRENT SONG TIME

3.12.1 DESCRIPTION

The system shall display the time within current song the user is listening to.

3.12.2 SOURCE

Mary Huerta

3.12.3 CONSTRAINTS

If the system isn't playing a song no song Time will be displayed. If the system is paused on the song then that song's time will be displayed.

3.12.4 STANDARDS

NA

3.12.5 PRIORITY

High

3.13 STORING USER PREFERENCES

3.13.1 DESCRIPTION

The system shall store users local preferences (volume setting, color of page).

3.13.2 SOURCE

Kolten Sturgill

3.13.3 CONSTRAINTS

NA

3.13.4 STANDARDS

NA

3.13.5 PRIORITY

Low

3.14 PLAYING A NEXT SONG

3.14.1 DESCRIPTION

The system shall consecutively play another song after the previous song has ended.

3.14.2 SOURCE

Mary Huerta

3.14.3 CONSTRAINTS

NA

3.14.4 STANDARDS

NA

3.14.5 PRIORITY

High

3.15 STORING USER SEARCHES

3.15.1 DESCRIPTION

The system shall store each query the user make

3.15.2 SOURCE

Kolten Sturgill

3.15.3 CONSTRAINTS

NA

3.15.4 STANDARDS

NA

3.15.5 PRIORITY

High

3.16 STORING API RESULTS

3.16.1 DESCRIPTION

The system shall store each result in correspondence with the users search results

3.16.2 SOURCE

Kolten Sturgill

3.16.3 CONSTRAINTS

NA

3.16.4 STANDARDS

NA

3.16.5 PRIORITY

High

3.17 SEARCHING FOR PREVIOUS USER SEARCHES

3.17.1 DESCRIPTION

The system shall check previously made user searches for similar results in order to preserve critical API access.

3.17.2 SOURCE

Kolten Sturgill

3.17.3 CONSTRAINTS

NA

3.17.4 STANDARDS

NA

3.17.5 PRIORITY

Low

3.18 NEXT SONG SHUFFLED

3.18.1 DESCRIPTION

The system shall play random song in the playlist if the the previous song has ended if the user has selected shuffle mode.

3.18.2 SOURCE

Mary Huerta

3.18.3 CONSTRAINTS

The next song that will be played will be based upon whether the user has selected shuffle in-order or shuffle.

3.18.4 STANDARDS

NA

3.18.5 PRIORITY

High

3.19 NEXT SONG NON-SHUFFLED

3.19.1 DESCRIPTION

The system shall play a song in order from the current playlist if the previous song has ended if the user has selected in-order mode

3.19.2 SOURCE

Mary Huerta

3.19.3 CONSTRAINTS

The next song that will be played will be based upon whether the user has selected shuffle in order or shuffle.

3.19.4 STANDARDS

NA

3.19.5 PRIORITY

High

3.20 USER SIGN OUT

3.20.1 DESCRIPTION

User shall be able to sign out of their account.

3.20.2 SOURCE

Mitchel Smith

3.20.3 CONSTRAINTS

NA

3.20.4 STANDARDS

NA

3.20.5 PRIORITY

Critical

3.21 PREVIOUS SONG

3.21.1 DESCRIPTION

The system shall play the previously played song

3.21.2 SOURCE

Mitchel Smith

3.21.3 CONSTRAINTS

NA

3.21.4 STANDARDS

NA

3.21.5 PRIORITY

High

3.22 STORE PREVIOUSLY PLAYED SONGS

3.22.1 DESCRIPTION

The system shall store the previously played songs of the user's current session.

3.22.2 SOURCE

Mitchel Smith

3.22.3 CONSTRAINTS

NA

3.22.4 STANDARDS

NA

3.22.5 PRIORITY

High

3.23 REPEAT PLAYLIST

3.23.1 DESCRIPTION

The system shall repeat the playlist if the repeat button is selected

3.23.2 SOURCE

Mitchel Smith

3.23.3 CONSTRAINTS

NA

3.23.4 STANDARDS

NA

3.23.5 PRIORITY

Medium

3.24 CHANGING PAGE THEME

3.24.1 DESCRIPTION

The system shall have a light mode (white background with black text) and dark mode (Black background with white text). It shall be available to be switched from light mode to dark mode in the user's settings.

3.24.2 SOURCE

Kolten Sturgill

3.24.3 CONSTRAINTS

NA

3.24.4 STANDARDS

NA

3.24.5 PRIORITY

Future

3.25 REPEAT SONG

3.25.1 DESCRIPTION

The system shall repeat the song if the repeat song button is selected

3.25.2 SOURCE

Mitchel Smith

3.25.3 CONSTRAINTS

NA

3.25.4 STANDARDS

NA

3.25.5 PRIORITY

Medium

3.26 DISPLAY ALBUM ARTWORK

3.26.1 DESCRIPTION

The system shall display the album artwork of the currently playing song.

3.26.2 SOURCE

Mitchel Smith

3.26.3 CONSTRAINTS

NA

3.26.4 STANDARDS

NA

3.26.5 PRIORITY

Low

3.27 STOP SONG

3.27.1 DESCRIPTION

The user shall be able to stop the currently playing song

3.27.2 SOURCE

Mitchel Smith

3.27.3 CONSTRAINTS

NA

3.27.4 STANDARDS

NA

3.27.5 PRIORITY

Critical

3.28 PLAY SONG

3.28.1 DESCRIPTION

The user shall be able to start the current song if it is stopped

3.28.2 SOURCE

Mitchel Smith

3.28.3 CONSTRAINTS

NA

3.28.4 STANDARDS

NA

3.28.5 PRIORITY

Critical

4 PACKAGING REQUIREMENTS

Synthify will be delivered and view-able as a web application, but the source code will be available in a repository for the stakeholder to view.

4.1 HOSTING

4.1.1 DESCRIPTION

The system shall be a website hosted on GitHub Pages. The back-end services that handles API requests will be hosted on Heroku.

4.1.2 SOURCE

Mary Huerta

4.1.3 CONSTRAINTS

NA

4.1.4 STANDARDS

NA

4.1.5 PRIORITY

Critical

4.2 WEBSITE

4.2.1 DESCRIPTION

The system shall be a web application accessible via an internet browser.

4.2.2 SOURCE

Mary Huerta

4.2.3 CONSTRAINTS

NA

4.2.4 STANDARDS

NA

4.2.5 PRIORITY

Critical

5 PERFORMANCE REQUIREMENTS

Synthify will primarily be a web-based application. The thoughts behind performance are more so worrying about response time from the API's we will be calling and the load times for the site when a user is interacting with it.

5.1 RESPONSIVENESS

5.1.1 DESCRIPTION

The system shall load itself in less than 60 seconds after the user had logged in

5.1.2 SOURCE

Mary Huerta

5.1.3 CONSTRAINTS

The user should have an internet speed of 40 Mbps or more to load everything.

5.1.4 STANDARDS

NA

5.1.5 PRIORITY

Medium

6 SAFETY REQUIREMENTS

Synthify is purely software and thus requires no physical safety requirements.

7 MAINTENANCE & SUPPORT REQUIREMENTS

To support Synthify.me after it's delivery there will be on-boring features to help new users learn about Synthify.me's features. There will be also be a FAQ page for troubleshooting with new and old users. There will also be documentation of source code available on Github.

7.1 ON-BOARDING PAGE

7.1.1 DESCRIPTION

The system shall have an on-boarding page on the website to help new users learn how to add music services and play music.

7.1.2 SOURCE

Mary Huerta

7.1.3 CONSTRAINTS

NA

7.1.4 STANDARDS

NA

7.1.5 PRIORITY

Critical

7.2 FAQ PAGE

7.2.1 DESCRIPTION

The system shall have a FAQ page on the website to help on-board new users.

7.2.2 SOURCE

Mary Huerta

7.2.3 CONSTRAINTS

NA

7.2.4 STANDARDS

NA

7.2.5 PRIORITY

Critical

7.3 DOCUMENTATION OF SOURCE CODE

7.3.1 DESCRIPTION

The system shall be documented and it's code available on Github.

7.3.2 SOURCE

Mary Huerta

7.3.3 CONSTRAINTS

NA

7.3.4 STANDARDS

NA

7.3.5 PRIORITY

Critical

8 OTHER REQUIREMENTS

Due to our time constraints we will not plan for having extensibility and modularity therefore it is not required. There will be no setup required by the user besides having an account with our service and a internet browser above and certain version.

8.1 INTERNET BROWSERS

8.1.1 DESCRIPTION

The system shall work on Chrome version 70.0.3538.77 and above, Safari version 12.0.1 and above, and Firefox version 63.0.1 and above.

8.1.2 SOURCE

Mary Huerta

8.1.3 CONSTRAINTS

NA

8.1.4 STANDARDS

NA

8.1.5 PRIORITY

Critical

9 FUTURE ITEMS

Synthify.me will contain some requirements that can be done in the future one of which is it's color scheme. A time constraint on the project may limit the ability to have two color schemes.

9.1 CHANGING PAGE THEME

9.1.1 DESCRIPTION

The system shall have a light mode (white background with black text) and dark mode (Black background with white text). It shall be available to be switched from light mode to dark mode in the user's settings.

9.1.2 SOURCE

Kolten Sturgill

9.1.3 CONSTRAINTS

NA

9.1.4 STANDARDS

NA

9.1.5 PRIORITY

Future

REFERENCES