

Team with Github names:

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Title: Music Playlist Manager

1 Summary

Sharing playlists of music between a large group of people can be difficult when everyone doesn't listen to music through the same service. This will allow people to create playlists in a generic format that can then be integrated into the users service of choice. This allows people to share their playlists with their friends who can then export it into the streaming service of their choice.

2 Project Requirements

User Requirements

| ID | Description | Priority |
|-------|--|----------|
| UR-01 | Users can create account | High |
| UR-02 | Users can create a playlist | High |
| UR-03 | Users can search database for song title, album title, artist, and playlist name | High |
| UR-04 | Users can add content (songs, from albums or artists) to a playlist | High |
| UR-05 | Users can remove songs from a playlist | Medium |
| UR-06 | Users can make playlists collaborative | Low |
| UR-07 | Users can share a playlist | High |
| UR-08 | Users can register their Spotify account to our service | High |
| UR-09 | Users can register their Tidal account to our service | High |
| UR-10 | Users can register their Google Play Music account to our service | High |
| UR-11 | Users can export playlists into Spotify | High |
| UR-12 | Users can export playlists into Tidal | High |
| UR-13 | Users can export playlists into Google Play Music | High |

Non-Functional Requirements

| ID | Description | Priority |
|--------|---|----------|
| NFR-01 | Search has to be less than 20ms | High |
| NFR-02 | Service should support thousands of concurrent users | High |
| NFR-03 | Should be able to expand to other music services easily | Medium |

Functional Requirements

| ID | Description | Priority |
|-------|--|----------|
| FR-01 | When a user creates an account, a user record has to be added to the database | High |
| FR-02 | When a user creates a playlist, a playlist record is added to the database which includes the name of the playlist and an optional description | High |
| FR-03 | There has to be a database of music for users to search that is categorized by song, album, artist, and playlist | High |
| FR-04 | When users search music database, it has to return any song, artist, or album, or playlist that matches the search query | High |
| FR-05 | When a user selects a song to add to a playlist, a list of all playlists that the user owns or can collaborate on is returned to the user | High |
| FR-06 | After selecting which playlist to add a song to, an association is created between the song and the playlist | High |
| FR-07 | When a user selects an entire album to add to a playlist, a list of all playlists that the user owns or can collaborate on is returned to the user | High |
| FR-08 | After selecting which playlist to add an entire to, an association is created between all the songs in the album and the playlist | High |
| FR-09 | When a user chooses to view an album, all the songs on that album are listed | High |
| FR-10 | When a user selects an artist, a list of their albums and songs is returned | High |
| FR-11 | When a user removes a song from a playlist, the association between the song and playlist is removed | Medium |
| FR-12 | When a user chooses to make a playlist collaborative, a flag is set allowing users other than the owner to edit the playlist | Low |

| | | |
|-------|---|------|
| FR-13 | When a user chooses to share a playlist, a unique link has to be created, based on the playlist id. This link has to be able to direct back to the playlist | High |
| FR-14 | When a user connects their Spotify account with our service, our system will need to make a connection with Spotify to authorize the account | High |
| FR-15 | After authorizing the connection with Spotify, their Spotify credentials need to be stored with the user's record | High |
| FR-16 | When a user connects their Tidal account with our service, our system will need to make a connection with Tidal to authorize the account | High |
| FR-17 | After authorizing the connection with Tidal, their Tidal credentials need to be stored with the user's record | High |
| FR-18 | When a user connects their Google Play Music account with our service, our system will need to make a connection with Google Play Music to authorize the account | High |
| FR-19 | After authorizing the connection with Google Play Music, their Google Play Music credentials need to be stored with the user's record | High |
| FR-20 | When exporting a playlist to Spotify a new playlist has to be created for the Spotify account associated with our user | |
| FR-21 | When exporting a playlist to Spotify, each song has to be searched for using the Spotify API to get the song's id for Spotify. Then each song has to be added to the playlist that was created in FR-20 | |
| FR-22 | When exporting a playlist to Tidal a new playlist has to be created for the Tidal account associated with our user | |
| FR-23 | When exporting a playlist to Tidal, each song has to be searched for using the Tidal API to get the song's id for Tidal. Then each song has to be added to the playlist that was created in FR-22 | |
| FR-24 | When exporting a playlist to Google Play Music a new playlist has to be created for the Google Play Music account associated with our user | |
| FR-25 | When exporting a playlist to Google Play Music, each song has to be searched for using the Google Play Music API to get the song's id for Google Play Music. Then each song has to be added to the playlist that was created in FR-24 | |

3 Use Cases

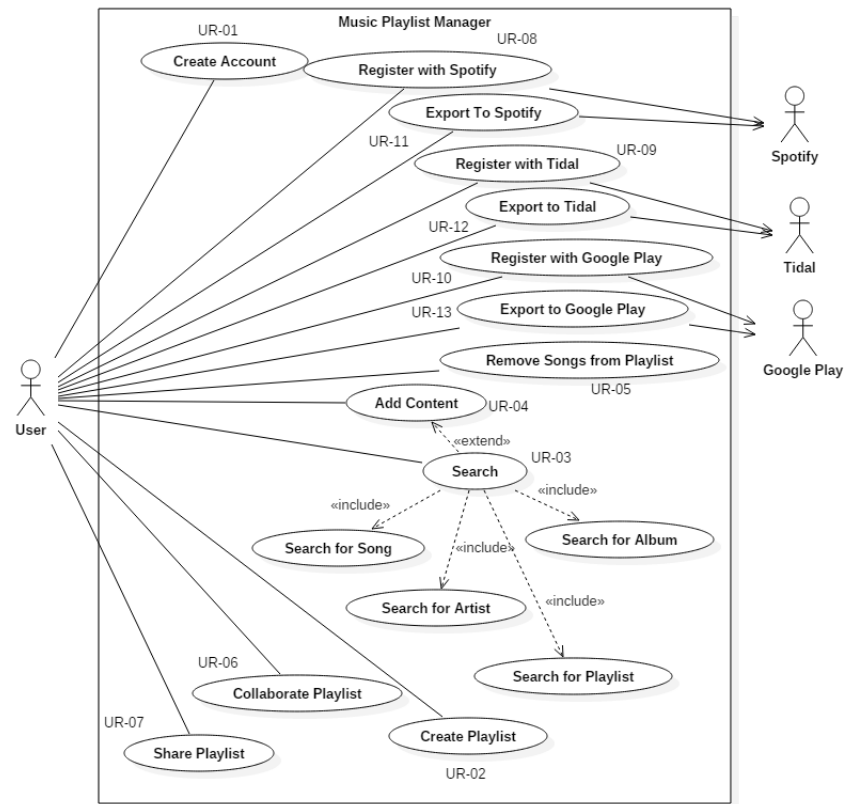


Figure 1: System Use Case Diagram

Below are the two use case documents:

| | | | |
|--------------------------|---|--|---|
| Use Case ID: | UR-03 | | |
| Use Case Name: | Search | | |
| Description: | Users can search songs, albums, artists and playlists from database | | |
| | | | |
| Actors: | Users | | |
| Pre-conditions | User is logged in | | |
| Post-conditions | User got a search result | | |
| Frequency of Use: | Daily | | |
| Flow of Events: | | Actor Action | System Response |
| | 1 | User enters a string in the search field | |
| | 2 | | System find songs in database that match the string |
| | 3 | | System find artists in database that match the string |
| | 4 | | System find albums in database that match the string |
| | 5 | | System find playlists in database that match the string |
| | 6 | | System displays results |
| | 7 | User views results | |
| Variations: | | | |
| Exceptions: | | | |
| Developer Notes: | | | |

| | | | | |
|-------------------|---|--|---|---|
| Use Case ID: | UR-04 | | | |
| Use Case Name: | Add Playlist Content | | | |
| Description: | Users can add content to a playlist. | | | |
| | | | | |
| Actors: | Users | | | |
| Pre-conditions | Users are logged in. Users have searched for content in the system (see UR-03) | | | |
| Post-conditions | User has added a song or album to the playlist | | | |
| Frequency of Use: | As frequently as desired | | | |
| Flow of Events: | | Actor Action | System Response | |
| | 1 | User selects the search term results for a song. | System displays available playlists. | |
| | 2 | User selects playlist to add song. | System displays playlist with new song added. | |
| Variations: | (a) | 1 | User selects the search term results for an album. | System displays all songs from album. |
| | | 3 | User can either add entire album or choose a song (see previous variation) | System prompts user for which playlist to add content to. |
| | | 4 | User chooses playlist. | System displays playlist with new content added. |
| | (b) | 1 | User selects the search term results for an artist. | System displays artists albums. |
| | | 2 | | System displays artists songs. |
| | | 3 | User selects playlist to add song or album to (see previous two variations) | System prompts user for which playlist to add content to. |
| | | 4 | User chooses playlist. | System displays playlist with new content added. |
| | Exceptions: | | | |
| | Developer Notes: | | | |

4 Activity Diagrams

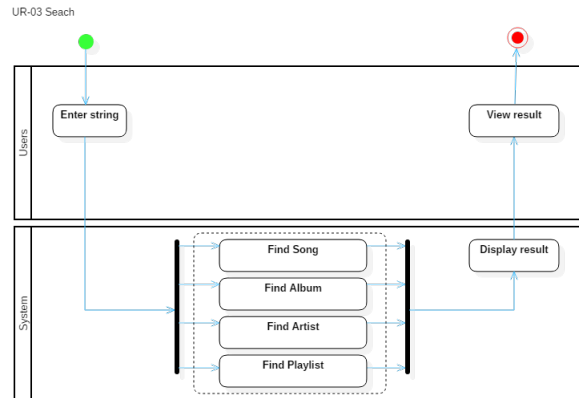


Figure 2: Activity Diagram for Searching

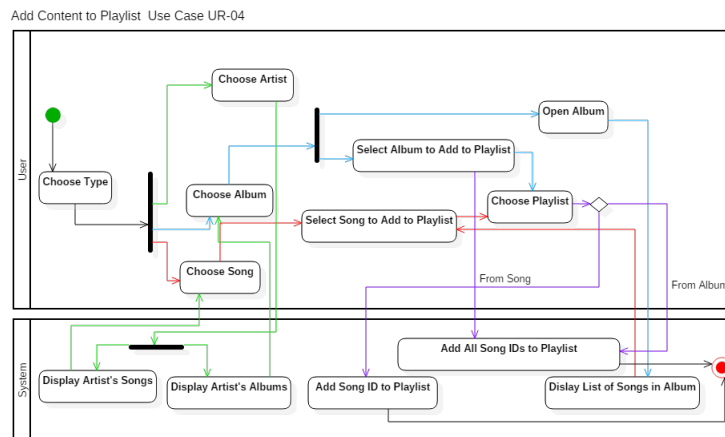


Figure 3: Activity Diagram for Adding Content

5 UI Mockups

We begin with a statechart diagram of the UI and then a closer look at all the screens for more detail.

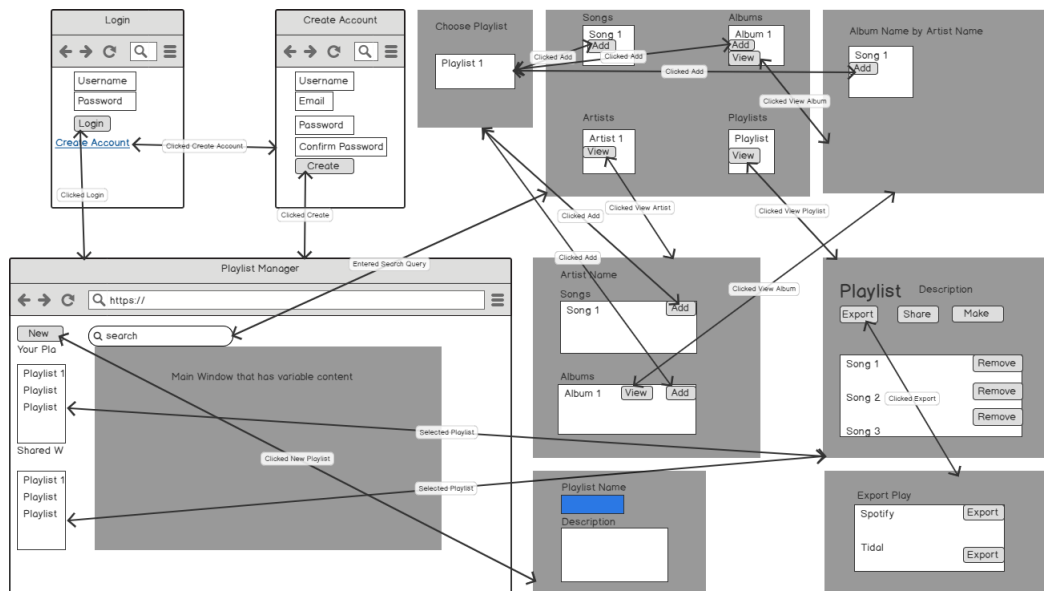


Figure 4: Main Window

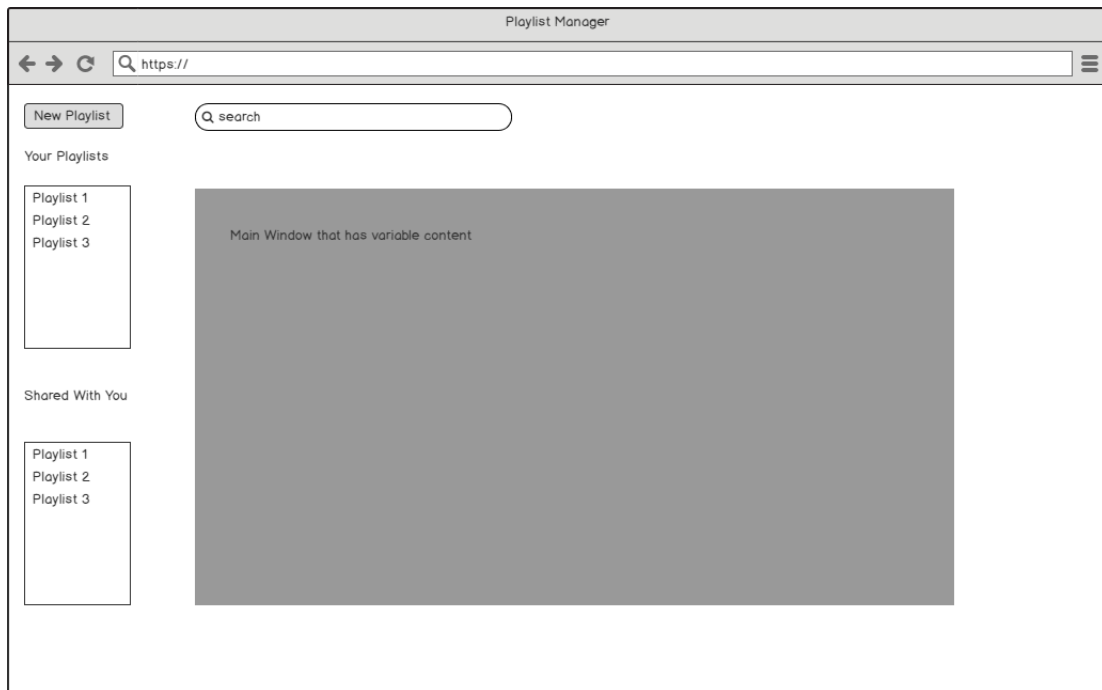


Figure 5: Main Window

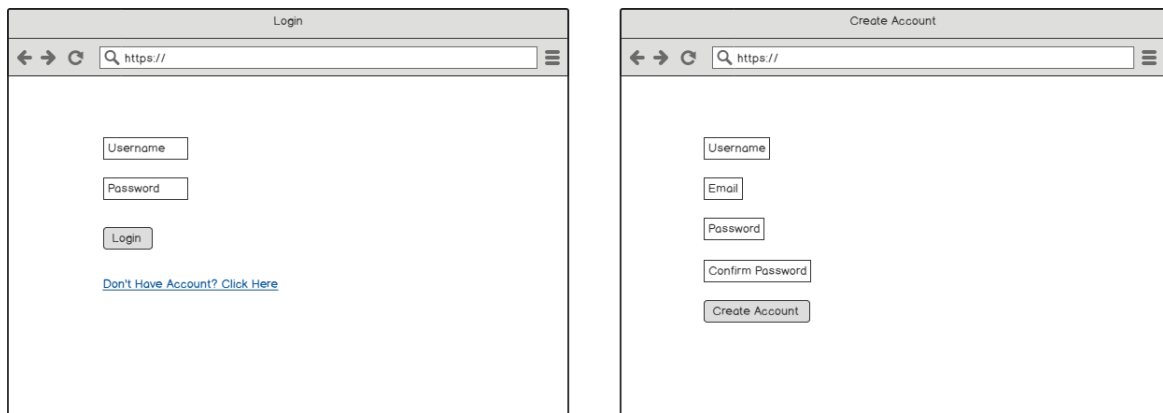


Figure 6: Login and Create Account Windows

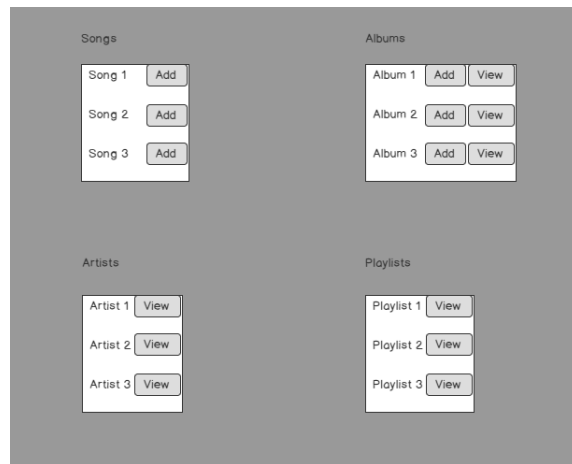


Figure 7: Search Window

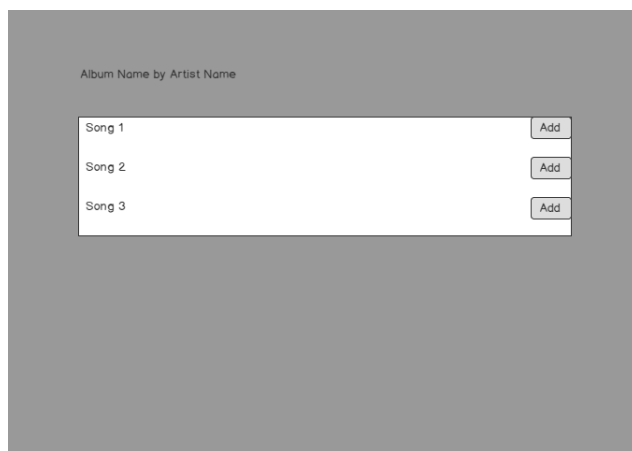


Figure 8: Album View Window

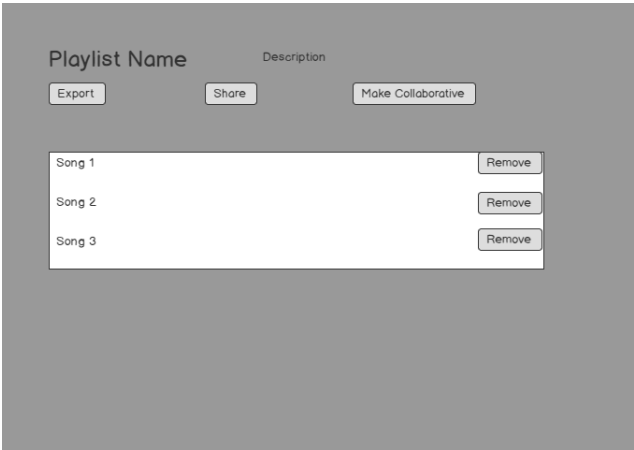


Figure 9: Playlist View Window

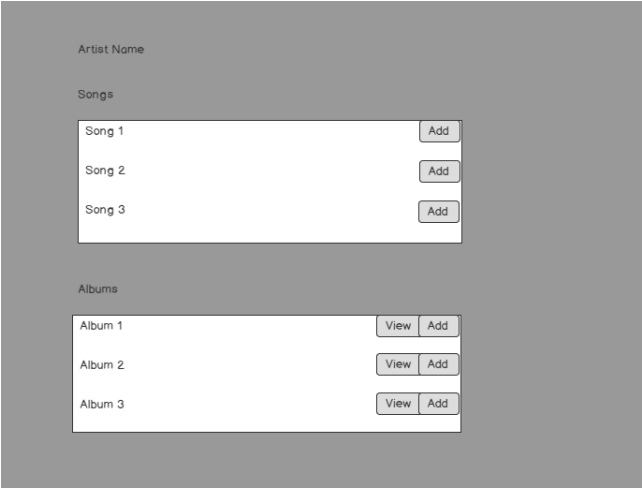


Figure 10: Artist View Window



Figure 11: Dialogs

6 Sequence Diagrams

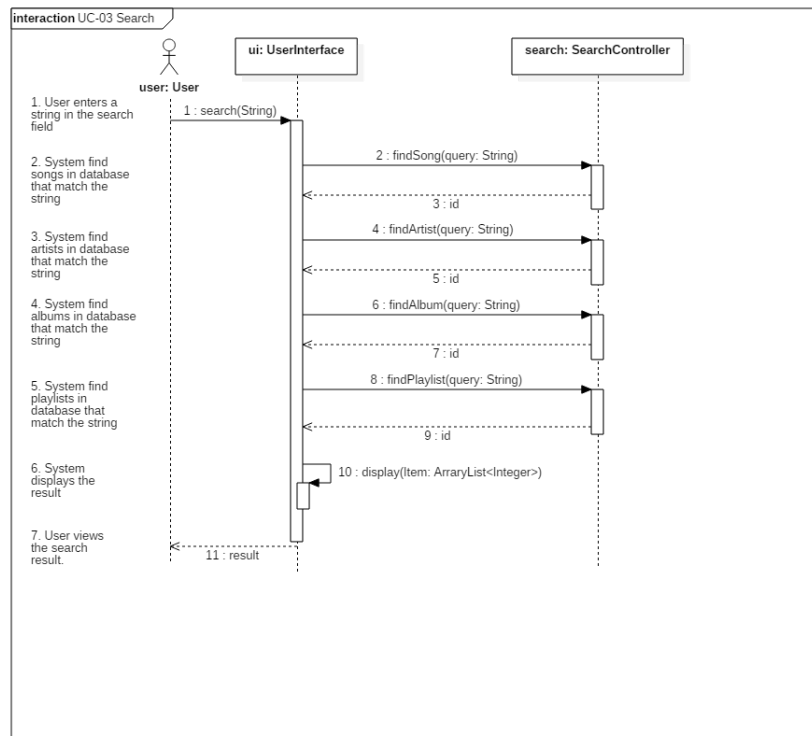


Figure 12: Sequence diagram searching

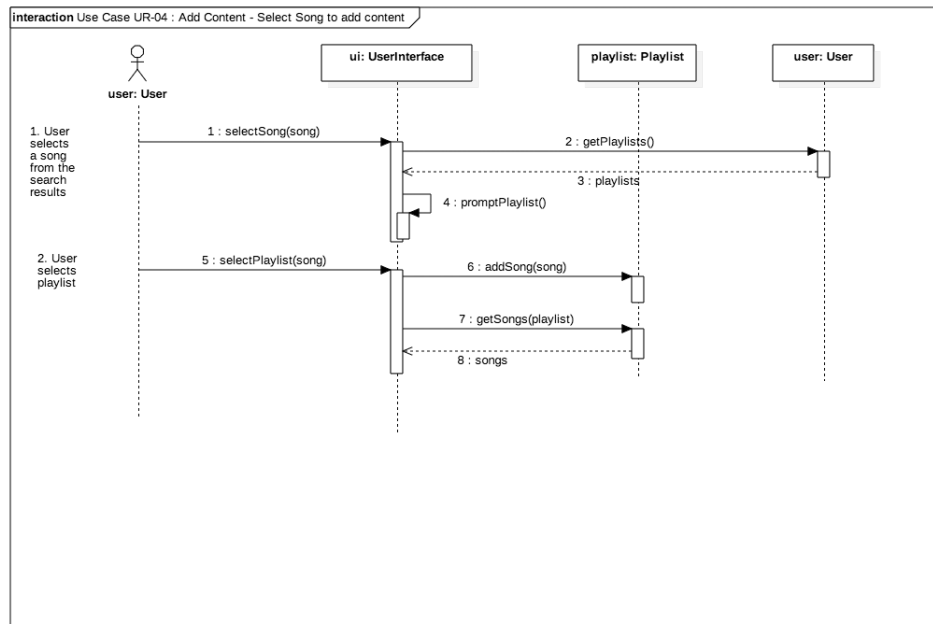


Figure 13: Sequence diagram for adding a song to a playlist

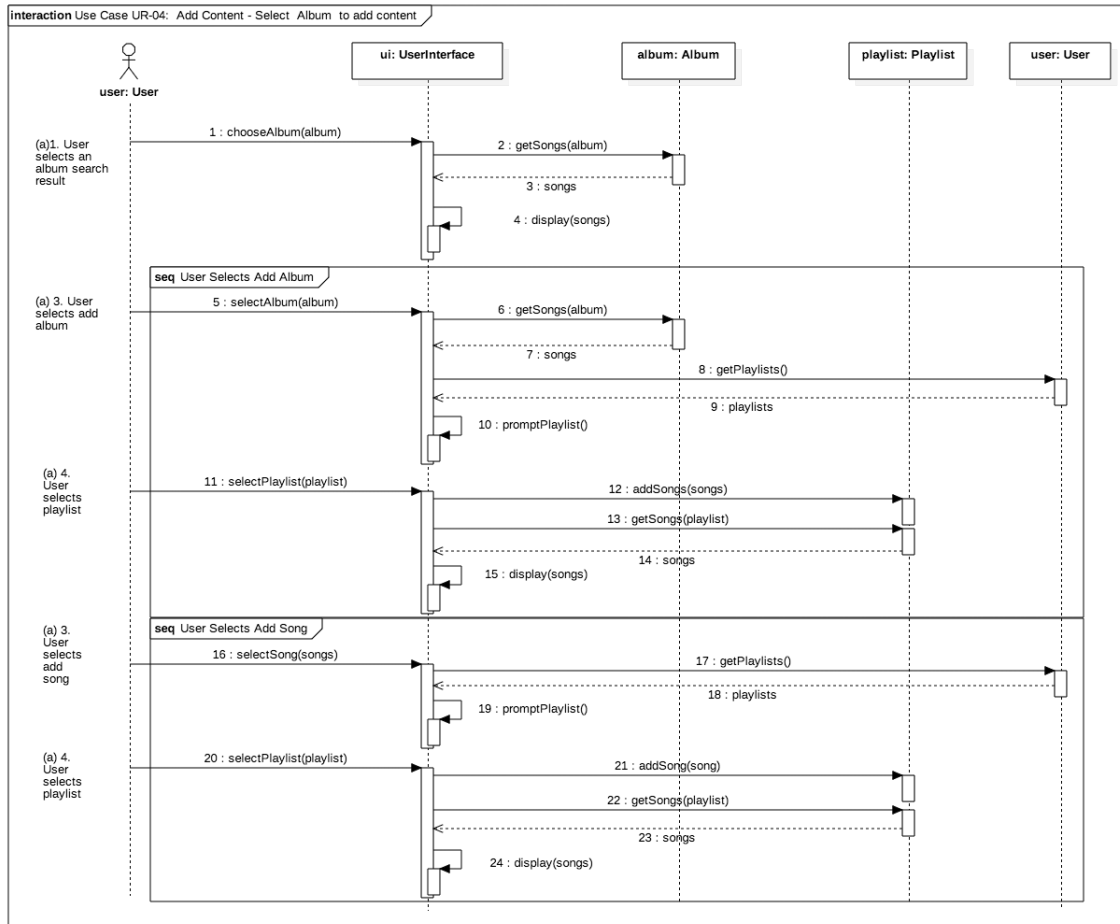


Figure 14: Sequence diagram for adding an album's content to a playlist

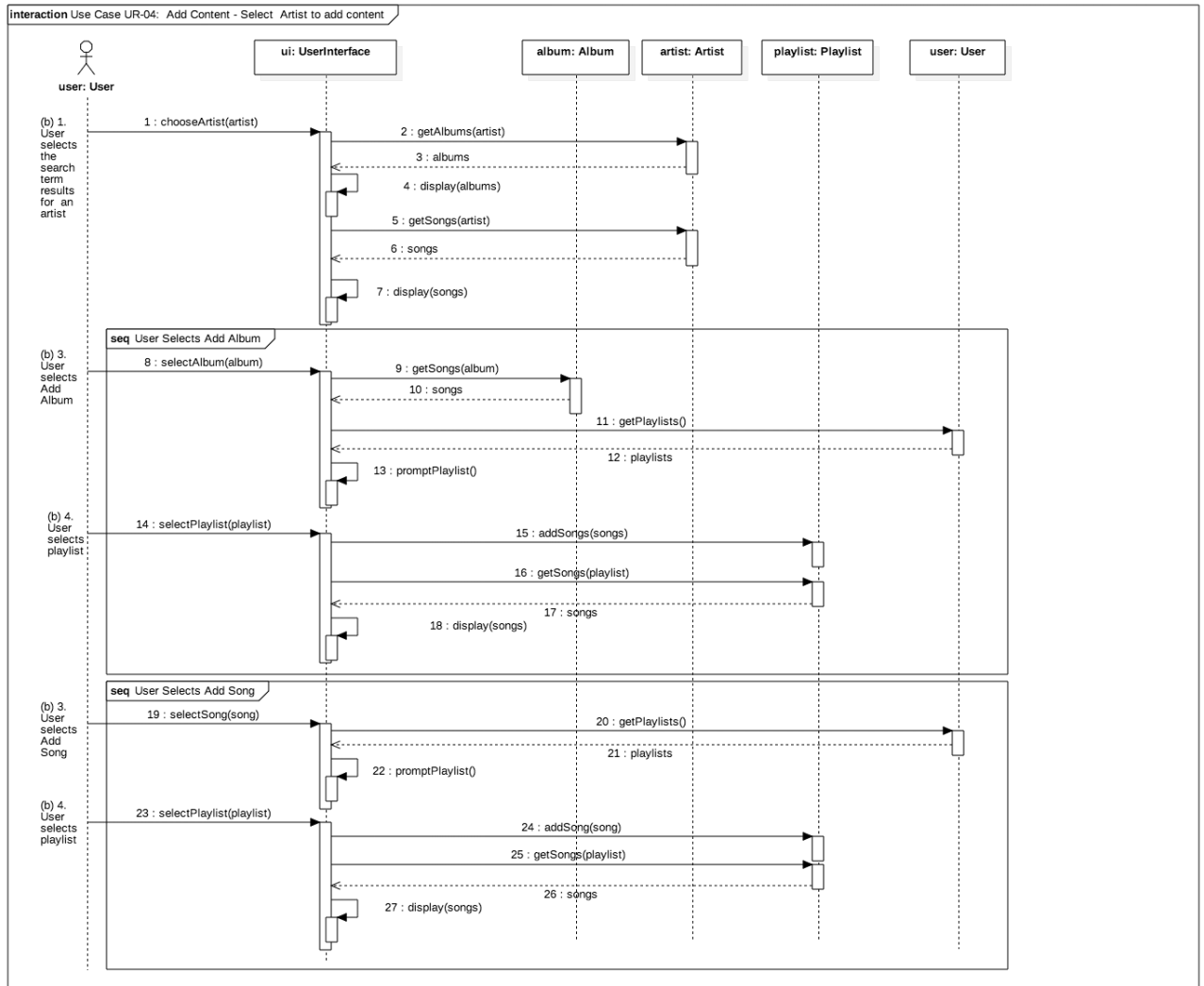


Figure 15: Sequence diagram for adding an artist's content to a playlist

7 Class Diagram

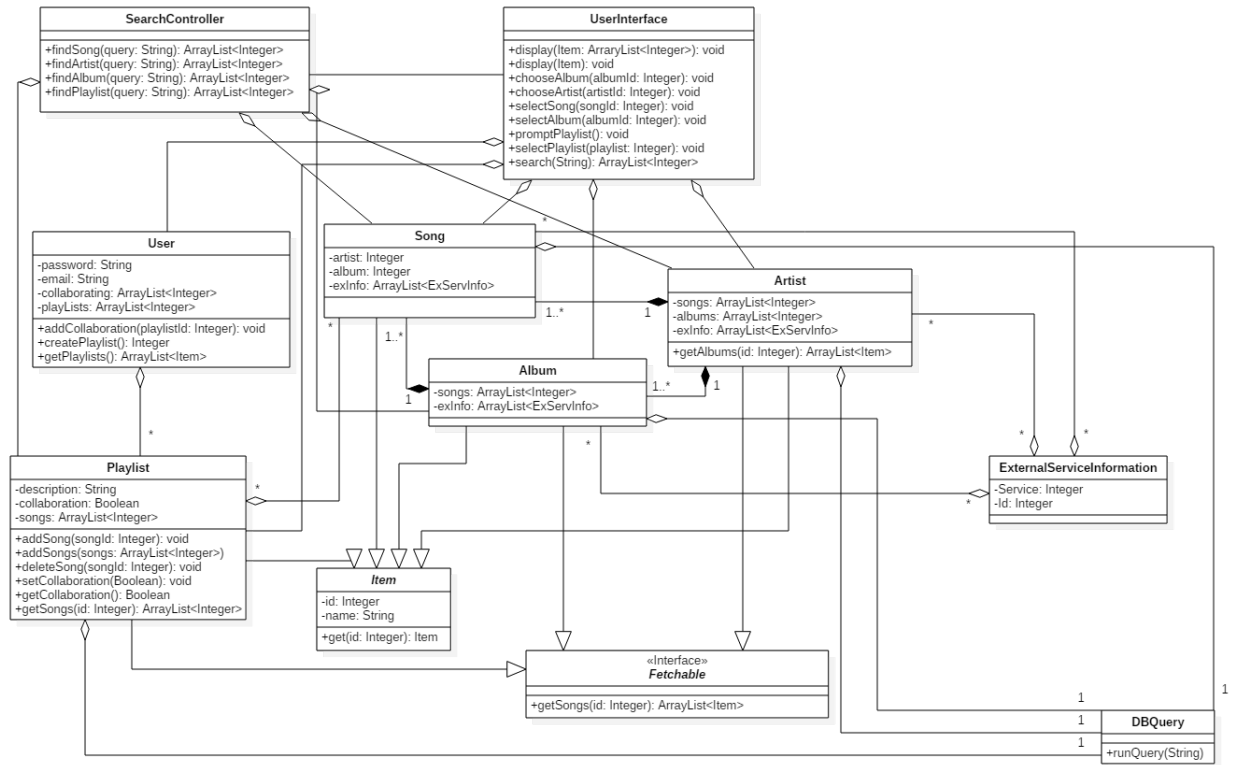


Figure 16: Class Diagram