

Deliverable #1: Home Audio System (HAS)

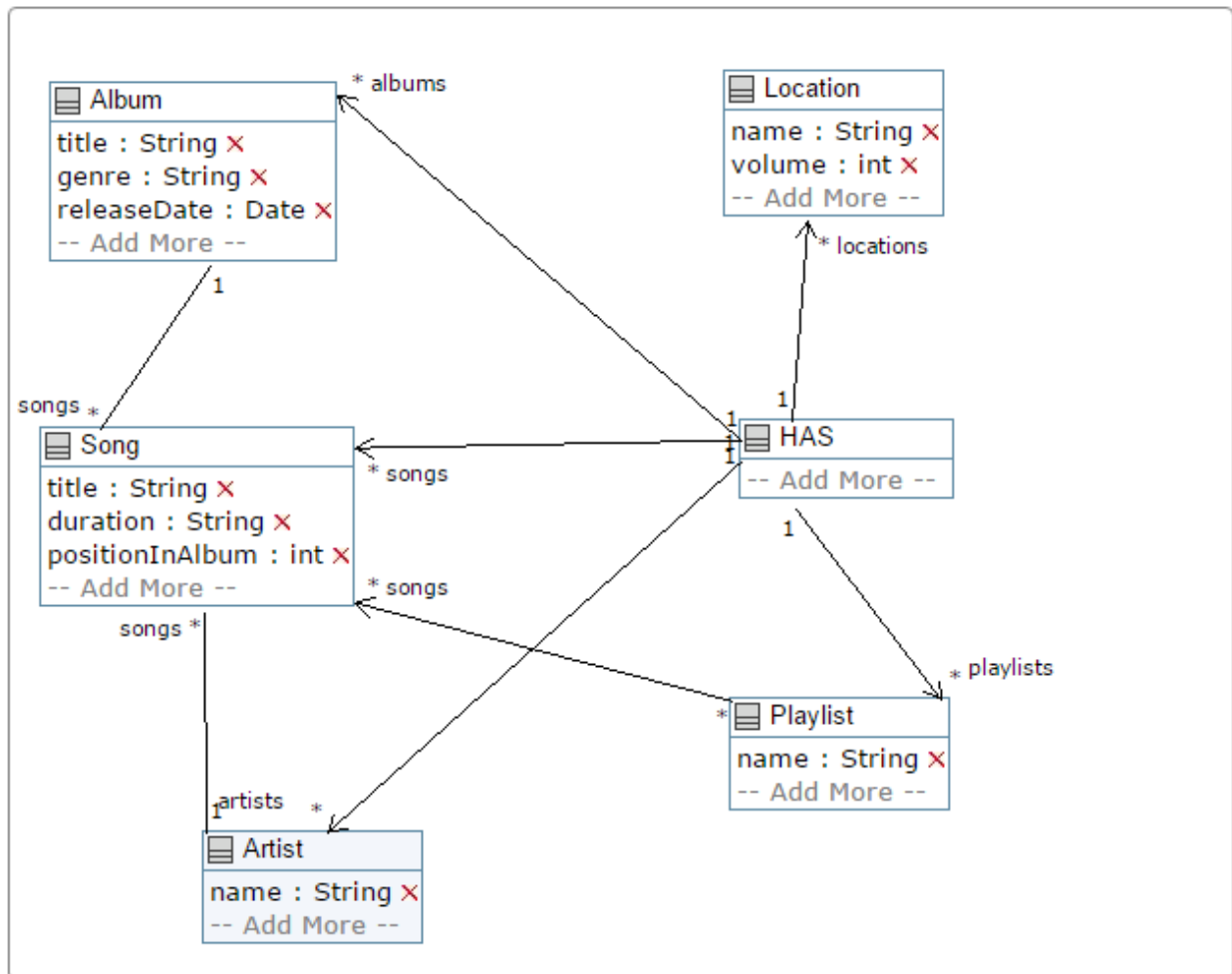
Table 1: Functional Requirements of HAS

<u>Requirement ID</u>	<u>Requirement Description</u>
HAS7701	The Home Audio System shall allow the user to control the system from a central location.
HAS7702	The Home Audio System shall maintain a library of songs grouped by album or artist
HAS7703	The Home Audio System shall keep track of a song's title.
HAS7704	The Home Audio System shall keep track of a song's duration.
HAS7705	The Home Audio System shall keep track of a song's position on an album.
HAS7706	The Home Audio System shall keep track of an album's genre.
HAS7707	The Home Audio System shall keep track of an album's release date.
HAS7708	The Home Audio System shall keep track of an artist's name.
HAS7709	The Home Audio System shall allow the user to set up one or multiple locations.
HAS7710	The Home Audio System shall allow the user to create one or multiple ordered playlists.
HAS7711	The Home Audio System shall allow the user to stream the same music to several locations.
HAS7712	The Home Audio System shall allow the user to play music by choosing a playlist, album or song as well as a specific location.
HAS7713	The Home Audio System shall allow the user to control the volume of each location.
HAS7714	The Home Audio System shall allow the user to temporarily mute one or many locations.

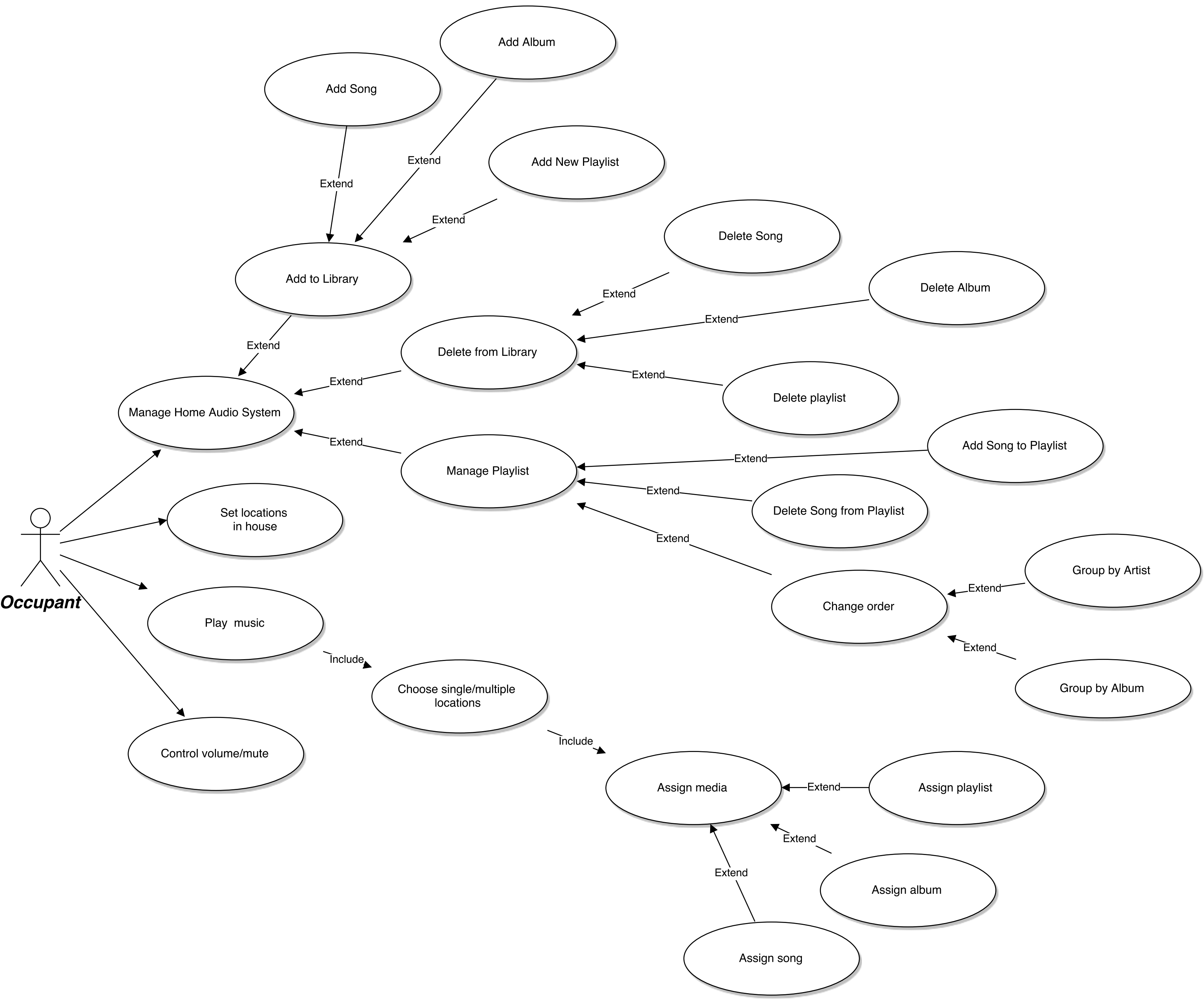
Table 2: Non-Functional Requirements of HAS

<u>Requirement ID</u>	<u>Requirement Description</u>
HAS8801	The Home Audio System shall be portable on 3 devices: desktop, mobile and web.
HAS8802	The Home Audio System shall be able to refresh the screen in less than 2 seconds.

Domain Model Diagram



Use Cases Diagram



Use cases

Use Case : Manage Home Audio System

Successful Outcome : The Occupant selects a task to modify the library of the Home Audio System.

ID	UC-ML-01
Use Case Goal	Primary actor successfully modify one of the component of the Home Audio System.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	System is properly launched
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	System shows the Manage Home Audio System form.
2.	Primary actor chooses which task to execute (Add to library, Delete from library or Manage playlist).
3.	System sends the selected choice to the controller.
4.	System updates to the new form.
5.	Use case ends successfully.

Use Case : Add to Library «extends» Manage Home Audio System

Successful Outcome : The Occupant adds a new Object to the library.

ID	UC-AL-01
Use Case Goal	Primary actor successfully adds a new object to the library.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	The user selected the Manage Home Audio System option
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	System shows the Add Library form.
2.	Primary actor chooses which task to execute (Add song, Add album, add new playlist).
3.	System sends the selected choice to the controller.
4.	System updates to the new form to fill by the user.
5.	Use case ends successfully.

Use Case : Add Song «extends» Add to Library

Successful Outcome : The Occupant adds a song to the main Library.

ID	UC-AL-02
Use Case Goal	Primary actor successfully adds a Song to the Library of the HAS.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	The User has successfully execute Add to Library (UC-AL-01)
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to add a song.
2.	System prompts Primary Actor the name of the song to add.
3.	System adds the selected song to the main Library.
4.	Use case ends successfully.

Alternative Flows:

Step	Action
2a.1	The list of Songs is empty, there are no devices to take the song from.
2a.2	Display error message “No song to add”.
2a.3	Use case ends unsuccessfully.

Step	Action
3a.1	The name of the song is empty or only spaces
3a.2	System display error message “Name cannot be empty!”.
3a.3	System returns control to Main Success Scenario Step 2.

Use Case : [Add Album](#) «extends» [Add to Library](#)

Successful Outcome : The Occupant adds an album to the Library.

ID	UC-AL-03
Use Case Goal	Primary actor successfully adds an album to the Library of the HAS.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	The User has successfully execute Add to Library (UC-AL-01)
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to add an album.
2.	System prompts Primary Actor which album to add.
3.	System adds the selected album to the main Library.
4.	Use case ends successfully.

Alternative Flows:

Step	Action
2a.1	The list of albums is empty, there is no device to take the album from.
2a.2	Display error message “No album to add”.
2a.3	Use case ends unsuccessfully.

Step	Action
3a.1	The name of the album is empty or only spaces
3a.2	System display error message “Name cannot be empty!”.
3a.3	System returns control to Main Success Scenario Step 2.

Use Case : [Add New Playlist](#) «extends» [Add to Library](#)

Successful Outcome : The Occupant creates a Playlist in the Library.

ID	UC-AL-04
Use Case Goal	Primary actor successfully adds an new Playlist to the Library of the HAS.

Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	The User has successfully execute Add to Library (UC-AL-01)
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to create a new Playlist.
2.	System prompts Primary Actor to enter the new Playlist information.
3.	System saves the new Playlist in the Library.
4.	Use case ends successfully.

Alternative Flows:

Step	Action
2a.1	Primary Actor enters information for the Playlist name that is already been used by another Playlist.
2a.2	System display error message "Name already taken!".
2a.3	System returns control to Main Success Scenario Step 2.

Step	Action
2b.1	The field entered by the Primary Actor are empty or only spaces.
2b.2	System display error message "Name cannot be empty!".
2b.3	System returns control to Main Success Scenario Step 2.

Use Case : Delete from Library «extends» Manage Home Audio System

Successful Outcome : The Occupant deletes an existing Object from the library.

ID	UC-DL-01
Use Case Goal	Primary actor successfully deletes an object from the library.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	1. The user selected the Manage Home Audio System option. 2. The main Library is not empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	System shows the Delete Library form.
2.	Primary actor chooses which task to execute (Delete song, Delete album, Delete playlist).
3.	System sends the selected choice to the controller.
4.	System updates to the new form to fill by the user.
5.	Use case ends successfully.

Use Case : Delete Song «extends» Delete from Library

Successful Outcome : The Occupant deletes a song from the main Library.

ID	UC-DL-02
Use Case Goal	Primary actor successfully deletes a Song from the Library of the HAS.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	1. The User has successfully execute Delete from Library (UC-DL-01) 2. The list of songs is not empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to delete a song from the Library of the HAS.
2.	System prompts Primary Actor which song to delete.
3.	System deletes the selected song from the Library.
4.	Use case ends successfully.

Alternative Flows:

Step	Action
3b.1	The Song entered by Primary Actor cannot be found in the Library.
3b.2	System display error message "Song cannot be found, enter a valid name!".
3b.3	System returns control to Main Success Scenario Step 2.

Use Case : Delete Album «extends» Delete from Library

Successful Outcome : The Occupant deletes an album from the main Library.

ID	UC-DL-03
Use Case Goal	Primary actor successfully deletes a Song from the Library of the HAS.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	1. The User has successfully execute Delete from Library (UC-DL-01) 2. The list of albums is not empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to delete an album from the Library of the HAS.
2.	System prompts Primary Actor which album to delete.
3.	System deletes the selected album from the Library.
4.	Use case ends successfully.

Alternative Flows:

Step	Action
3b.1	The Album entered by Primary Actor cannot be found in the Library.
3b.2	System display error message "Album cannot be found, enter a valid name!".
3b.3	System returns control to Main Success Scenario Step 2.

Use Case : Delete Playlist «extends» Delete from Library

Successful Outcome : The Occupant deletes a playlist from the main Library.

ID	UC-DL-03
Use Case Goal	Primary actor successfully deletes a Playlist from the Library of the HAS.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	1. The User has successfully execute Delete from Library (UC-DL-01) 2. The list of playlists is not empty.
Domain	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to delete a playlist from the Library of the HAS.
2.	System prompts Primary Actor which playlist to delete.
3.	System deletes the selected playlist from the Library.
4.	Use case ends successfully.

Alternative Flows:

Step	Action
3b.1	The Playlist entered by Primary Actor cannot be found in the Library.
3b.2	System display error message "Playlist cannot be found, enter a valid name!".
3b.3	System returns control to Main Success Scenario Step 2.

Use Case : Manage Playlist «extends» Manage Home Audio System

Successful Outcome : The Occupant selects a Playlist to manage.

ID	UC-MP-01
Use Case Goal	Primary actor successfully selects a Playlist
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	The list of Playlists is not empty. The Occupant has created at least one playlist as per UC-AL-04.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to manage a Playlist.
2.	System prompts Primary Actor which Playlist to select.
3.	System selects the specified Playlist and present it to the Primary Actor.
4.	Use case ends successfully.

Use Case : Add Song to Playlist «extends» Manage Playlist

Successful Outcome : The Occupant adds a song to the selected Playlist.

ID	UC-MP-02
Use Case Goal	Primary actor successfully adds a Song to a Playlist.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	The User has successfully execute Manage Playlist. The list of songs in the main Library is not empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to add a song to the selected Playlist.
2.	System prompts Primary Actor the name of the song to add.
3.	System adds the selected song to the Playlist.
4.	Use case ends successfully.

Alternative Flows:

Step	Action
3a.1	The name of the song is empty or only spaces
3a.2	System display error message “Name cannot be empty!”.
3a.3	System returns control to Main Success Scenario Step 2.

Use Case : Delete Song from Playlist «extends» Manage Playlist

Successful Outcome : The Occupant delete a song from the selected Playlist.

ID	UC-MP-03
Use Case Goal	Primary actor successfully deletes a Song from a Playlist
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	The User has successfully execute Manage Playlist. The list of songs in the Playlist is not empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to delete a song from the selected Playlist.
2.	System prompts Primary Actor which song to delete.
3.	System deletes the selected song from the Playlist.
4.	Use case ends successfully.

Alternative Flows:

Step	Action
3a.1	The name of the song is empty or only spaces
3a.2	System display error message "Name cannot be empty!".
3a.3	System returns control to Main Success Scenario Step 2.

Use Case : Change order «extends» Manage Playlist

Successful Outcome : The Occupant changes the order of display of the selected Playlist.

ID	UC-MP-04
Use Case Goal	Primary actor successfully change the order of display of the songs in a Playlist.
Actor(s)	Primary actor: Occupant
Level	Subfunction
Entry condition	The User has successfully execute Manage Playlist. The list of Playlist in the main Library is not empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to change the display order of the selected Playlist.
2.	System prompts Primary Actor to choose the order of display.
3.	System updates the order of the songs in the selected Playlist.
4.	Use case ends successfully.

Use Case : Group by artist «extends» Change order

Successful Outcome : The Occupant changes the order of display of the selected Playlist to group by artist.

ID	UC-MP-05
Use Case Goal	Primary actor successfully change the order of display of the songs in a Playlist.
Actor(s)	Primary actor: Occupant
Level	Subfunction
Entry condition	The User has successfully execute Change Order.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to use the Group by Artist order for the selected Playlist.
2.	System updates the order of the songs in the selected Playlist and changes the form.
3.	Use case ends successfully.

Use Case : Group by album «extends» Change order

Successful Outcome : The Occupant changes the order of display of the selected Playlist to group by album.

ID	UC-MP-06
Use Case Goal	Primary actor successfully change the order of display of the songs in a Playlist.
Actor(s)	Primary actor: Occupant
Level	Subfunction
Entry condition	The User has successfully execute Change Order.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to use the Group by album order for the selected Playlist.
2.	System updates the order of the songs in the selected Playlist and changes the form.
3.	Use case ends successfully.

Use Case : Set Locations in house

Successful Outcome : The Occupant sets up the locations with audio systems.

ID	UC-ST-01
Use Case Goal	Primary actor successfully sets up location with audio system
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	System is properly launched
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to set up locations with audio system in the house.
2.	System prompts Primary Actor which the list of the available locations to set up.
3.	System sets up the list of the locations in the house where music can be played.
4.	Use case ends successfully.

Alternative Flows:

Step	Action
2a.1	The location chosen by the Primary actor has no audio system.
2a.2	User aborts.
2a.3	Use case ends unsuccessfully.

Use Case : Play Music «include» Choose single/multiple locations

Successful Outcome : The Occupant plays music from the HAS.

ID	UC-PLM-01
Use Case Goal	Primary actor successfully plays music
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	1. System is properly launched. 2. The list of locations to stream the music in not empty. 3. The main Library is not empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to play music.
2.	System prompts Primary Actor to choose a location to play the music.
3.	Primary Actor performs Assign to single/multiple locations. {UC- PLM -02}
4.	System selects the locations to play the music and stream the music to these locations with the Media Player.
5.	Use case ends successfully.

Use Case : Choose single/multiple locations «include» Assign Media

Successful Outcome : The Occupant chooses the locations to stream the music.

ID	UC-PLM-02
Use Case Goal	Primary actor successfully chooses a location
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	The list of locations to stream the music is not empty as stated in UC-PLM-01
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	System prompts Primary Actor which location(s) to choose to play the music.
2.	System sends the designated locations to play the music to the controller.
3.	Use case ends successfully.

Alternative Flows:

Step	Action
2a.1	Primary actor enters an invalid location.
2a.2	System display error message “Enter valid locations!”.
2a.3	System returns control to Main Success Scenario Step1.

Use Case : Assign Media

Successful Outcome : The Occupant assigns the music to stream.

ID	UC-PLM-03
Use Case Goal	Primary actor successfully chooses the

	music to stream
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	The Library is not empty as stated in UC-PLM-01
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	System shows the Assign Media form.
2.	Primary actor chooses the media to stream.
3.	System sends the selected choice to the controller.
4.	Controller sends information to the Third-party software responsible of playing the music.
5.	Use case ends successfully.

Use Case : Assign Playlist «extends» Assign Media

Successful Outcome : The Occupant assigns a playlist to the player.

ID	UC-PLM-04
Use Case Goal	Primary actor successfully assign a Playlist to be played
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	1. The User has successfully execute Assign Media (UC-PLM-03) 2. The list of playlists must not be empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to stream a Playlist.
2.	System prompts Primary Actor which playlist to be streamed.
3.	System sends the selected choice to the controller.
4.	System updates the information to be sent to the third-party software that plays the music.
5.	Use case ends successfully.

Alternative Flows:

Step	Action
3a.1	The name of the Playlist is empty or only spaces
3a.2	System display error message "Name cannot be empty!".
3a.3	System returns control to Main Success Scenario Step 2.

Use Case : Assign Album «extends» Assign Media

Successful Outcome : The Occupant assigns an album to the player.

ID	UC-PLM-05
Use Case Goal	Primary actor successfully assign an album to be played
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	1. The User has successfully execute Assign Media (UC-PLM-03) 2. The list of albums must not be empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to stream an Album.
2.	System prompts Primary Actor which album to be streamed.
3.	System sends the selected choice to the controller.
4.	System updates the information to be sent to the third-party software that plays the music.
5.	Use case ends successfully.

Alternative Flows:

Step	Action
3a.1	The name of the Album is empty or only spaces
3a.2	System display error message "Name cannot be empty!".
3a.3	System returns control to Main Success Scenario Step 2.

Use Case : Assign Song «extends» Assign Media

Successful Outcome : The Occupant assigns a song to the player.

ID	UC-PLM-06
Use Case Goal	Primary actor successfully assign a Playlist to be played
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry Condition	1. The User has successfully execute Assign Media (UC-PLM-03) 2. The list of songs must not be empty.
Domain Entities	Occupant

Main Success Scenario:

Step	Action
1.	Primary Actor indicates intention to stream a Song.
2.	System prompts Primary Actor which song to be streamed.
3.	System sends the selected choice to the controller.
4.	System updates the information to be sent to the third-party software that plays the music.
5.	Use case ends successfully.

Alternative Flows:

Step	Action
3a.1	The name of the Song is empty or only spaces
3a.2	System display error message "Name cannot be empty!".
3a.3	System returns control to Main Success Scenario Step 2.

Use Case : Control volume/mute

Successful Outcome : The Occupant sets the volume in the locations with audio systems.

ID	UC-CV-01
Use Case Goal	Primary actor successfully change the change the volume or mute the music in the different locations.
Actor(s)	Primary actor: Occupant
Level	User-Goal
Entry condition	1. System is properly launched. 2. The list of locations is not empty.
Domain Entities	Occupant

Main Success Scenario:

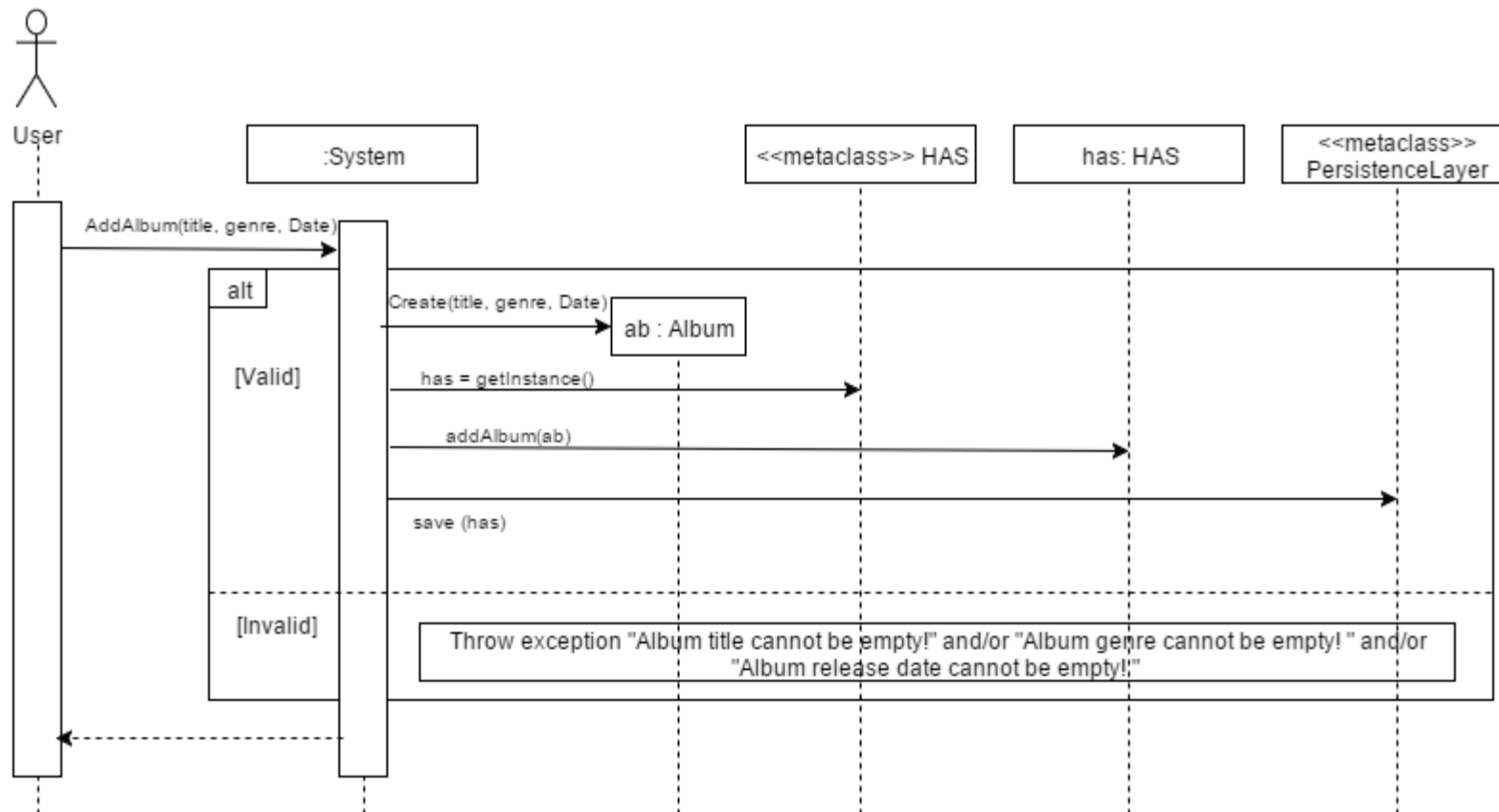
Step	Action
1.	Primary Actor indicates intention to set the volume in the locations with audio system in the house.
2.	System prompts Primary Actor which location to control volume.
3.	System prompts Primary Actor to either increase the volume, decrease the volume or mute it.
3.	System sets up the volume at the designated location(s).
4.	Use case ends successfully.

Alternative Flows:

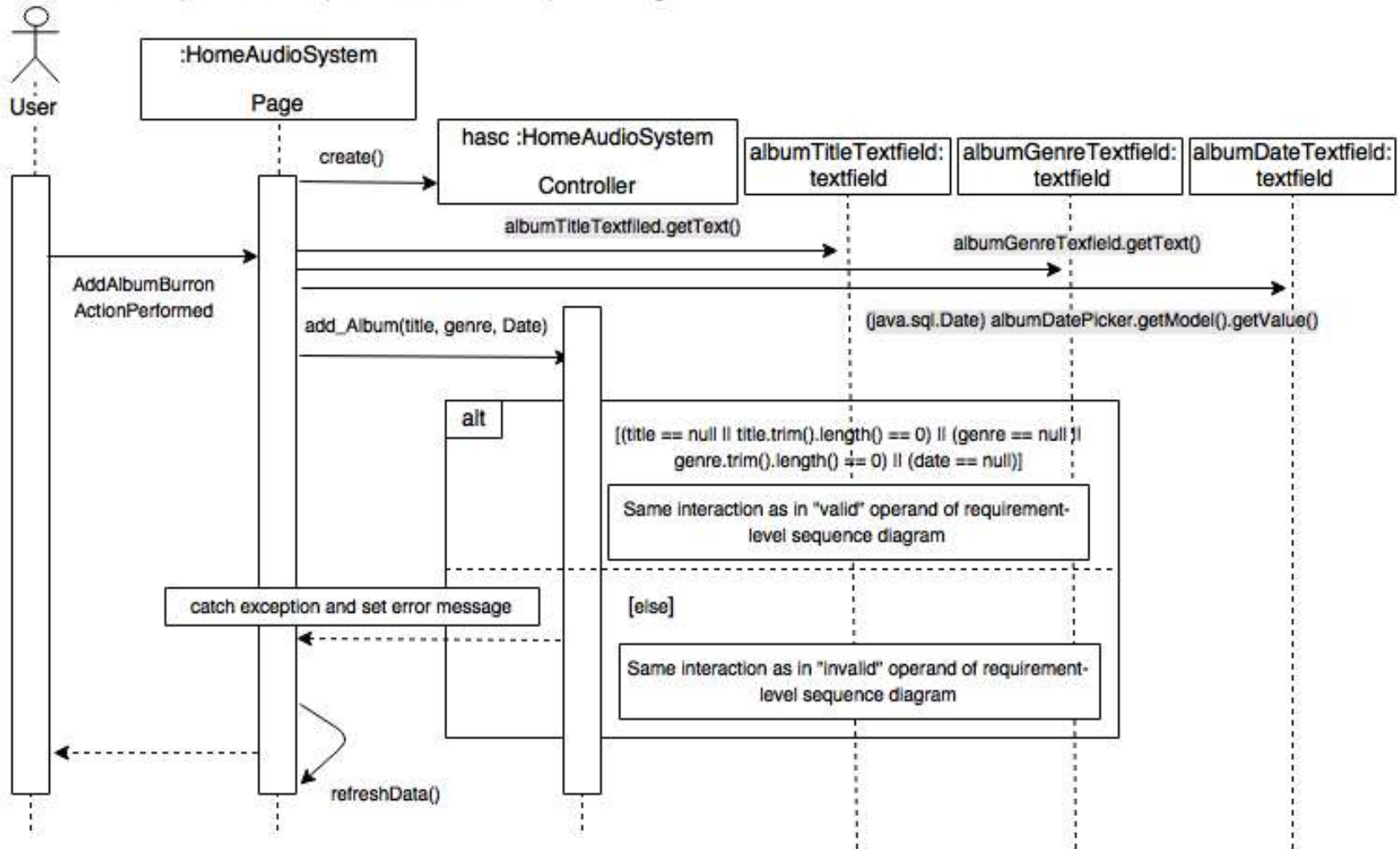
Step	Action
3a.1	Primary actor enters an invalid location.
3a.2	System display error message "Enter valid locations!".
3a.3	System returns control to Main Success Scenario Step 2.

Sequence Diagrams:

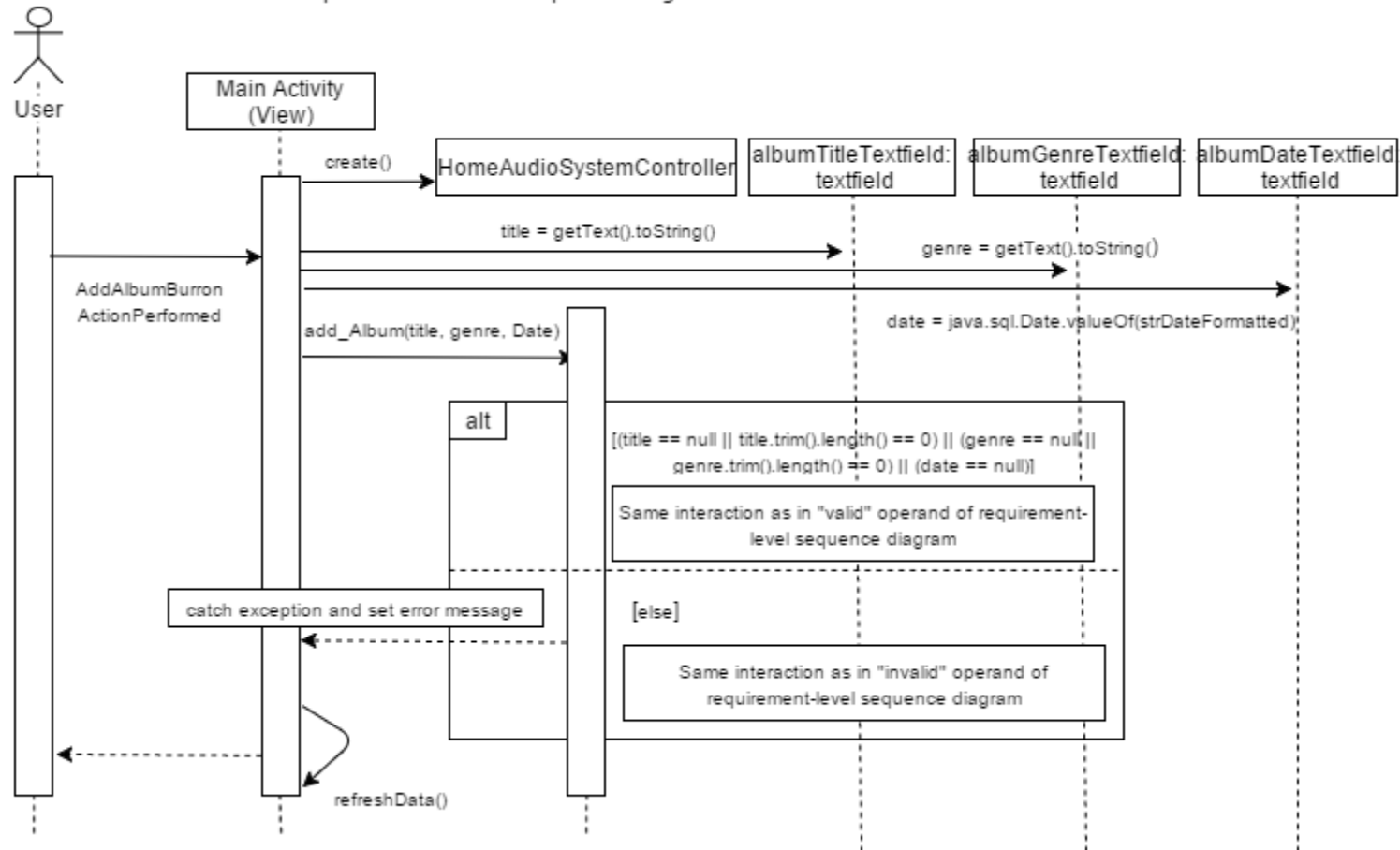
Add Album - Requirements level Sequence Diagram



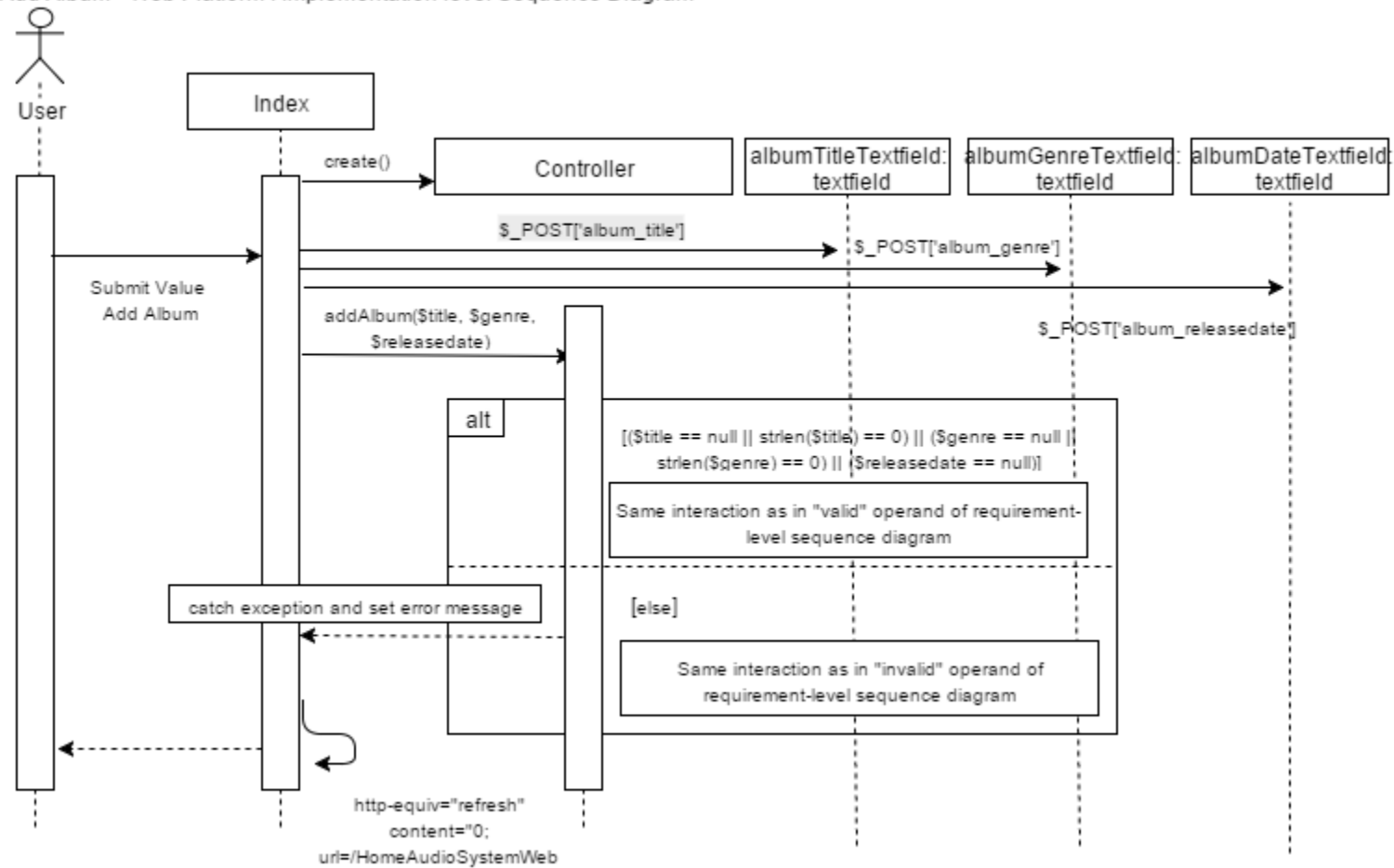
Add Album - Desktop Platform : Implementation level Sequence Diagram



Add Album - Android Platform : Implementation level Sequence Diagram



Add Album - Web Platform : Implementation level Sequence Diagram



Work Plan for Remaining Interactions:

<u>Task</u>	<u>Start Date</u>	<u>Expected Completion Date</u>	<u>isCompleted</u>
Deliverable 1 – Requirements Document and Prototype			
Functional and non-functional system requirements	02/10/2016	02/12/2016	yes
Domain Model	02/13/2016	02/15/2016	yes
Use Cases	02/16/2016	02/20/2016	yes
Requirements-level sequence diagram for “Add Album” use case	02/16/2016	02/20/2016	yes
Source code of prototype implementation of “Add Album” use case on each supported platform	02/16/2016	02/20/2016	yes
Implementation-level sequence diagram for “Add Album” use case for each supported platform	02/16/2016	02/20/2016	yes
Work plan for remaining iterations	02/20/2016	02/21/2016	yes
Make sure everything is in order for submission of deliverable	02/21/2016	02/22/2016	yes
Deliverable 2 – Design Specification			
Description of architecture of proposed solution including block diagram	02/26/2016	02/29/2016	no
Description of detailed design of proposed solution including class diagram	02/26/2016	02/29/2016	no
Implement Requirement "HAS7702"	02/27/2016	03/06/2016	no
Implement Requirement "HAS7703"	02/27/2016	03/06/2016	no
Implement Requirement "HAS7704"	02/27/2016	03/06/2016	no
Implement Requirement "HAS7705"	02/27/2016	03/06/2016	no
Update of work plan	03/05/2016	03/06/2016	no
Make sure everything is in order for submission of deliverable	03/06/2016	03/07/2016	no
Deliverable 3 – Quality Assurance Plan			
Description of unit testing	03/08/2016	03/17/2016	no
Description of component testing	03/08/2016	03/17/2016	no
Description of system testing	03/08/2016	03/17/2016	no
Description of performance/stress testing	03/08/2016	03/17/2016	no
Implement Requirement "HAS7708"	03/10/2016	03/18/2016	no
Implement Requirement "HAS7709"	03/10/2016	03/18/2016	no
Implement Requirement "HAS7710"	03/10/2016	03/18/2016	no

Implement Requirement "HAS7711"	03/10/2016	03/18/2016	no
Update of work plan	03/19/2016	03/20/2016	no
Make sure everything is in order for submission of deliverable	03/20/2016	03/21/2016	no
Deliverable 4 – Release Pipeline Plan			
Description of release pipeline	03/22/2016	03/25/2016	no
Implement Requirement "HAS7712"	03/22/2016	03/25/2016	no
Implement Requirement "HAS7713"	03/22/2016	03/25/2016	no
Implement Requirement "HAS7714"	03/22/2016	03/25/2016	no
Update of work plan	03/26/2016	03/27/2016	no
Make sure everything is in order for submission of deliverable	03/27/2016	03/27/2016	no
Deliverable 5 – Presentation			
Prepare Powerpoint presentation	03/28/2016	04/09/2016	no
Prepare script to say	03/28/2016	04/09/2016	no
Fully test application	03/28/2016	04/13/2016	
Present project	04/14/2016	04/14/2016	no
Deliverable 6 – Final Application			
Source code of full implementation on each supported platform	04/15/2016	04/15/2016	no