Equivalence Partition and Boundary Testing

**User.java**

**refreshRecentlyPlayed()**

Equivalence classes:

1. Api return less then 10 items
2. Api return 10 items
3. Api return more than 10 items
4. Null track object
5. Non null track object
6. Null artist object
7. Non null artist object
8. Null track name
9. Empty track name
10. Not empty track name

* [Invalid][1] testResfreshRecentlyPlayedLessThan10()
  + Boundary Condition: just below 10 (9 items tested)
  + Boundary Condition: just above 0 (length 1 tested)
* [Valid][2, 5, 7, 10] testResfreshRecentlyPlayed()
  + Boundary Condition: = 10
* [Invalid][3] testResfreshRecentlyPlayedMoreThan10()
  + Boundary Condition: just above 10 (11 items tested)
* [Invalid][4] testResfreshRecentlyPlayedNullTrack()
* [Invalid][6] testResfreshRecentlyPlayedNullArtist()
* [Invalid][8] testResfreshRecentlyPlayedNullTrackName()
* [Invalid][9] testResfreshRecentlyPlayedEmptyTrackName()

**refreshCurrentlyPlaying()**

Equivalence classes:

1. Null CurrentlyPlaying object
2. Non Null CurrentlyPlaying object
3. Null track object
4. Non null track object
5. Null artist object
6. Non null artist object
7. Null track name
8. Empty track name
9. Not empty track name

* [Valid][1] testRefreshCurrentlyPlayingNull()
* [Valid][2, 4, 6, 9] testRefreshCurrentlyPlayingNotNull()
  + Boundary Condition: track name length just above 0 (length 1 tested)
* [Invalid][3] testResfreshCurrentlyPlayingNullTrack()
* [Invalid][5] testResfreshCurrentlyPlayingNullArtist
* [Invalid][7] testResfreshCurrentlyPlayingNullTrackName()
* [Invalid][8] testResfreshCurrentlyPlayingEmptyTrackName()
  + Boundary Condition: track name length at 0 (length 0 tested)

**addToQueue()**

Equivalence classes:

1. Uri length > 14
2. Uri length <= 14
3. Uri contains "spotify:track:”
4. Uri does not contain "spotify:track:”

* [Valid][1][3] testAddToQueueValidUri()
  + Boundary Condition: just above 14 (length: 15)
* [Invalid][2] Test: testAddToQueueShortUri()
  + Boundary Condition: at 14
* [Invalid][4] testAddToQueueInvalidUri()

**Share()**

Equivalence class:

1. Non null chatlist
2. Null chatlist
3. Null current track
4. Non null current track
5. Null genre string
6. Non null genre string

* [Valid][1, 4, 6] shareTestOK()
* [Invalid][2] shareTestNullChatlist()
* [Invalid][3] shareTestNullCurrentTrack()
* [Invalid][5] shareTestNullGenreStr()

**refreshSpotifyToken()**

Equivalence classes:

1. Token length > 0
2. Empty token
3. Null Token

* [Valid][1] testRefreshSpotifyTokenValid()
  + Boundary Condition: just above 0 (tested length = 1)
* [Invalid][2] testRefreshSpotifyTokenEmptyToken()
  + Boundary Condition: at 0
* [Invalid][3] testRefreshSpotifyTokenNullToken()

**SqLite.java**

The functions in this file interacts with String and Genre object input.

To set equivalence partition for String input, we tested: 1) null string, 2) empty string and 3) string with length > 0.

Boundary conditions for String input are 1) length == 0, and 2) length > 0

And to test Genre object, we tested: 1) null object, 2) not null object. No boundary condition for genre objects

Method:

**InsertAuthenticatedUser()**

Equivalence class:

1. Not empty username
2. Null Username
3. Empty Username
4. Not empty token
5. Null Token
6. Empty Token
7. Not empty refresh token
8. Null Refresh Token
9. Empty Refresh Token
10. Not empty session id
11. Null Session Id
12. Empty SessionId

Boundary conditions for String input are 1) length == 0, and 2) length > 0

* [Valid][1, 4, 7, 10] testInsertAuthenticatedUserOK()
  + Boundary Condition: length == 1 for all
* [Invalid][2] testInsertAuthenticatedUserNullUsername()
* [Invalid][3] testInsertAuthenticatedUserEmptyUsername()
  + Boundary Condition: length == 0
* [Invalid][5] testInsertAuthenticatedUserNullToken()
* [Invalid][7] testInsertAuthenticatedUserEmptyToken()
  + Boundary Condition: length == 0
* [Invalid][8] testInsertAuthenticatedUserNullRefreshToken()
* [Invalid][9] testInsertAuthenticatedUserEmptyToken()
  + Boundary Condition: length == 0
* [Invalid][11] testInsertAuthenticatedUserNullSessionId()
* [Invalid][12] testInsertAuthenticatedUserEmptySessionId()
  + Boundary Condition: length == 0

**UpdateUserAttribute()**

Equivalence class:

1. Not empty attribute
2. Null Attribute
3. Empty Attribute
4. Not empty value
5. Null Value
6. Empty Value
7. Not empty username
8. Null Username
9. Empty Username

Boundary conditions for String input are 1) length == 0, and 2) length > 0

* [Valid][1, 4, 7] testUpdateUserAttributeOK()
  + Boundary Condition: length == 1 for all
* [Invalid][2] testUpdateUserAttributeNullAttribute()
* [Invalid][3] testUpdateUserAttributeEmptyAttribute()
  + Boundary Condition: length == 0
* [Invalid][5] testUpdateUserAttributeNullValue()
* [Invalid][6] testUpdateUserAttributeEmptyValue()
  + Boundary Condition: length == 0
* [Invalid][8] testUpdateUserAttributeNullUsername()
* [Invalid][9] testUpdateUserAttributeEmptyUsername()
  + Boundary Condition: length == 0

**InsertUserwithGenre()**

Equivalence class:

1. Not empty Username
2. Null Username
3. Empty Username
4. Not empty Genre
5. Null Genre
6. Empty Genre

Boundary conditions for String input are 1) length == 0, and 2) length > 0

* [Valid][1, 4] testInsertUserwithGenreOK()
  + Boundary Condition: length == 1 for for Username and Genre
* [Invalid][2] testInsertUserwithGenreNullUsername()
* [Invalid][3] testInsertUserwithGenreEmptyUsername()
  + Boundary Condition: length == 0
* [Invalid][5] testInsertUserwithGenreNullGenre()
* [Invalid][6] testInsertUserwithGenreEmptyGenre()
  + Boundary Condition: length == 0

**AuthenticateUser()**

Equivalence class:

1. Not null and not empty code
2. Null code
3. Empty code
4. Not empty session id
5. Null session id
6. Empty session id

Boundary conditions for String input are 1) length == 0, and 2) length > 0

* [Valid][1, 4] testAuthenticateUserOld()
  + Boundary Condition: length == 1 for code and session id
* [Valid][1, 4] testAuthenticateUserNew()
  + Boundary Condition: length == 1 for code and session if
* [Invalid][2] testAuthenticateUserNullCode()
* [Invalid][3] testAuthenticateUserEmptyCode()
  + Boundary Condition: code length == 0
* [Invalid][5] testAuthenticateUserNullSessionId()
* [Invalid][6] testAuthenticateUserEmptySessionId()
  + Boundary Condition: session id length == 0

**GetUserCount()**

Equivalence class:

1. Not empty for username
2. Null username
3. Empty username

Boundary conditions for String input are 1) length == 0, and 2) length > 0

* [Valid][1] testGetUserCountOK()
  + Boundary Condition: username length == 1
* [Invalid][2] testGetUserCountNullUsername()
* [Invalid][3] testGetUserCountEmptyUsername()
  + Boundary Condition: username length == 0

**GetGenreUser()**

Equivalence class:

1. Not empty username
2. Null username
3. Empty username

Boundary conditions for String input are 1) length == 0, and 2) length > 0

* [Valid][1] testGetGenreUserOK()
  + Boundary Condition: username length == 1
* [Invalid][2] testGetGenreUserNullUsername()
* [Invalid][3] testGetGenreUserEmptyUsername()
  + Boundary Condition: username length == 0

**GetUserBySessionId**

Equivalence class:

1. Not empty for session id
2. Null session id
3. Empty session id

Boundary conditions for String input are 1) length == 0, and 2) length > 0

* [Valid][1] testGetUserBySessionIdOK()
  + Boundary Condition: username length == 1
* [Invalid][2] testGetUserBySessionIdNullSessionId()
* [Invalid][3] testGetUserBySessionIdEmptySessionId()
  + Boundary Condition: username length == 0

**InsertChatRoom**

Equivalence class:

1. Non null Genre
2. Null Genre
3. Not empty link
4. Null Link
5. Empty Link
6. Not empty playlist
7. Null Playlist
8. Empty Playlist

Boundary conditions:

String input are 1) length == 0, and 2) length > 0

* [Valid][1, 3, 6] testInsertChatRoomOK()
  + Boundary Condition: length == 1 for all
* [Invalid][2] testInsertChatRoomNullGenre()
* [Invalid][4] testInsertChatRoomNullLink()
* [Invalid][5] testInsertChatRoomEmptyLink()
  + Boundary Condition: link length == 0
* [Invalid][7] testInsertChatRoomNullPlaylist()
* [Invalid][8] testInsertChatRoomEmptyPlaylist()
  + Boundary Condition: playlist length == 0

**InsertParticipant()**

Equivalence class:

1. Not null genre
2. Null Genre
3. Not empty username
4. Null Username
5. Empty Username
6. Not empty token
7. Null Token
8. Empty Token
9. Not empty refresh token
10. Null Refresh Token
11. Empty Refresh Token
12. Not empty session id
13. Null Session Id
14. Empty SessionId

Boundary conditions:

String input are 1) length == 0, and 2) length > 0

* [Valid][1, 3, 6, 9, 12] testInsertParticipantOK()
  + Boundary Condition: length == 1 for all string
* [Invalid][2] testInsertParticipantNullGenre()
* [Invalid][4] testInsertParticipantNullUsername()
* [Invalid][5] testInsertParticipantEmptyUsername()
  + Boundary Condition: username length == 0
* [Invalid][7] testInsertParticipantNullToken()
* [Invalid][8] testInsertParticipantEmptyToken()
  + Boundary Condition: token length == 0
* [Invalid][10] testInsertParticipantNullRefreshToken()
* [Invalid][11] testInsertParticipantEmptyRefreshToken()
  + Boundary Condition: refresh token length == 0
* [Invalid][13] testInsertParticipantNullSessionId()
* [Invalid][14] testInsertParticipantEmptySessionId()
  + Boundary Condition: session id length == 0

**RemoveParticipant()**

Equivalence class:

1. Not null genre
2. Null Genre
3. Not empty username
4. Null Username
5. Empty Username

Boundary conditions:

String input are 1) length == 0, and 2) length > 0

* [Valid][1, 3] testRemoveParticipantOK()
  + Boundary Condition: length == 1 for username
* [Invalid][2] testRemoveParticipantNullGenre()
* [Invalid][4] testRemoveParticipantNullUsername()
* [Invalid][5] testRemoveParticipantEmptyUsername()
  + Boundary Condition: username length == 0

**RemoveUserGenre()**

Equivalence class:

1. Not empty for username
2. Null Username
3. Empty Username

Boundary conditions:

String input are 1) length == 0, and 2) length > 0

* [Valid][1] testRemoveUserGenreOK()
  + Boundary Condition: username length == 1
* [Invalid][2] testRemoveUserGenreNullUsername()
* [Invalid][3] testRemoveUserGenreEmptyUsername()
  + Boundary Condition: username length == 0

**GetChatRoomParticipant()**

Equivalence class:

1. Not null for Genre object
2. Null Genre

* [Valid][1] testGetChatRoomParticipantOK()
* [Invalid][2] testGetChatRoomParticipantNullGenre()

**InsertSong()**

Equivalence class:

1. Not empty username
2. Null Username
3. Empty Username
4. Non null time shared
5. Null Time Shared
6. Non null genre
7. Null Genre
8. Not empty song
9. Null song
10. Empty song

Boundary conditions:

String input are 1) length == 0, and 2) length > 0

* [Valid][1, 4, 6, 8] testInsertSongOK()
  + Boundary Condition: username and song length == 1
* [Invalid][2] testInsertSongNullUsername()
* [Invalid][3] testInsertSongEmptyUsername()
  + Boundary Condition: username length == 0
* [Invalid][5] testInsertSongNullTimeShared()
* [Invalid][7] testInsertSongNullGenre()
* [Invalid][9] testInsertSongNullSong()
* [Invalid][10] testInsertSongEmptySong()
  + Boundary Condition: song length == 0

**GetChatRoomPlaylist()**

Equivalence class:

1. Not null Genre object
2. Null Genre

* [Valid][1] testGetChatRoomPlaylistOK()
* [Invalid][2] testGetChatRoomPlaylistNullGenre()

**InsertSession()**

Equivalence class:

1. Not empty time
2. Null time
3. Empty time
4. Not empty session id
5. Null session id
6. Empty session id

Boundary conditions:

String input are 1) length == 0, and 2) length > 0

* [Valid][1, 4] testInsertSessionOK()
  + Boundary Condition: time and session id length == 1
* [Invalid][2] testInsertSessionNullTime()
* [Invalid][3] testInsertSessionEmptyTime()
  + Boundary Condition: time length == 0
* [Invalid][5] testInsertSessionNullSessionId()
* [Invalid][6] testInsertSessionEmptySessionId()
  + Boundary Condition: session id length == 0

**UserJoin()**

Equivalence classes:

1. Non null genre
2. Null genre
3. Not empty username
4. Null username
5. Empty username
6. Not null chatlist
7. Null chatlist

Boundary conditions:

String input are 1) length == 0, and 2) length > 0

* [Valid][1, 3, 6] testUserJoinOldOK()
  + Boundary Condition: username length == 1
* [Invalid][2] testUserJoinNullGenre()
* [Invalid][4] testUserJoinNullUsername()
* [Invalid][5] testUserJoinEmptyUsername()
  + Boundary Condition: username length == 0
* [Invalid][7] testUserJoinNullChatlist()

**UserSend()**

Equivalence classes:

1. Not empty username
2. Null username
3. Empty username
4. Not empty text
5. Null text
6. Empty text
7. Not null chatlist
8. Null chatlist

Boundary conditions:

String input are 1) length == 0, and 2) length > 0

* [Valid][1, 4, 7] testUserSendOK()
  + Boundary Condition: username and text length == 1
* [Invalid][2] testUserSendNullUsername()
* [Invalid][3] testUserSendEmptyUsername()
  + Boundary Condition: username length == 0
* [Invalid][5] testUserSendNullText()
* [Invalid][6] testUserSendEmptyText()
  + Boundary Condition: text length == 0
* [Invalid][8] testUserSendNullChatlist()

[skip] GetLatestSession()

* Helper method for testing purpose

[skip] Update()

* Method that call getAllChatRooms()

[skip] Connect()

* Minor method Setup database connection

**ChatRoom.java**

**AddParticipant()**

Equivalence class:

1. not null User object
2. Null User object
3. Not empty username
4. User with null username
5. User with empty username

Boundary condition: username length == 0 and username length > 0

* [Valid][1, 3] addParticipantTestOK()
  + Boundary Condition: username length == 1
* [Invalid][2] addParticipantTestNullUser()
* [Invalid][4] addParticipantTestNullUsername()
* [Invalid][5] addParticipantTestEmptyUsername()
  + Boundary Condition: username length == 0

**AddMessage()**

Equivalence classes:

1. not null Message object
2. Null Message object
3. Message with not empty content
4. Message with null content
5. Message with empty content

Boundary condition: message content length == 0 and message content length > 0

* [Valid][1, 3] addMessageTestOK()
  + Boundary Condition: message content length == 1
* [Invalid][2] addMessageTestNullMessage()
* [Invalid][4] addMessageTestNullMessageContent()
* [Invalid][5] addMessageTestEmptyMessageContent()
  + Boundary Condition: message content length == 0

**AddSong()**

Equivalence class:

1. not null Song object
2. Null song object
3. Song with not empty song name
4. Song with null song name
5. Song with empty song name

Boundary condition: song name length == 0 and song name length > 0

* [Valid][1, 3] addSongTestOK()
  + Boundary Condition: song name length == 1
* [Invalid][2] addSongTestNullSong()
* [Invalid][4] addSongTestNullSongName()
* [Invalid][5] addSongTestEmptySongName()
  + Boundary Condition: song name length == 0

**Genre.java**

**IsValidGenre()**

Equivalence classes:

1. not empty genre string
2. null genre string
3. empty genre string

Boundary condition: genre string length < 3 and genre string length >= 3

* [Valid][1] isValidGenreTrueTest()
  + Boundary condition: Test at length == 3
* [Invalid][2] isValidGenreFalseTest()
  + Boundary condition: Test at length == 2
* [Invalid][3] isValidGenreNullTest()

**SpotifyAPI.java**

[skip] RecentlyPlayed()

* Helper method that simply calls API

[skip] CurrentlyPlaying()

* Helper method that simply calls API

[skip] AddSong()

* Helper method that simply calls API

**GetSpotifyTokenFromCode()**

Equivalence classes:

1. Non null code
2. null code
3. empty code

Boundary Condition: code length == 0, code length > 0

* [Valid][1] getSpotifyTokenFromCodeTestOK()
  + Boundary Condition: code length at 1
* [Invalid][2] getSpotifyTokenFromCodeNullCode()
* [Invalid][3] getSpotifyTokenFromCodeEmptyCode()
  + Boundary Condition: code length == 0

**RefreshSpotifyToken()**

Equivalence classes:

1. Non null token
2. null token
3. empty token

Boundary Condition: token length == 0, token length > 0

* [Valid][1] refreshSpotifyTokenTestOK ()
  + Boundary Condition: token length > 0
* [Invalid][2] refreshSpotifyTokenTestNullToken()
* [Invalid][3] refreshSpotifyTokenTestEmptyToken()
  + Boundary Condition: token length == 0

**GetEmailFromSpotifyToken()**

Equivalence classes:

1. Non null token
2. null token
3. Empty token

Boundary Condition: token length == 0, token length > 0

* [Valid][1] getEmailFromSpotifyTokenTestOK ()
  + Boundary Condition: token length > 0
* [Invalid][2] getEmailFromSpotifyTokenTestNullToken()
* [Invalid][3] getEmailFromSpotifyTokenTestEmptyToken()
  + Boundary Condition: token length == 0

[skip] BuildFormDataFromMap

* Private helper method

**ChatList.java**

[skip] Size()

* Minor method that returns size of array

[skip] GetChatroomByGenreTest()

* Minor method that get values from map

**GetTotalParticipants()**

Equivalence classes:

1. Not null chatroom list
2. null chatroom list

* [Valid][1] getTotalParticipantsTest()
* [Invalid][2] getTotalParticipantsTestNullChatroomList()

**RefreshChatList()**

Equivalence classes:

1. not null chatroom list
2. chatlist with null chatroom list
3. not null chatrooms
4. chatlist with null chatrooms

* [Valid][1, 3] refreshChatListTestWithToken()
* [Valid][1, 3] refreshChatListTestWithoutToken()
* [Invalid][2] refreshChatListTestNullChatroomList()
* [Invalid][4] refreshChatListTestNullChatroom()

**StartChat.java**

[skip] InitializeChatList()

* Minor methods that calls other db methods to initialize chatlist

[skip] RefreshSongDataRepeatly()

* Private methods that calls refreshChatList() in ChatList.java

[skip] userJoin()

* Private method from refactoring main function

[skip] userSend()

* Private method from refactoring main function