# Part1

*1.1 As a user, I want to search a book in the website so that I can find the information of the book, like the category of the book, the URL to look at it online and the rate from other users.*

My condition of satisfaction is that I give the right book name and click the search button. And there is book related to the name in the API or our database.

*1.2 As a user, I want to create a channel in the website so that I can have a personal place to invite people who also read the book to discuss about the book.*

My condition of satisfaction is that I click the ‘Create a Channel’ button and give the name of the channel.

*1.3 As a host of channel, I can manage the group information and accept joining request to the channel I own so that I can discuss about the book with my friends.*

My condition of satisfaction is that I click the agree button to give others the permission to join in the discussion channel.

*1.4 As a normal user, I can send the joining request to the host of the channel so that the host of channel can know that I want to join his or her channel.*

My condition of satisfaction is that I have already chosen the channel which I want to join in. Then I input some request text and click the ‘send request’ button.

*1.5 As a user, I can rate for the book which I have already searched if I have signed in the web so that I can express my opinion for the book.*

My condition of satisfaction is that I have searched book and signed in web. And then I click the ‘want to rate’ button and input all the rate information, like rate for plot.

*1.6 As a user, I want to get the recommendation about the books which I am maybe interested based on my favorite books in so that I can read new interesting books.*

My condition of satisfaction is that I have logged in the website and have already choose the category I am interested in. Or I have searched some books in the website with an account.

*1.7 As a user, I want to rerate the books which I have rated if I have logged in so that I revise the rating for the books.*

My condition of satisfaction is that I have rated the book and have logged in the web. I click the ‘rerate’ button and input all the rate information, like rate for plot.

*1.8 As a normal user or host of the same channel, I can chat with others who are in the same channel which I have joined in so that group members can chat privately.*

My condition of satisfaction is that I have already joined in the channel. Then I enter the group chatting channel, write what I want to say and click “send”.

# Part2

2.1 *In the ‘Item’ Class, ‘toJsonObject’ method is used to transfer the item object to the Json object.*

Valid equivalence class is normal item object which have all the information required.

Invalid equivalence class is empty item object.

2.2 *In the ‘OpenLibrary’ Class, ‘Search’ method is used to get book information from OpenLibrary API.*

Valid equivalence class is that the input title name is a book name.

Invalid equivalence class is that the input title name is empty String.

2.3 *In the ‘OpenLibrary’ Class, ‘getCategories’ method is used to get the Categories from the Json Object.*

Valid equivalence class is that the input is a normal Json Object which contains categories.

Invalid equivalence class is that the input is a Json Object which don’t have ‘categories’ or have empty ‘categories’.

2.4 *In the ‘OpenLibrary’ Class, ‘getDescribe’ method is used to get the Description from the Json Object.*

Valid equivalence class is that the input is a normal Json Object which contains valid key to get description.

Invalid equivalence class is that the input is a Json Object which don’t have key or have the invalid key which means the book don’t have any description.

2.5 *In the ‘OpenLibrary’ Class, ‘getItemList’ method is used to get all the information of item from the Json Array.*

Valid equivalence class is that the input is a normal Json Array which contains all the information about the book. For boundary conditions, the Array could have 1 or 2 Json Object, because we only take the first Json object.

Invalid equivalence class is that the input is an empty Json Array.

2.6 *In the ‘OpenLibrary’ Class, ‘getAuthor’ method is used to get the Authors from the Json Object.*

Valid equivalence class is that the input is a normal Json Object which contains authors. Since we only take the first author. As for boundary conditions, the author array will contain 1 or 2 authors.

Invalid equivalence class is that the input is a Json Object which don’t have ‘author or have empty ‘author’.

2.7 *In the ‘OpenLibrary’ Class, ‘saveItem’ method is used to save all the information into the database.*

Valid equivalence class is that the input is a normal Item Object which contains all the information of the book.

Invalid equivalence class is that the input is an empty Item Object.

2.8 *In the ‘MysqlTableCreation’ Class, ‘createTables’ method is used to create database tables before the server start.*

Valid equivalence class is that the input is a sql to add data to the tables exists.

Invalid equivalence class is that the input is a sql to add data to non-exists tables.

2.8 *The ‘MysqlRealData’ Class is to add some real data searched*

Valid equivalence class is that the input is a normal Item Object which contains all the information of the book.

Invalid equivalence class is that the input is an empty Item Object.

2.10 *In the ‘GoogleApiLogin’ Class, ‘login’ method cannot be tested independently without frontend. More details of reasons are discussed in part3.*

2.11 *In the ‘BookRecommend’ Class, ‘recommendItems’ method is used to get recommendations to a specific user.*

Valid equivalence class is that the input is a user who has registered in our application.

Invalid equivalence class is that the input is a user who has not registered, so not in our database.

2.12 *In the ‘MysqlConnection’ Class, ‘setFavoriteItems’ method.*

Valid equivalence class is that the inputs, userId and itemId, are in our database.

Invalid equivalence class is that userId or itemId is not in our database.

2.13 *In the ‘MysqlConnection’ Class, ‘unsetFavoriteItems’ method.*

Valid equivalence class is that the inputs, userId and itemId, are in our database.

Invalid equivalence class is that userId or itemId is not in our database.

2.14 *In the ‘MysqlConnection’ Class, ‘getFavoriteItemIds’ method.*

Valid equivalence class is that the input, userId, is in our database.

Invalid equivalence class is that userId is not in our database.

2.15 *In the ‘MysqlConnection’ Class, ‘getFavoriteItems’ method.*

Valid equivalence class is that the input, userId, is in our database.

Invalid equivalence class is that userId is not in our database.

2.16 *In the ‘MysqlConnection’ Class, ‘getCategories’ method.*

Valid equivalence class is that the input, itemId, is in our database.

Invalid equivalence class is that itemId is not in our database.

2.17 *In the ‘MysqlConnection’ Class, ‘getFavoriteItemIds’ method.*

Valid equivalence class is that the input, userId, is in our database.

Invalid equivalence class is that userId is not in our database.

2.18 *In the ‘MysqlConnection’ Class, ‘searchItems’ method.*

Valid equivalence class is that the input, keyword, is a book name.

Invalid equivalence class is that the keyword is an empty string.

2.19 *In the ‘MysqlConnection’ Class, ‘saveItem’ method.*

Valid equivalence class is that the input is an ‘item’ class object.

Invalid equivalence class is that the input is empty.

2.20 *In the ‘MysqlConnection’ Class, ‘getItemsOncat’ method.*

Valid equivalence class is that the input is a kind if category that belongs to a book.

Invalid equivalence class is that the input is empty.

2.21 *In the ‘MysqlConnection’ Class, ‘getItemsOnIds’ method.*

Valid equivalence class is that the input is a set of item ids.

Invalid equivalence class is that the input is an empty set.

2.22 *In the ‘MysqlConnection’ Class, ‘createGroup’ method.*

Valid equivalence class is that the inputs, hostId and groupName are in not null.

Invalid equivalence class is that hostId or groupName is null.

2.23 *In the ‘MysqlConnection’ Class, ‘joinGroup’ method.*

Valid equivalence class is that the input, group name, exits.

Invalid equivalence class is that the group does not exit.

2.24 *In the ‘MysqlConnection’ Class, ‘getGroupsByHost’ method.*

Valid equivalence class is that the input, userId is a valid userId.

Invalid equivalence class is that the userId is invalid.

2.25 *In the ‘MysqlConnection’ Class, ‘getGroupsByMember’ method.*

Valid equivalence class is that the input, userId is a valid userId.

Invalid equivalence class is that the userId is invalid.

2.26 *In the ‘MysqlConnection’ Class, ‘getJoinMessage’ method.*

Valid equivalence class is that the input, userId is valid.

Invalid equivalence class is that the userId is invalid.

2.27 *In the ‘MysqlConnection’ Class, ‘ratingBook’ method.*

Valid equivalence class is that the input, itemId is valid.

Invalid equivalence class is that the itemId is invalid.

2.28 *In the ‘MysqlConnection’ Class, ‘GetRatingAndComments’ method.*

Valid equivalence class is that the input, itemId is valid.

Invalid equivalence class is that the itemId is invalid.

2.29 *In the ‘MysqlConnection’ Class, ‘handleJoinRequest’ method.*

Valid equivalence class is that the input, groupName, is valid.

Invalid equivalence class is that the groupName is invalid.

2.30 *In the ‘MysqlConnection’ Class, ‘rejectJoinRequest’ method.*

Valid equivalence class is that the input, groupName, is valid.

Invalid equivalence class is that the groupName is invalid.

2.31 *In the ‘MysqlConnection’ Class, ‘ifRating’ method.*

Valid equivalence class is that the input, bookName, is valid.

Invalid equivalence class is that the bookName is invalid.

# Part3

3.1 examlpe1

*We used Google login API in this project. On backend, I need a one-time code generated by google, which includes profile of the user. So when I was testing backend independently, it was hard to mock a one-time code by myself. Thus, I left both the unit test and integration test related to login method and endpoint.*

3.1 examlpe2

*JDBC was used in this project. I used a bunch of catch-exceptions in my code, which is hard to generate. Besides, getters and setters were not tested as well.*