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Iteration1:
Flashcardenator 3000

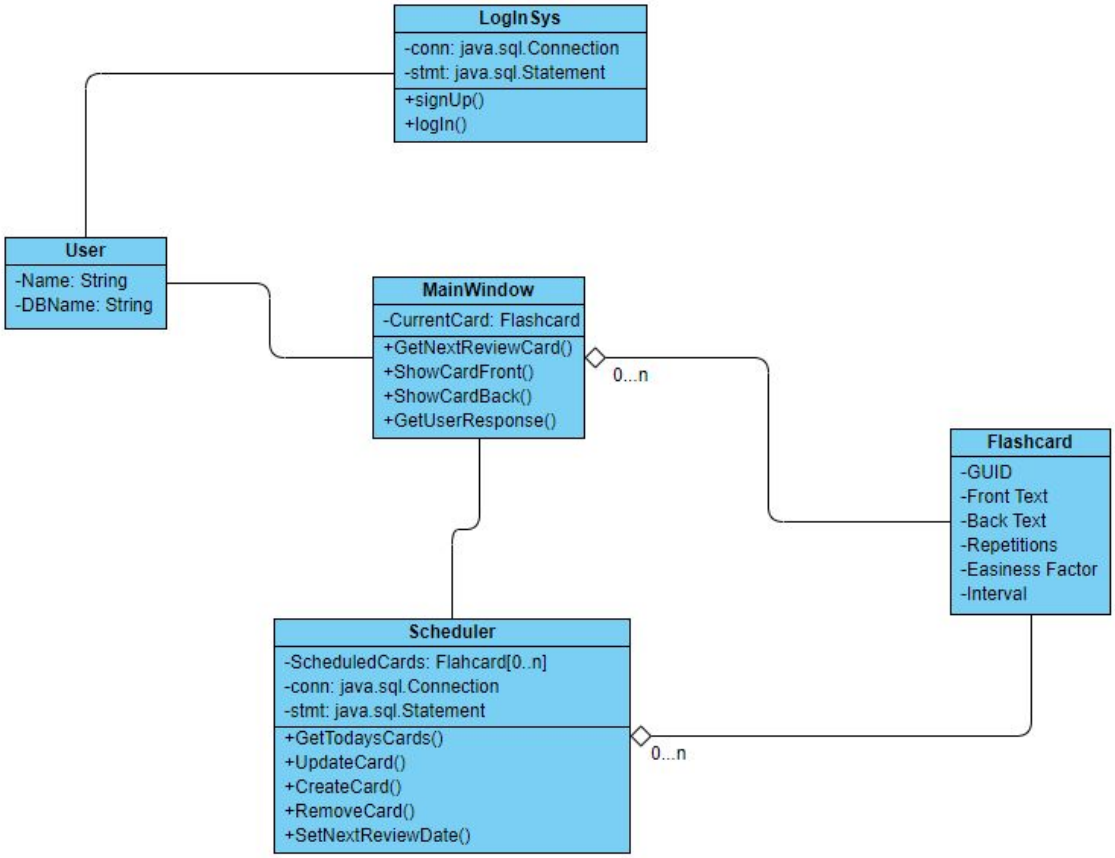
Functional Requirements

- FREQ-1: The system shall allow the user to login to an existing account
- FREQ-2: The system shall allow the user to register a new account
- FREQ-3: The system shall allow the user to logout of an account
- FREQ-4: The system shall associate and save a database of flashcards, as well as all pertinent scheduling information with a user account
- FREQ-5: Upon login, the system shall present the user with a set of flashcards from their database to review, per the SM2 algorithm
- FREQ-6: The system shall allow users to create flashcards
- FREQ-7: The system shall allow users to edit existing flashcards
- FREQ-8: The system shall allow users to delete existing flashcards
- FREQ-9: The system shall allow users to select a qualitative score of 0-4 in response to a flashcard review, which is used in the SM2 algorithm
- FREQ-10: The system shall allow users to view a list of cards in the database
- FREQ-11: The system shall track user performance on flashcard reviews, and present the user with statistics on their progress

Non-functional Requirements

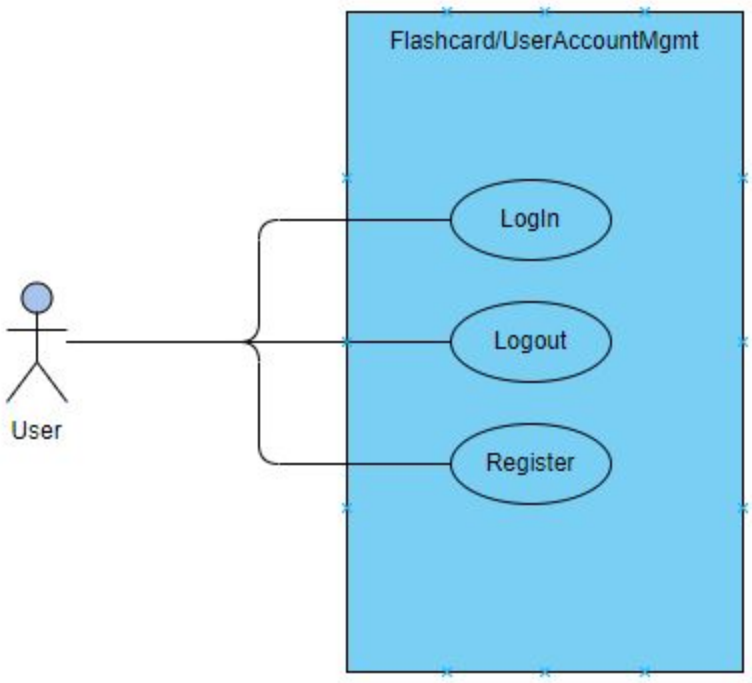
- NREQ-1: The system shall use the SM2 algorithm for spaced repetition scheduling
- NREQ-2: The system shall support international character sets in flashcards
- NREQ-3: The login system shall prevent SQL Injection.

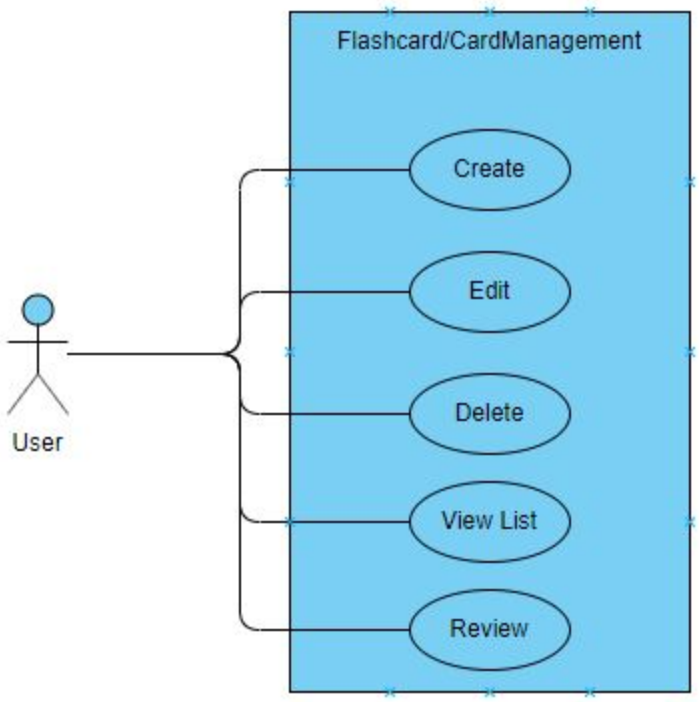
System Class Diagram



Use Case Diagrams

Since many of the use case broadly fall into the same grouping, we have logically broken our diagrams into two separate view. The first is related to account management, and the second is related to editing or reviewing flashcards.




Flashcard/CardManagement
Create
Edit
Delete
View List
Review
User

Use Cases and User Stories

Below are 5 detailed use cases from the preceding diagrams, as well as an associated user story for each. The use cases are:

1. Login to the system
2. Create a flashcard
3. Review a set of flashcards
4. Edit an existing flashcard
5. Delete an existing flashcard

Use Case #1

User Story: As a user, I can login to the system so that I can access my saved set of flashcards.

ID	UC-1
Name	Login to the system
Actors	User
Description	User will be prompted to login to their account before they can use the system
Preconditions	1. The user has already registered an account 2. The user is not currently logged in to any account
Postconditions	1. The user is logged in to the system 2. The user has access to their database of cards
TUCBW	The user requests to login to the system
Normal Flow	The user enters their username and password in the appropriate fields.
TUCEW	The user presses “login” button and is presented with homepage
Successful outcome	The user gains access to their database of flashcards
Unsuccessful outcome	The user is unable to access their database of flashcards

Exceptions	Incorrect username, incorrect password

Use Case #2

User Story: As a user, I can create a new flashcard so that I can review it at a later date.

ID	UC-2
Name	Create flashcard
Actors	User
Description	User will be presented with an interface to enter text into “front” and “back” fields, which will be used to generate a new card in the database
Preconditions	1. The user has already logged in to their account
Postconditions	2. The card is saved in the user’s database
TUCBW	The user requests to create a new card
Normal Flow	The user enters text in the “front” edit box The user enters text in the “back” edit box
TUCEW	The user selects “create” and is presented with a notification that the card has been added to the database
Alternate Flow	The user selects “cancel”. Card information is destroyed and nothing is added to the database
Successful outcome	The card is added to the database
Unsuccessful outcome	The card is not added to the database
Exceptions	Empty text in one or more of the fields

Use Case #3

User Story: As a user, I can review a set of flashcards so that I can better remember the information contained in them.

ID	UC-3
Name	Review a set of flashcards
Actors	User
Description	The user will be presented with a set of flashcards to review, as determined by the SM2 algorithm. The user will be shown the front of a card, press a button to see the back of the card, and select a response to indicate card difficulty/ease.
Preconditions	1. The user has logged in to their account 2. The user has flashcards ready to review in their database
Postconditions	1. The flashcards' next review dates are updated based on user ease/difficulty response
TUCBW	The user requests to review their flashcards
Normal Flow	1. The system randomly selects a card from the set to be reviewed 2. The system presents the user with the front side of a flash card 3. The user selects "show backside" 4. The system presents the user with the back of the flashcard 5. The user selects a difficulty/ease response button 6. The system updates the card scheduling information in the database and removes it from the review set 7. The system repeats these steps until there are no more cards to review
TUCEW	The user selects a response for the final flashcard in their review sequence
Alternate Flow	The user selects cancel in the middle of a review. The system halts the review session but allows the user to continue later if they choose.

Successful outcome	The user reviews all scheduled flashcards
Unsuccessful outcome	The user is unable to review a scheduled flashcard
Exceptions	The user closes the program in the middle of a review, card data is corrupted, database is inaccessible

Use Case #4

User Story: As a user, I can edit the text of an existing flashcard so that I can clarify or change the information contained within.

ID	UC-4
Name	Edit an existing flashcard
Actors	User
Description	The user will be able to edit the “front” or “back” field of an existing flashcard in their database.
Preconditions	1. The user has logged in to their account 2. The user has an existing flashcard in their database
Postconditions	1. The flashcard information is updated in the database
TUCBW	The user selects edit when viewing an existing flashcard
Normal Flow	1. The user enters/changes text in the “front” or “back” fields of the card
TUCEW	The user selects “Done” and is presented with a notification that their changes were successfully added to their database.
Alternate Flow	The user selects cancel in the middle of editing. The changes are discarded and the flashcard is not updated in the database.
Successful outcome	The user is able to update card information in the database

Unsuccessful outcome	The user is unable to update their card's information
Exceptions	The user leaves one or more fields blank, database is inaccessible

Use Case #5

User Story: As a user, I can delete a flashcard from the database so that I will no longer see it in reviews.

ID	UC-5
Name	Delete an existing flashcard
Actors	User
Description	The user will be able to permanently delete a flashcard from their database.
Preconditions	1. The user has logged in to their account 2. The user has selected an existing flashcard in their database
Postconditions	1. The flashcard is removed from the database
TUCBW	The user selects delete when viewing an existing flashcard
Normal Flow	1. The system presents the user with a confirmation dialogue asking them to confirm they want to permanently remove card 2. The user selects "Confirm" 3. The system deletes the card from the database
TUCEW	The system notifies the user that the card has been removed.
Alternate Flow	The user selects cancel when asked to confirm card deletion. The system does not remove the card from the database.
Successful outcome	The user is able to remove the card from the

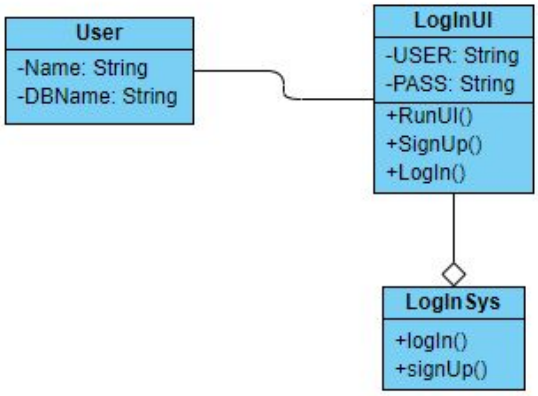
	database
Unsuccessful outcome	The user is unable to remove the card from the database
Exceptions	The database is inaccessible

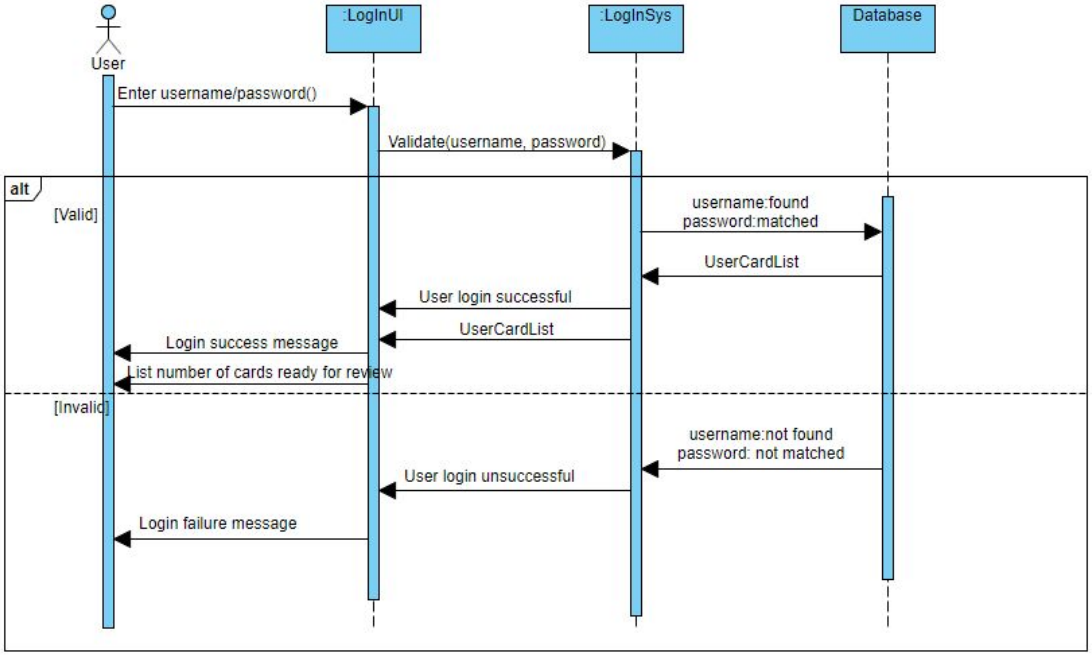
Requirements Traceability

	UC-1	UC-2	UC-3	UC-4	UC-5
FREQ-1	X				
FREQ-2					
FREQ-3					
FREQ-4	X				
FREQ-5			X		
FREQ-6		X			
FREQ-7				X	
FREQ-8					X
FREQ-9					
FREQ-10					
FREQ-11					
NREQ-1					
NREQ-2					
NREQ-3					

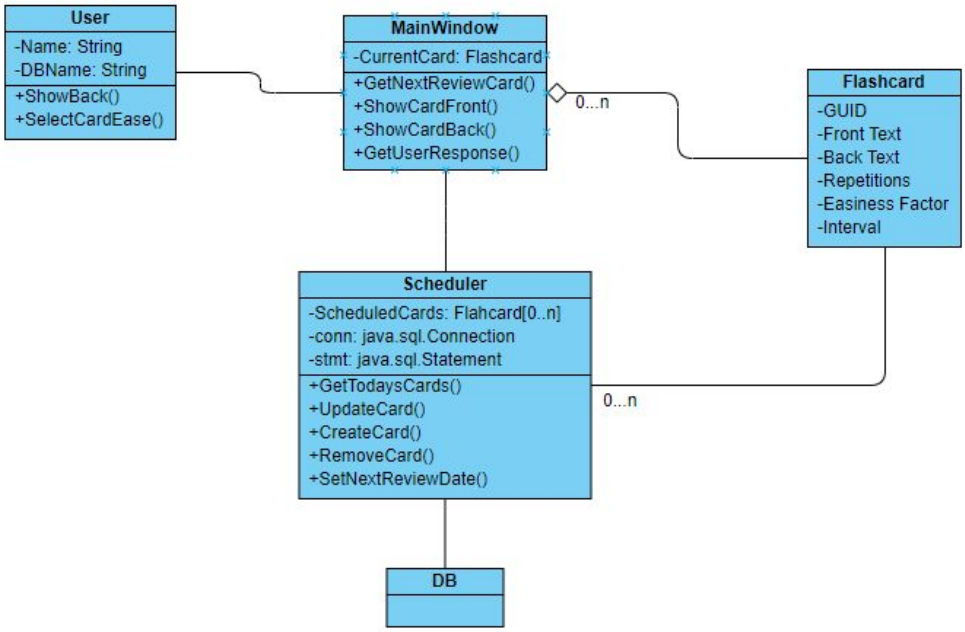
Sequence Diagrams

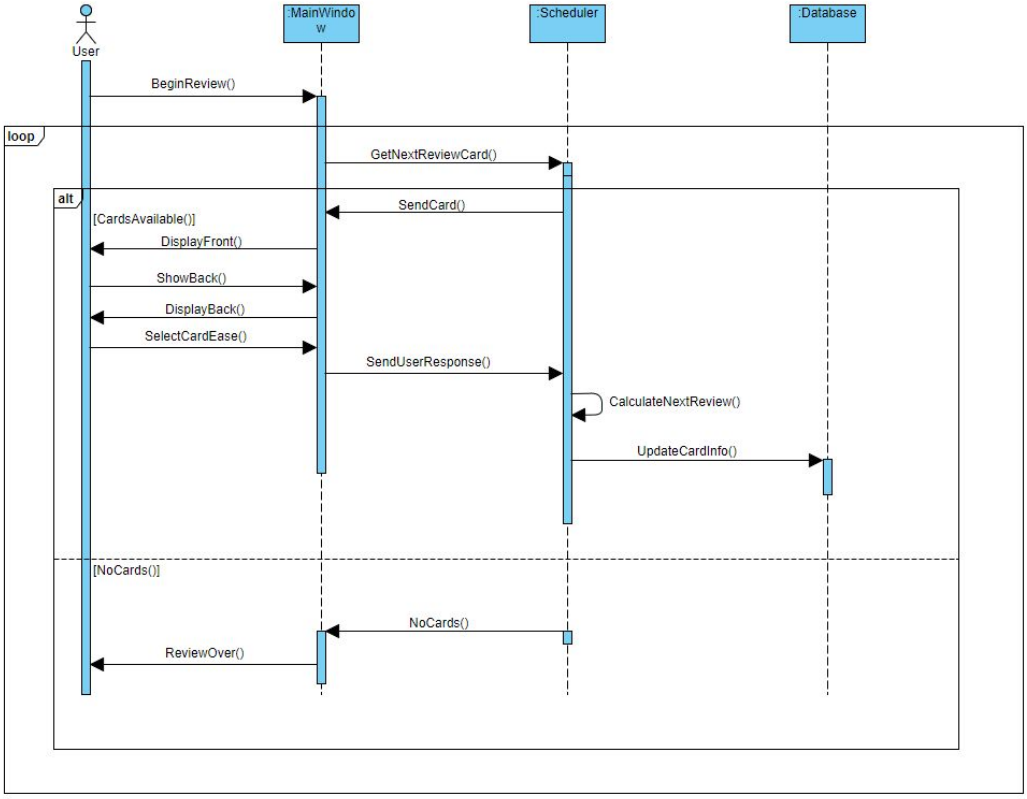
User Login





Review Card


User
-Name: String
-DBName: String
+ShowBack()
+SelectCardEase()
MainWindow
-CurrentCard: Flashcard
+GetNextReviewCard()
+ShowCardFront()
+ShowCardBack()
+GetUserResponse()
0...n
Flashcard
-GUID
-Front Text
-Back Text
-Repetitions
-Easiness Factor
-Interval
Scheduler
-ScheduledCards: Flahcard[0..n]
-conn: java.sql.Connection
-stmt: java.sql.Statement
+GetTodaysCards()
+UpdateCard()
+CreateCard()
+RemoveCard()
+SetNextReviewDate()
0...n
DB


User
:MainWindow
:Scheduler
:Database
BeginReview()
loop
GetNextReviewCard()
alt
SendCard()
[CardsAvailable()]
DisplayFront()
ShowBack()
DisplayBack()
SelectCardEase()
SendUserResponse()
CalculateNextReview()
UpdateCardInfo()
[NoCards()]
NoCards()
ReviewOver()

Brainstorming

In the process of getting to Iteration1, the team has realized several things that were not captured in the initial proposal. The largest change is in the use of a user login/account creating system. We felt that this was a vital part of the application and should be added, so that multiple users can create databases on the same computer.

Project Planning

All planning for this iteration was done using github project management. Please see the project “Iteration 1” that we created for a detailed list of tasks and assignees.