

Group 40 - Design Documentation

Studioruum (Study Material Sharing Platform)

studioruum



Scholar



Educator

Let's get started!

This document aims to outline the general structure and composition of the system we aim to produce. Following on from the feedback given on the requirements, we have still maintained our previous decision to stick with a typical database for our data model, as applications that provide some of the functions we aim to implement (eg. Anki, Notion) seem to use a standard database to store the flashcards they utilise.

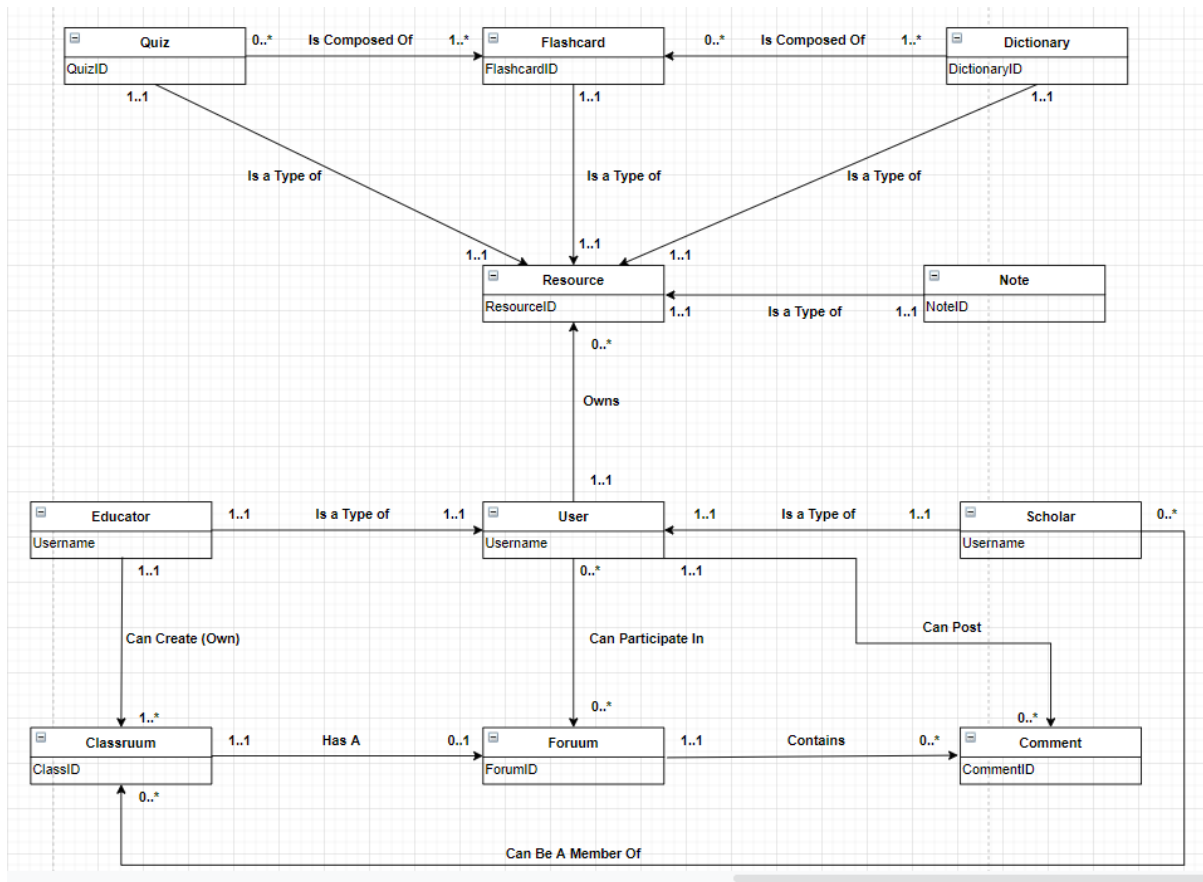
The amendments suggested in the agreed requirements were also sound, with the addition of a mobile application. Other than this, the “chatroom for scholars” was already partially planned as a “forum”, a public place that can allow scholars to discuss a topic (which may or may not be attached to the classroom/classroom of an educator). Additionally, the resources collated were planned to be tested via a quiz, which seems to provide a similar assessment functionality as the online tests, though the actual collection of scores does not need to be made available to educators, as the main purpose of the application is not focused on marking the completion of particular homework style-tasks.

Mission Statement

“We aim to produce a comprehensive learning application that can help with the study of different topics, both academic and personal (eg. Learning university modules or foreign languages). Our system will revolve around scholars (the general user) and educators (users with more capabilities to share material with groups) who can both create flashcards, notes, dictionaries and other types of content to aid in the learning process, which can be reviewed in various different ways.”

-LLOYD JONES, DANIEL PONTURO, BOBBY CHASE-DAVIES, LACHLAN SMITH, TYLER BUNSIE AND JORDAN CLEWLOW

Global Logical Data Model



The main entities within our system comes down to **users** and **resources**. When referring to a resource, this means any data item a user can create that can hold formatted text to aid with the learning process. As such, all of the different types of resources are labelled as such.

One special type of resource would be the **flashcard**, which is a simple two-sided set of text. The main interesting point, however, is that multiple flashcards can either be combined into a **dictionary**, or into a **quiz**. These two structured are both resources, but fundamentally consist of a number of flashcards.

In terms of user, we have already discussed in the requirements the importance of **scholars** and **educators**, which can generally be thought of as *students* and *teachers*. They are both types of users, with the main distinction being the ability of educators to **create classrooms** and the ability of scholars to **join classrooms**. A classroom is essentially a public domain which can have an attached forum, and it also acts as a sort of file sharing hub for educators to send their resources across to scholars within the classroom. Additionally, these **forums** can exist on their on own, as part of a general topic and not a particular educator's classroom, and comments can be placed on them by any kind of user, in a similar manner to public forum.

The data dictionary on the next page shows the entities that are structured here, with the different constraints, limitations and explanations necessary to understand the role they play in the system at large.

Data Dictionary

Entity Name	Description	Aliases	Occurrence
Quiz	A sorted collection of flashcards which can be from different sets of Dictionaries	Test	Zero or more Quizzes are composed by one or more Flashcards. Each Quiz is a type of resource
Flashcard	A resource containing two sides of text		Each Flashcard is a type of Resource
Dictionary	A collection of flashcards related to a topic	Deck	One or more Dictionaries is composed by zero or more Flashcards. Each Dictionary is a type of Resource
Resource	Some form of learning material	Item	A Resource can be owned by one and only one user
Note	A resource containing one side of text, which can be formatted according to the user		Each Note is a type of Resource
User	Someone that has access to the system	Account	One user can own multiple Resources. Zero or more Users can participate in Forums
Scholar	General user who does not have class creating privileges	Student	Each and every Scholar is a type of User
Educator	User with the ability to create and manage classes	Teacher	Each and every Educator is a type of User. One Educator can own one or multiple Classrooms
Classroom	A group that allows Educators to share resources with Scholars	Class	One or multiple Classrooms can be owned by one Educator
Forum	A public domain conversation hub which can be directly related to a specific Classroom	Forum	A single Forum can or cannot be directly related to a specific Classroom
Comment	An interaction posted by the User on a specific Forum	Interaction	Zero or more Comments are contained in a particular Forum

Entity	Multiplicity	Relationship	Multiplicity	Entity
Quiz	0..*	IsComposedOf	1..*	Flashcard
Quiz	1..1	IsATypeOf	1..1	Resource
Flashcard	1..1	IsATypeOf	1..1	Resource
Dictionary	1..*	IsComposedOf	0..*	Flashcard
Dictionary	1..1	IsATypeOf	1..1	Resource
Resource	None	None	None	None
Note	1..1	IsATypeOf	1..1	Resource
User	1..1	Owns	0..*	Resource
User	0..*	CanParticipateIn	0..*	Forum
User	1..1	CanPost	0..*	Comment
Scholar	1..1	IsATypeOf	1..1	User
Scholar	0..*	CanBeAMemberOf	0..*	Classroom
Educator	1..1	IsATypeOf	1..1	User
Educator	1..1	CanCreate	1..*	Classroom
Classroom	1..1	HasA	0..1	Forum
Forum	1..1	Contains	0..*	Comment
Comment	None	None	None	None

Entity	Attributes	Description	Data type and Length	Nulls
Quiz	ResourceID	Uniquely identifies the quiz	6 variable characters	No
	QuizName	Name of the Quiz	30 variable characters	No
	QuizTopic	Topic of the Quiz	30 variable characters	Yes
Flashcard	ResourceID	Uniquely identifies the flashcard	6 variable character	No
	DictionaryID	Identifies Deck containing flashcard	6 variable characters	Yes
	QuizID	Identifies containing Quiz	6 variable charcaters	Yes
	FrontContent	Content (text, etc) on the front of the card	255 variable characters	No
	BackContent	Content (text, etc) on the front of the card	255 variable characters	No
Dictionary	ResourceID	Uniquely identifies Dictionary	6 variable characters	No
	DictionaryName	Name of the Dictionary	30 variable characters	No
Resource	ResourceID	Uniquely identifies Resource	6 variable characters	No
	UserID	Identifies user owning Resource	6 variable charaters	No
	Resource_Type	The type of Resource it is	10 Variable characters	No
	ResourceName	The name of the Resource	30 Variable characters	No
	Privacy	The access level of the resource for non owners(public, private, shared)	7 Variable characters	no
Note	ResourceID	Uniquely identifies Note	6 variable characters	No
	NoteTitle	Title of the Note	30 variable characters	No
	NoteContent	Content (text, etc) of the note	255 variable characters	No
User	Time_Created	The time the account was created	TimeStamp	No
	Username	Username of User	30 variable characters	No
	Email	Email of User	50 variable characters	No
	Hashed_Password	Password for the User account	127 variable characters	No
	Account_Type	Identifies the type of account (educator or scholar)	8 Variable characters	No
	ClassID	Identifies which class the user is a member of	5 variable characters	Yes

Scholar	ScholarID UserID	Uniquely identifies Scholar Uniquely identifies User	6 variable integers 6 variable integers	No No
Educator	EducatorID UserID	Uniquely identifies Educator Uniquely identifies User	6 variable integers 6 variable integers	No
Classroom	ClassID	Uniquely identifies Classroom	5 variable characters	No
	EducatorID	Identifies owning Educator	5 variable characters	No
	ClassName	Name of the Classroom	30 variable characters	No
Forum	ForumID	Uniquely identifies Forum	6 variable integers	No
	ClassID	Identifies Class tied to Forum	6 variable integers	Yes
	ForumTitle	Title of the Forum	30 variable characters	No
Comment	CommentID	Uniquely identifies Comment	6 variable integers	No
	ForumID	Identifies Forum containing the comment	6 variable integers	No
	CommentContent	Content (text, etc) of the Comment	255 characters	No
	UserID	Identifies the User that posted the Comment	8 variable characters	No

Entity	Attributes	Description	Key	Nulls
Quiz	ResourceID	Uniquely identifies a quiz	Primary key	No
	QuizName	Name of the Quiz		No
	QuizTopic	Topic of the Quiz		Yes
Flashcard	ResourceID	Uniquely identifies flashcard	Primary key	No
	DictionaryID	Uniquely identifies containing Deck		No
	QuizID	Uniquely identifies containing Quiz		No
	FrontContent	Content (text, etc) on the front of the card		No
	BackContent	Content (text, etc) on the back of the card		No
Dictionary	ResourceID	Uniquely identifies Dictionary	Primary key	No
	DictionaryName	Name of the Dictionary		No
Resource	ResourceID	Uniquely identifies Resource	Primary key	No
	UserID	Identifies user owning Resource		No

	Resource_Type	The type of resource it is (quiz, note etc.)		No
	Privacy	The access level of the resource (public, private or shared)		No
Note	ResourceID	Uniquely identifies Note	Primary key	No
	NoteTitle	Title of the Note		No
	NoteContent	Content (text, etc) of the note		No
User				No
	Username	Uniquely identifies User	Primary key	No
	Email	Email of User	Alternate key	No
	Password	Hashed Password for the User account		No
	ClassID	The class the user belongs to		Yes
	Time_created	The time the user account was made		No
Scholar	ScholarID	Uniquely identifies Scholar	Primary key	No
	UserID	Uniquely identifies User		
Educator	EducatorID	Uniquely identifies Educator	Primary key	No
	UserID	Uniquely identifies User		
Classroom	ClassID	Uniquely identifies Classroom	Primary key	No
	EducatorID	Identifies owning Educator		No
	ClassName	Name of the Classroom		No
Foruum	ForumID	Uniquely identifies Foruum	Primary key	No
	ClassID	Identifies Class tied to Foruum		Yes
	ForumTitle	Title of the Foruum		No
Comment	CommentID	Uniquely identifies Comment	Primary key	No
	ForumID	Identifies containing Foruum		No
	CommentContent	Content (text, etc) of the Comment		No
	UserID	Identifies User which posted Comment		No

Logical Tables

User (Account_Type, Email, Username, Hashed_Password, ClassID, Created) Primary Key Username Foreign Key ClassID <i>references</i> Classruum (ClassID) Alternate Key Email	Foruum (ForumID, Creator, Forum_Title, Closed, Created) Primary Key ForumID Foreign Key Creator <i>references</i> User (Username)
Resources (Resource_type, Resource_ID, Creator, Privacy) Primary Key ResourceCode Foreign Key Creator <i>references</i> User (Username)	Comment (CommentID, ForumID, Creator, Comment_Content, Created) Primary Key CommentID Foreign Key ForumID <i>references</i> Foruum (ForumID) Foreign Key Creator <i>references</i> User (Username)
Classruum (ClassID, EducatorID, Class_Name) Primary Key ClassID Foreign Key EducatorID <i>references</i> User (Username)	Notes (ResourceID, NoteTitle, NoteContent) Primary Key ResourceID Foreign Key ResourceID <i>references</i> Resource (ResourceID)
FlashCard (ResourceID, FrontContent, BackContent, QuizID, DictionaryID) Primary Key ResourceID Foreign Key ResourceID <i>references</i> Resource (ResourceID)	Quiz (ResourceID, QuizName, QuizTopic) Primary Key ResourceID Foreign Key ResourceID <i>references</i> Resource (ResourceID)
Dictionary (ResourceID, DictionaryName) Primary Key ResourceID Foreign Key ResourceID <i>references</i> Resource (ResourceID)	

There does not exist tables for Scholars and Educators, as the information needed for their accounts can be held in the **User Table**, with an added attribute to identify the type of user they are.

Foreign Keys are used as primary keys in the tables for each resource, acting as the relationship between them. The resource table is 1 to 1 and can be uniquely identified with a ResourceID, with an example being Q207 for a quiz, or F492 for a flashcard.

If a Forum does not have a value for the ClassID, and is NULL, then it will instead be a general forum that is open for any user to view and comment on.

Physical Tables

User Table

Domain Account_Type	Variable length string maximum length 8		
Domain Email_Adress	Variable length character string maximum length 50		
Domain Username	Variable length character string maximum length 30		
Domain Password	Variable length character string maximum length 50		
Domain Clasruum	Variable length character string maximum length 5		
Time_Created	TIMESTAMP		
User(Account_Type	Account_Type	NOT NULL
	Email	Email_Address	NOT NULL
	Username	Username	NOT NULL
	Hashed_Password	Password	NOT NULL
	ClassID	Classruum	NULL
	Created	Time_Created	NOT NULL
	Primary Key Username		
	Alternate Key Email		
	Foreign Key ClassID references Class(ClassID)		

Resources Table

Domain Resource_Type	Variable length string maximum length 10		
Domain Resource_Code	Variable length character string maximum length 6		
Domain Resource_Name	Variable length character string maximum length 30		
Domain Owner	Variable length character string maximum length 30		
Domain Privacy	Variable length character string max size 7 if public/private/shared		
Resources(Type	Resource_Type	NOT NULL	
ID	Resource_ID	NOT NULL	
Name	Resource_Name	NOT NULL	
Creator	Owner	NOT NULL	

Privacy	Privacy	NOT NULL
Primary Key Code		
Foreign Key Creator references User(Username)		

Classruum Table

Domain ClassID	Variable length string maximum length 6	
Domain ClassName	Variable length character string maximum length 25	
Domain Owner	Variable length character string maximum length 8	
Classruum(ClassID	ClassID	NOT NULL
Class_Name	Name	NOT NULL
EducatorID	Owner	NOT NULL
Primary Key ClassID		
Foreign Key EducatorID references User(Username)		

Foruum Table

Domain ForumID	Integer	
Domain Forum_Title	Variable length character string maximum length 25	
Domain Closed	Binary	
Domain Owner	Variable length character string maximum length 30	
Domain Time_Created	TimeStamp	
Forum(ForumID	Resource_Type	NOT NULL
Closed	Closed	NOT NULL
Creator	Owner	NOT NULL
Created	Time_Created	NOT NULL
Forum_Title	Forum_Title	NOT NULL
Primary Key ForumID		
Foreign Key Creator references User(Username)		

Comment Table

Domain CommentID	Integer
Domain ForumID	Integer
Domain Comment_Content	Variable length character string maximum length 300
Domain Owner	Variable length character string maximum length 30
Domain Time_Created	TimeStamp

Comment(CommentID	CommentID	NOT NULL
	ForumID	ForumID	NOT NULL
	Content	Comment_Content	NOT NULL
	Creator	Owner	NOT NULL
	Created	Time_Created	NOT NULL
	Primary Key CommentID		
	Foreign Key Creator references User(Username)		
	Foreign Key ForumID references Forum(ForumID)		

Notes Table

Notes(ResourceID, NoteTitle, NoteContent)			
Primary Key ResourceID			
Foreign Key ResourceID references Resource(ResourceID)			
Domain ResourceID fixed length character string maximum length 5			
Domain FrontContent variable length character string maximum length 255			
Domain NoteTitle variable length character string maximum length 30			
Notes(ResorceID	ResourceID	NOT NULL	
NoteContent	NoteContent	NOT NULL	
NoteTitle	NoteTitle	NOT NULL	
)			
Primary Key ResourceID			
Foreign Key ResourceID references Resource(ResourceID)			

Flashcards Table

Flashcards(ResourceID, FrontContent, BackContent, QuizID, DictionaryID)

Primary Key ResourceID

Foreign Key ResourceID references Resource(ResourceID)

Domain ResourceID fixed length character string maximum length 5

Domain FrontContent variable length character string maximum length 255

Domain BackContent variable length character string maximum length 255

Domain QuizID variable length character string maximum length 5

Domain DictionaryID variable length character string maximum length 5

FlashCard(ResourceID	ResourceID	NOT NULL
FrontContent	FrontContent	NOT NULL
BackContent	BackContent	NOT NULL
QuizID	QuizID	NULL
DictionaryID	DictionaryID	NULL

)

Primary Key ResourceID

Foreign Key ResourceID references Resource(ResourceID)

Foreign Key QuizID references Quiz(ResourceID)

Foreign Key DictionaryID references Dictionary(ResourceID)

Quiz Table

Quiz(ResourceID, QuizName, QuizTopic)

Primary Key ResourceID

Foreign Key ResourceID references Resource(ResourceID)

Quiz(ResourceID	ResourceID	NOT NULL
-----------------	------------	----------

Question	FrontContent	NOT NULL
----------	--------------	----------

Answer	BackContent	NOT NULL
--------	-------------	----------

)

Primary Key ResourceID

Foreign Key ResourceID references Resource(ResourceID)

Dictionary Table

Dictionary(ResourceID, DictionaryName)

Primary Key ResourceID

Foreign Key ResourceID references Resource(ResourceID)

Dictionary(ResourceID	ResourceID	NOT NULL
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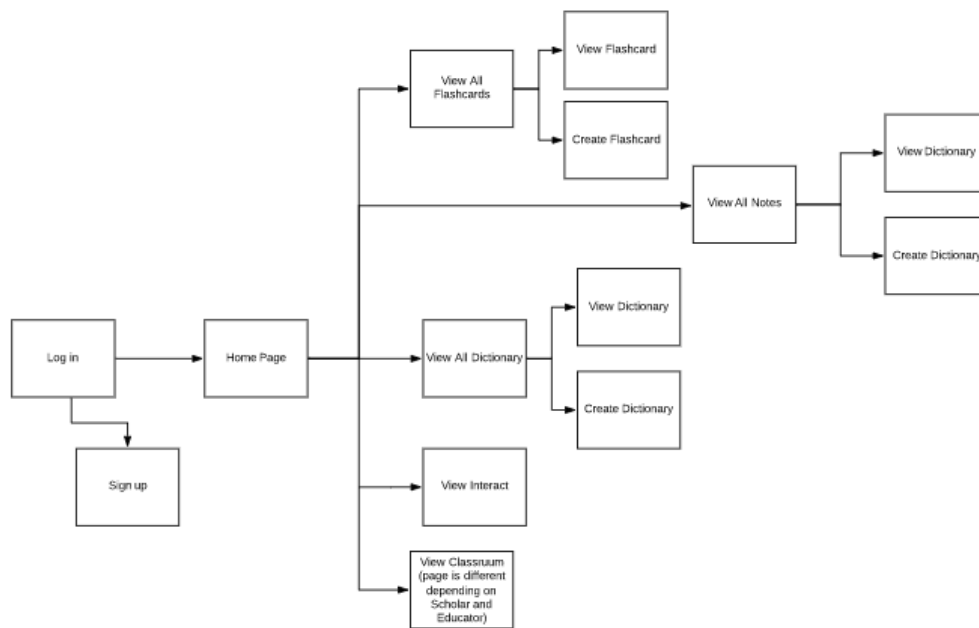
Name	DictionaryName	NOT NULL
------	----------------	----------

)

Primary Key ResourceID

Foreign Key ResourceID references Resource(ResourceID)

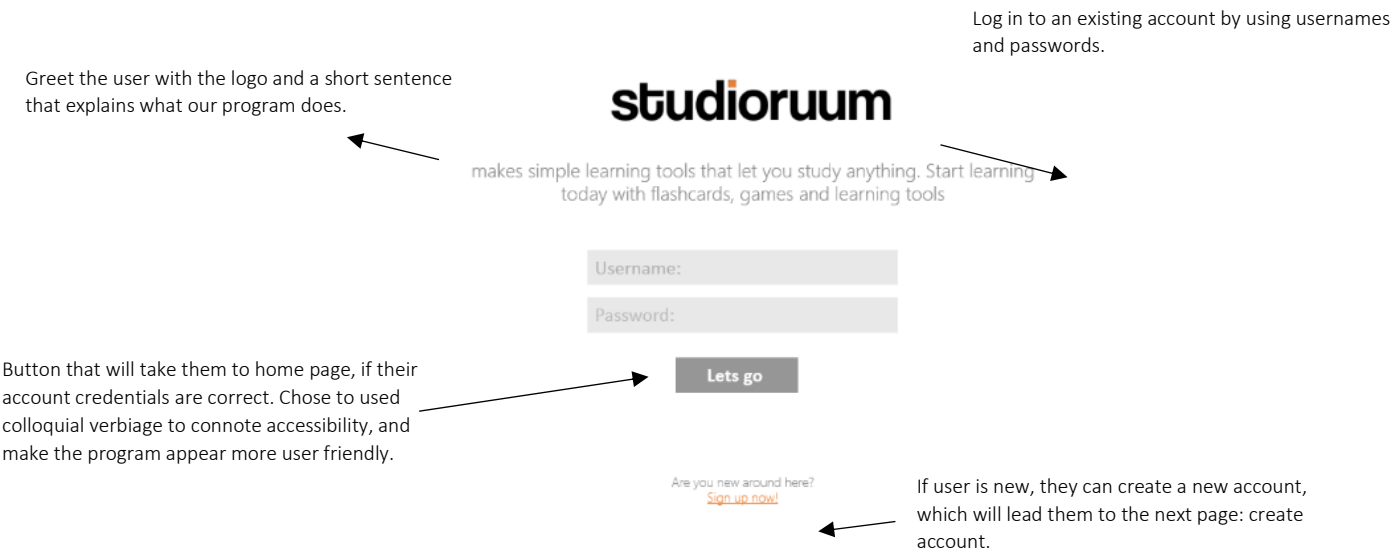
Interface Design Explanation



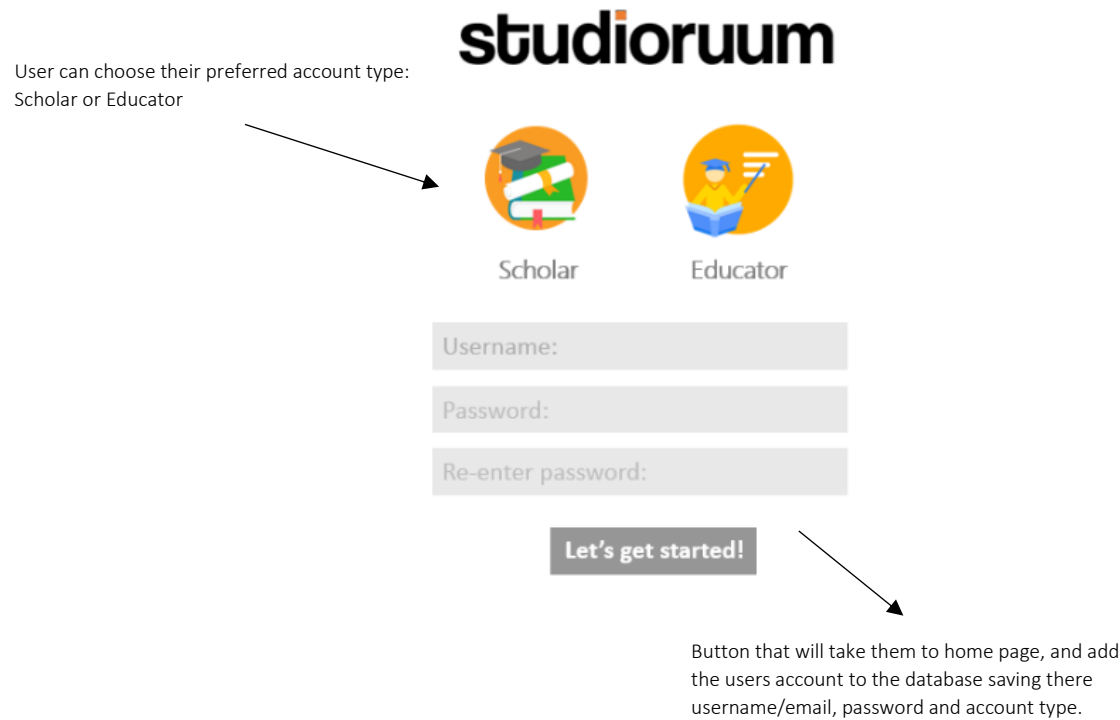
In the initial design for our interface, we had to consider the form and functionality of our program. We have chosen to implement a more professional approach (whilst maintaining our accessibility) compared to the likes of competitor applications (for example Quizlet). This is denoted through our simplistic and minimalistic colour pallet (pastel) and ease of access. to We ensured to fulfil the objectives specified in the requirements whilst maintaining the theme and visual representation of our product.

Our target demographic are students (age 15-25) and teachers. On the next page is an analysis of some of the important aspects to some of the pages, mostly outlining how navigation works through the scenes. The scene numbers to do not generally dictate the order of slides and are used just to refer to the scenes.

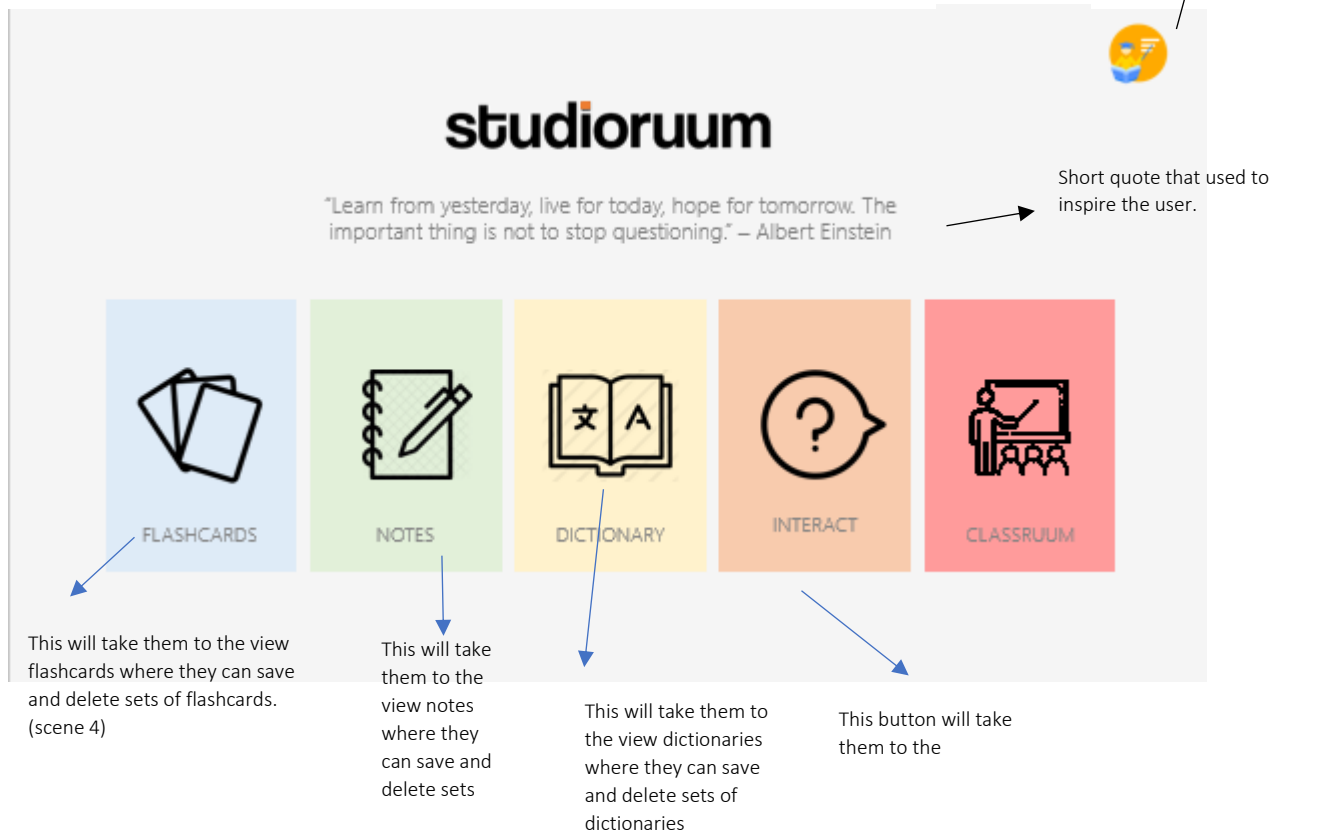
Scene: 1 Log in



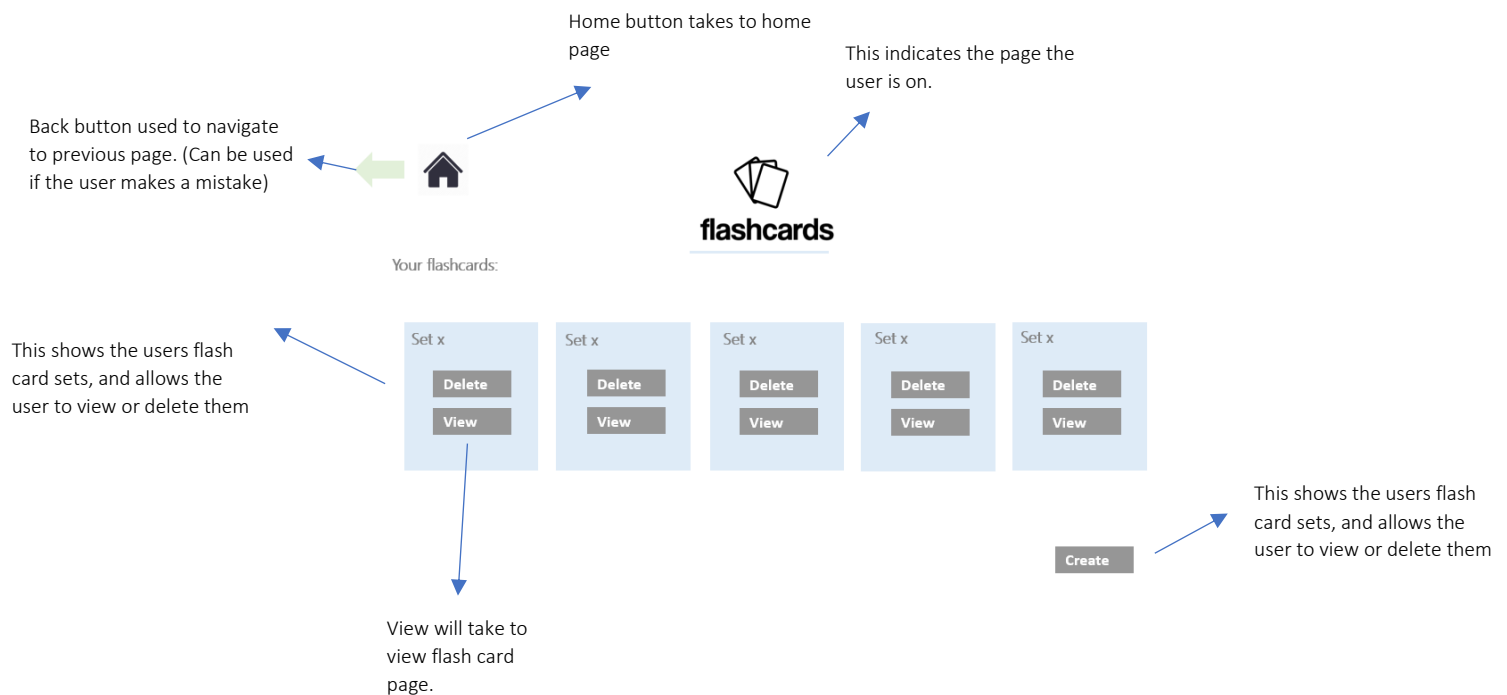
Scene: 2 Sign up



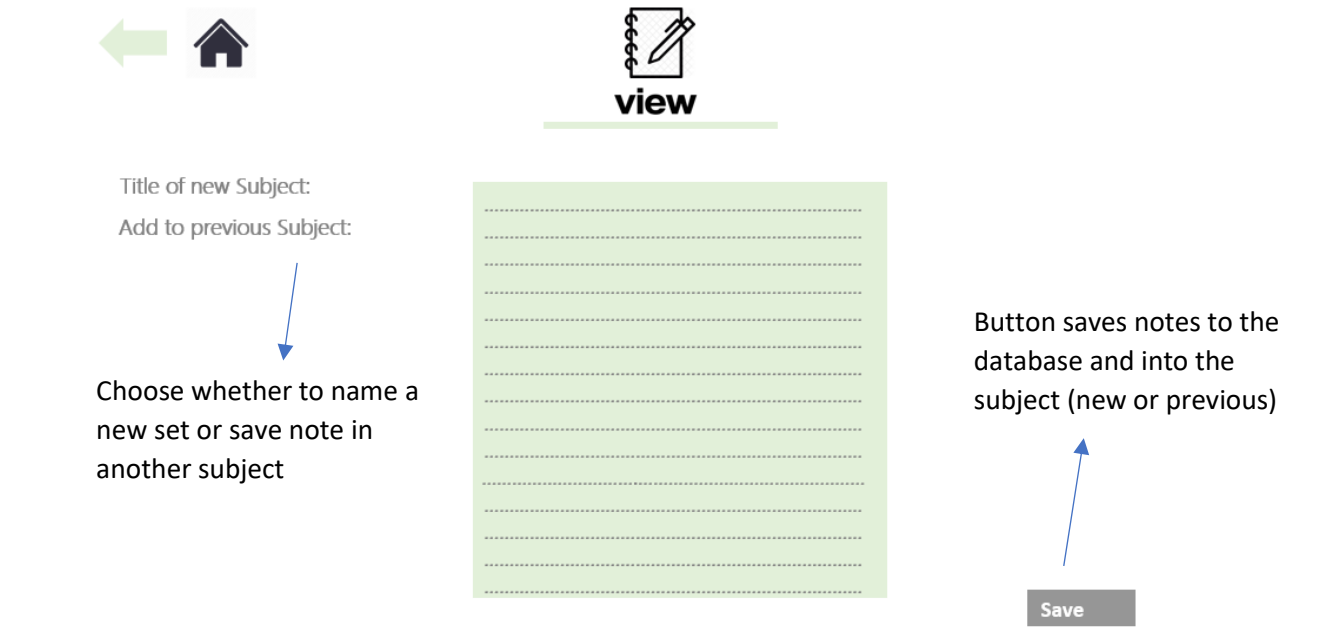
Scene: 3 Home



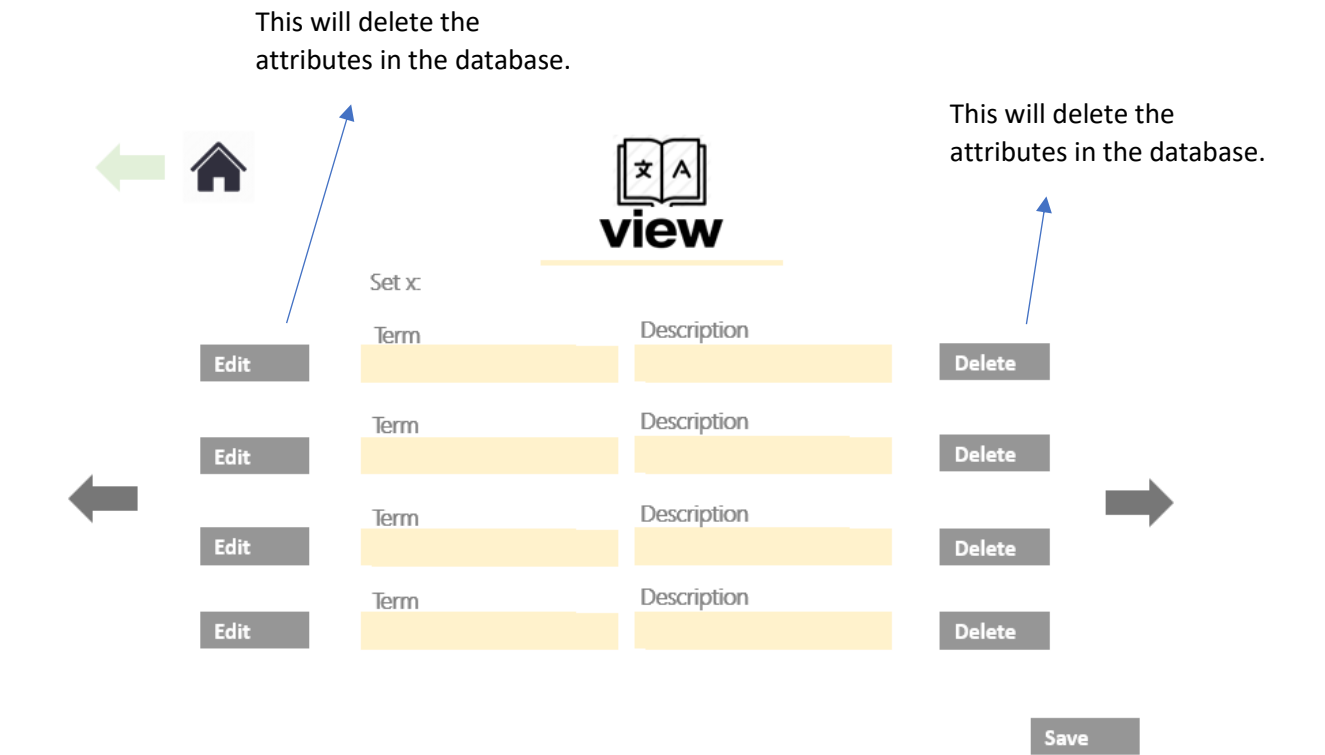
Scene: 4 View flashcards



Scene: 5 View note



Scene: 6 View dictionary

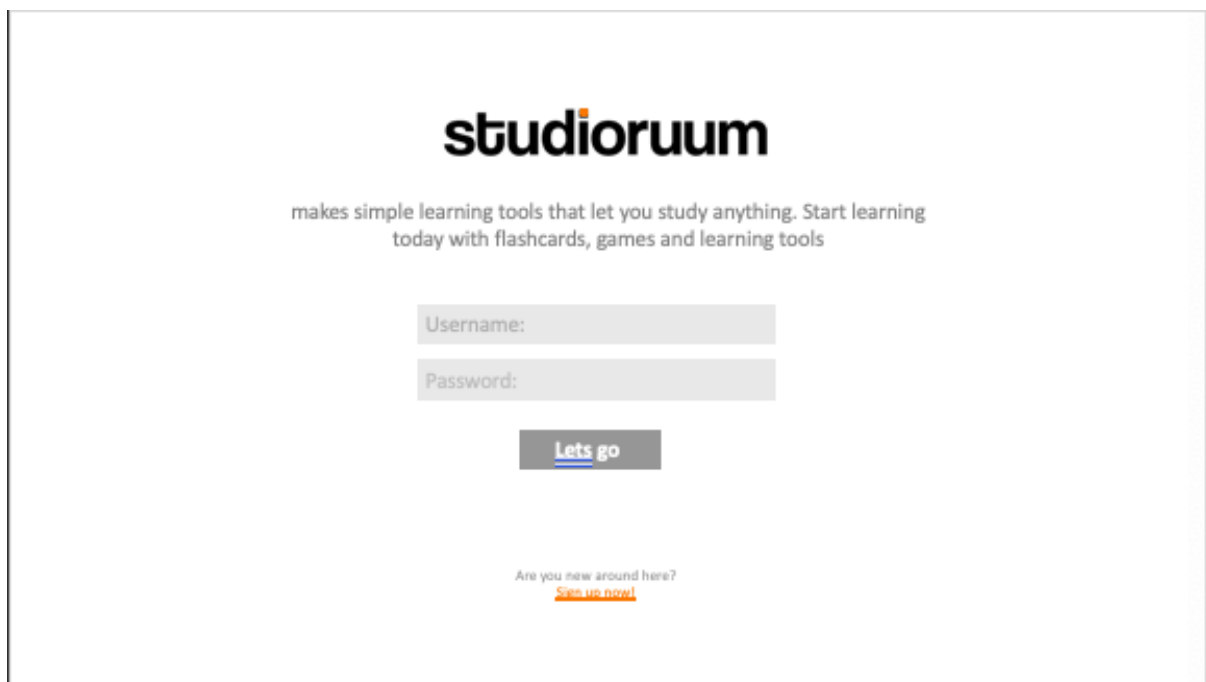


Other Interface Screens

Page 1:



Page 2:



Page 3:

studioruum

makes simple learning tools that let you study anything. Start learning today with flashcards, games and learning tools


Username:

Password:


Lets go

Are you new around here?
[Sign up now!](#)


Page 4:




FLASHCARDS




NOTES



DICTIONARY



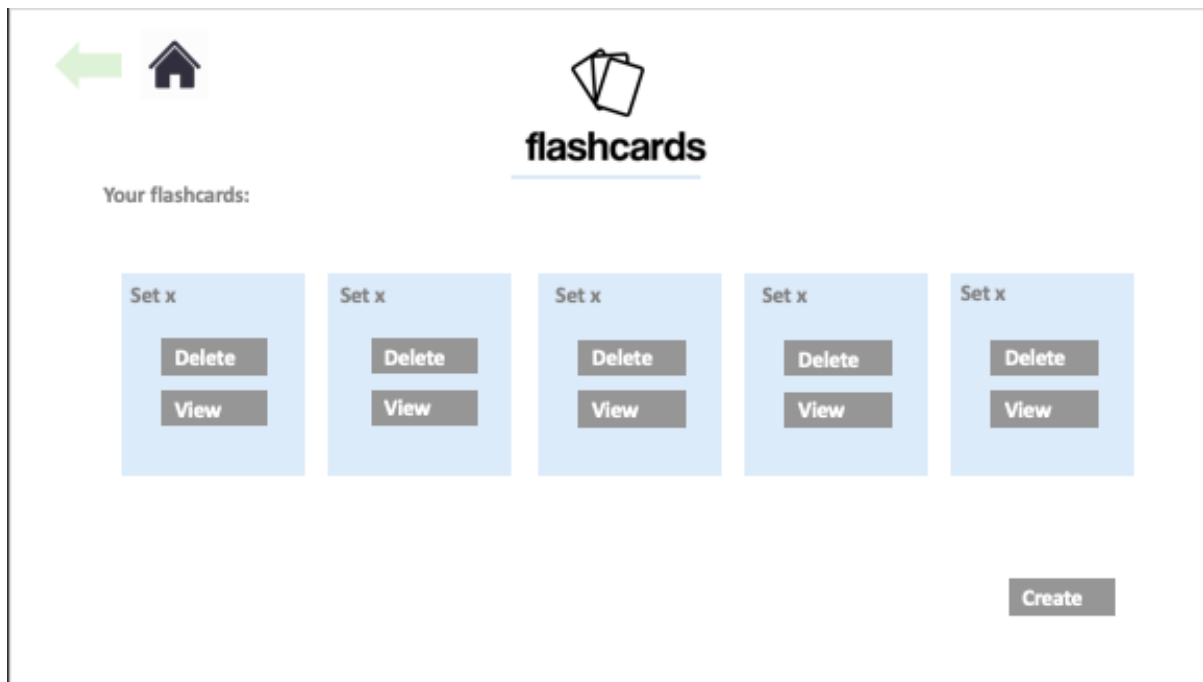
INTERACT



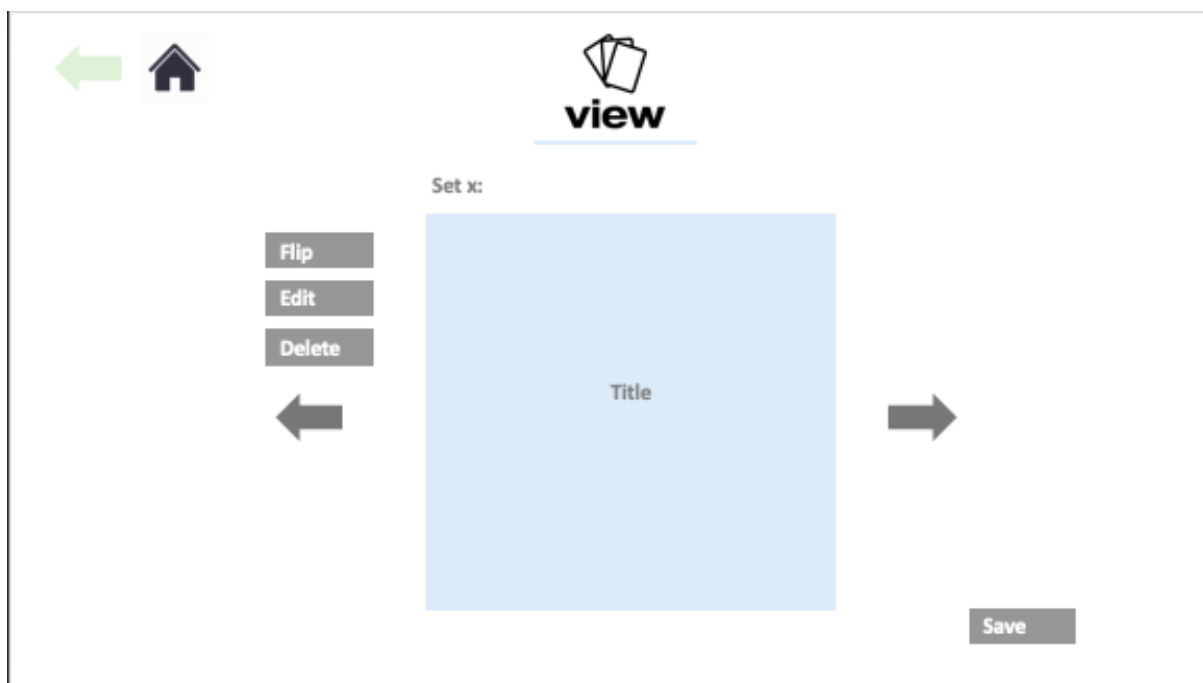
CLASSROOM

Start creating!



Page 5:




Page 6:



Page 7:




create

Title of new Set:



Add to previous set: (drop down list)


Title

Description

Save

Page 8:




Notes

Your flashcards:

Subject x

View Page

Delete Page

Subject x

View Page

Delete Page

Subject x

View Page

Delete Page

Subject x

View Page

Delete Page

Subject x

View Page

Delete Page

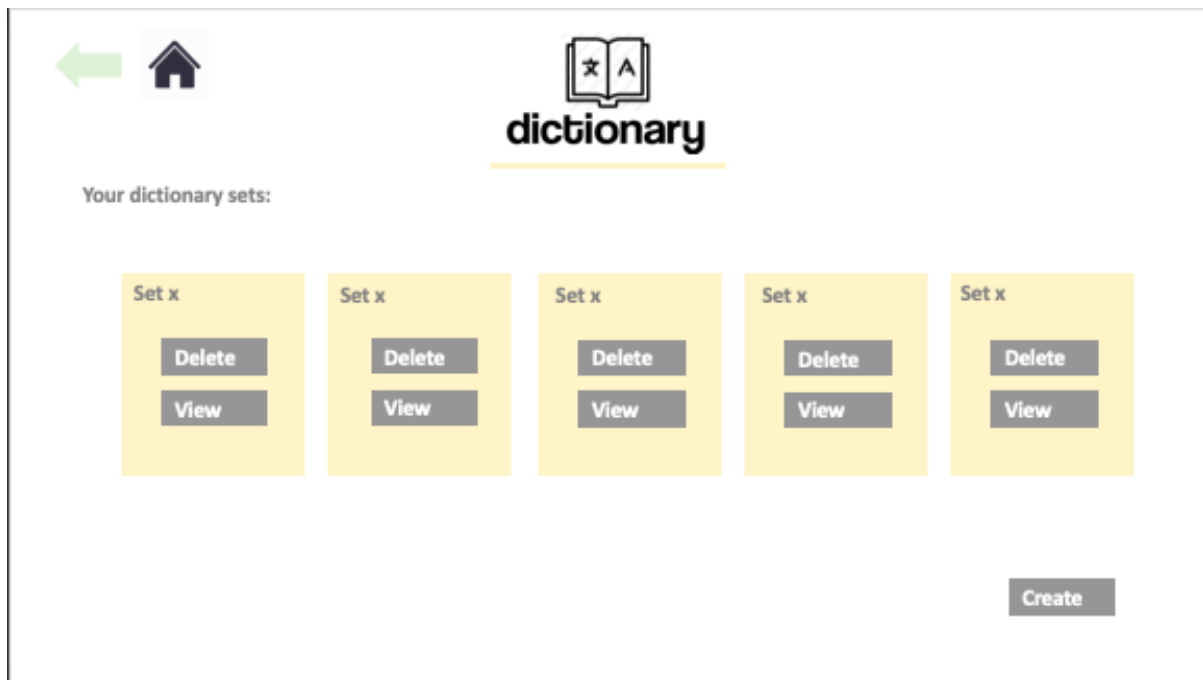
Create

Page 9:

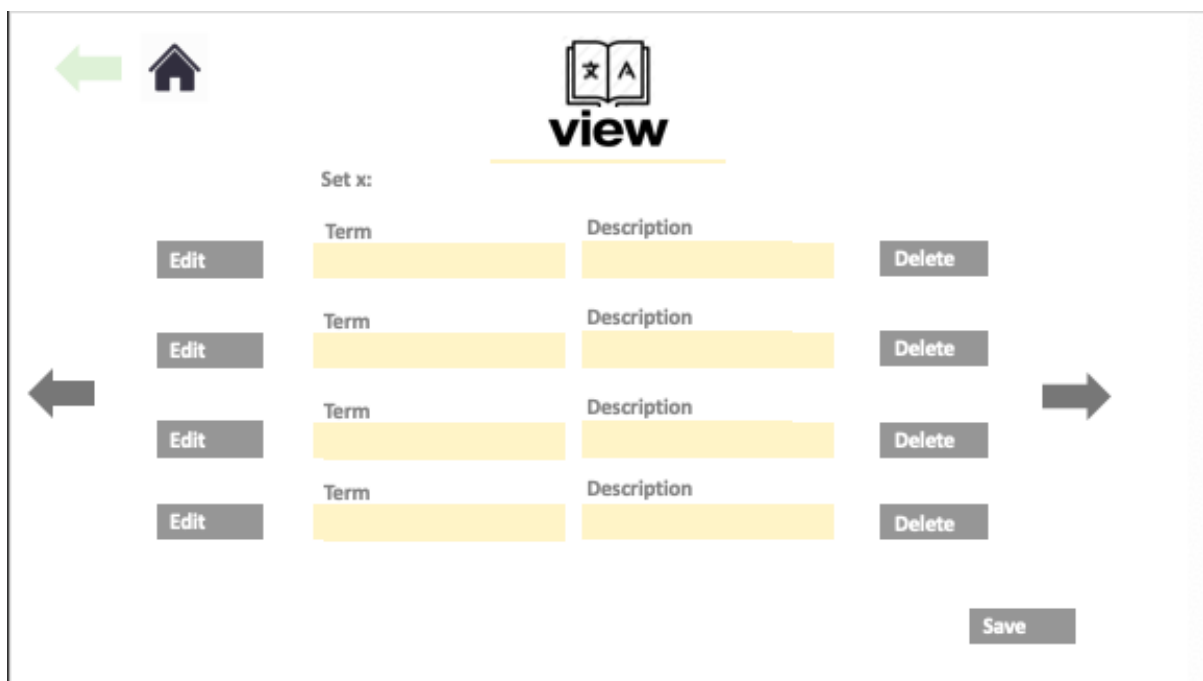
Page 10:

[illegible]



Page 11:




Page 12:



Page 13:






create


Title of new Subject:
Add to previous Subject:

Term	Description

Save

Page 14:




interact

Search...

Subjects

Subject x

Questions



Question Thread x


Personal


Share

Upload

Page 15:




Classroom




Your Classrooms:


Quizzes to complete:

Your Feedback:

Page 16:




Classroom



Upload Resources

Upload Quizzes

Your Classrooms:

Invite

Invite

Invite

Invite

Invite

Quizzes to mark:

Give Feedback

Give Feedback

Give Feedback

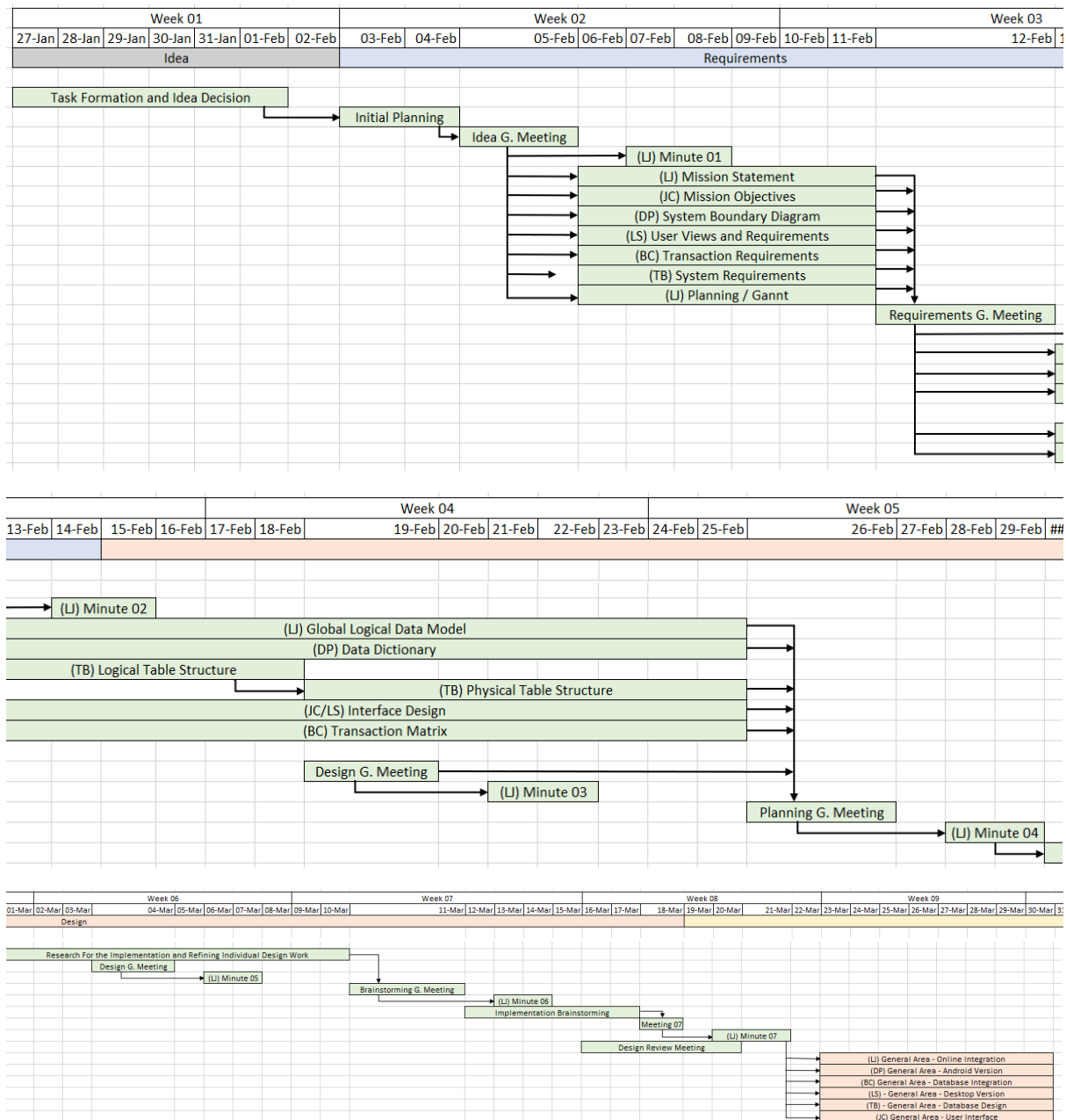
Give Feedback

Give Feedback

Planning

Gantt Chart

The Gantt Chart has been updated to show the current work completed so far, along with some rough estimation of the next few weeks. As we are currently starting the planning of the implementation, the planning for that sections remains divided up into the sections discussed in the **Meeting Minutes**, as those feature a large chunk of the planning completed thus far.



GitHub Page

The GitHub page has served as the main hub of all planning and file sharing, with most updates filed being placed on here, along with any planning information as shown with the current task allocations.

lloydgjones / Studioruum Private

Unwatch 2

Star 4

Fork 0

<> Code

Issues 0

Pull requests 0

Actions

Projects 0

Wiki

Security

Insights

Settings

No description, website, or topics provided.

Edit

Manage topics

66 commits

1 branch

0 packages

0 releases

6 contributors

Branch: master

New pull request

Create new file

Upload files

Find file

Clone or download

jordanclewlou Add files via upload

Latest commit feb1f63 6 hours ago

Design	Add files via upload	6 hours ago
Implementation	Implementation Planning Added	13 days ago
Meetings	Minute 05	3 days ago
Miscellaneous	Implementation Planning Added	13 days ago
Requirements	Implementation Planning Added	13 days ago
Gannt.xlsx	Planning for Part I Complete	26 days ago
README.md	Update README.md	3 days ago

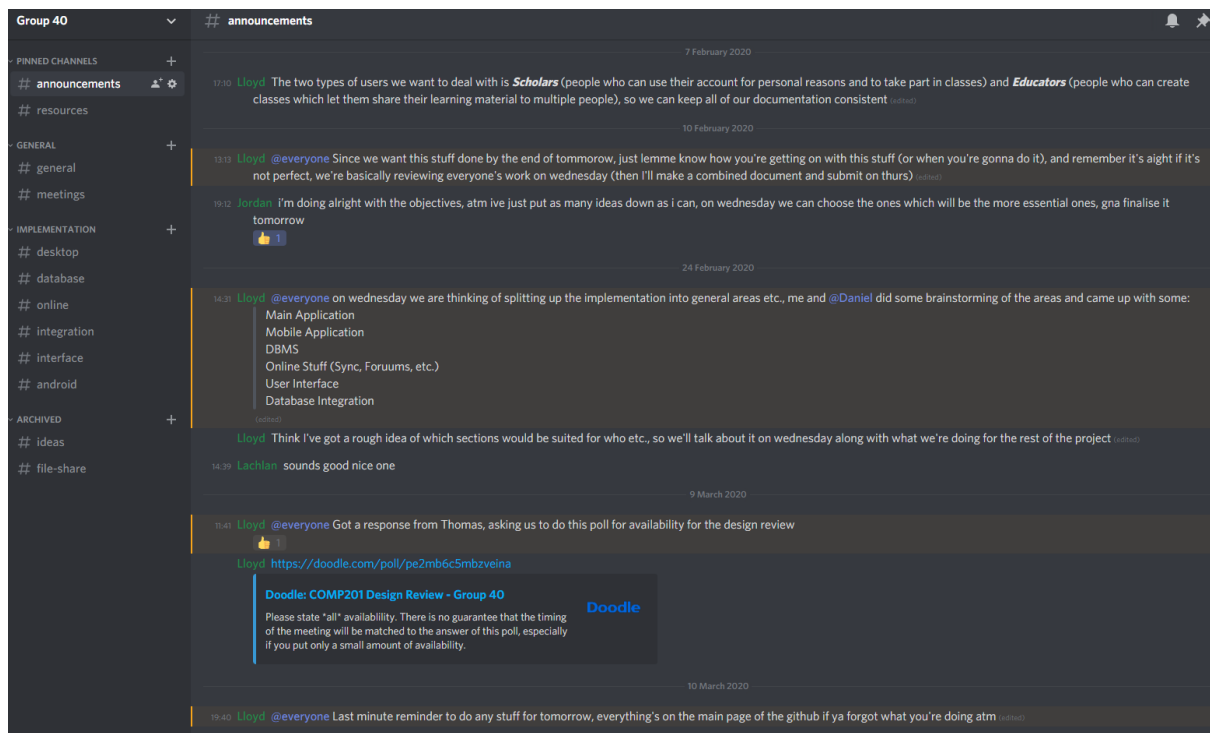
README.md

Group 40 - Studioruum

Current Stuff

- Tasks for Everyone
 - Learn Basic Git
- Tasks for Tyler
 - Finish Design Doc
- Tasks for Lloyd
 - Update Design Doc
- Tasks for Daniel
 - Research Android
- Tasks for Lachlan
 - Learn JavaFX
- Tasks for Jordan
 - Learn JavaFX
- Tasks for Bobby
 - Create a Mockup Database

Discord



The discord server has also since expanded to have more regular conversation between users, with the screenshot above showing the page of important announcements. Each channel shown on the right has discussion relating to a particular topic, which is used for quicker communication between meetings and to aid in pair/group programming as will be needed for the implementation.

Technologies

In terms of technologies to be used for the implementation, we have fully settled on **JavaFX** for the user interface, due to our familiarity and prior decision to work in Java. The database will be constructed via **MySQL** due to its widespread nature and appearance in other previous modules. For online storage, the student version of Amazon Web Services has allowed us to use **Amazon S3 (Simple Storage Service)**, which will host our files, and has a Java API to allow for integration with our desktop application.

Signatures

In the Order - Lloyd Jones, Daniel Ponturo, Tyler Bunsie, Bobby-Chase Davies, Lachlan Smith, Jordan Clewlow.



Jeff Smith Jr