

# Project Part II

## Team Members:

Erik Eakins,  
Mike Watson,  
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**Title:** Tenjin Math

**Project Summary:** An interactive program that focuses on learning basic math skills with mathematical flashcards and workbooks. Our user-friendly resource will allow children and parents to improve these skills through repetitive practice. The kumon practice focuses on the repetitive practice of problematic areas.

# Project Requirements:

Business Requirements			
ID	Topic	Description	Priority
BR-001	Time Frame	The project is to be completed before April 27, 2016, to meet deadline delivery.	Critical
BR-002	Access	Each user will have individual user profiles.	Medium
BR-003	Functionality	The project is a PC/Mac program that teaches/reviews basic arithmetic.	High
BR-004	Visual	The project will utilize a graphical user interface.	High
BR-005	Functionality	Each lesson will contain at least 5 questions so that the student can have repetitive practice.	High
BR-006	Access	The project will have a login screen for the user to log into the system	High

User Requirements			
ID	Topic	Description	Priority
UR-001	Access	As a user, I want to be able to create an account for a personalized profile.	Critical
UR-002	Access	As a user, I want to be able to login to an already-existing account, to resume my progress and see my profile account.	Critical
UR-003	Functionality	As a user, I want to see an overall progress summary of all completed lessons to identify problematic areas.	High
UR-004	Functionality	As a user, I want to select the addition, subtraction, multiplication, or division subject.	High
UR-005	Functionality	As a user, I want to be able to do a lesson module in the selected subject area.	High
UR-006	Functionality	As a user, I want to be able to input and save the answer to the given questions.	Critical
UR-007	Storage	As a user, I want to be able to quit an active lesson at any time, saving the current progress.	High
UR-008	Access	As a user, I want to be able to resume my progress on a previously saved lesson.	High
UR-009	Functionality	As a user, I want to be able to request assistance if I come across a problem that I don't understand.	Medium
UR-010	Functionality	As a user, I want to be able to complete lessons by submitting my answers at the end.	Medium
UR-011	Functionality	As a user, I want to view the lesson results at the end of the lesson module.	Medium
UR-012	Customize	As a user, I want to be able to update my personal profile preferences.	Low

Functional Requirements			
ID	Topic	Description	Priority
FR-001	Access	The system will create a profile from the information inputted on the login page and the user selects “Create a Profile”.	High
FR-002	Security	The system will check for a unique username and match with the configuration file, when the user attempts to log in or create a new profile.	High
FR-003	Storage	The system will store the progress and profile of users in a configuration file.	High
FR-004	Exercises	The questions will be pseudo-randomized based on the user’s progress.	Low

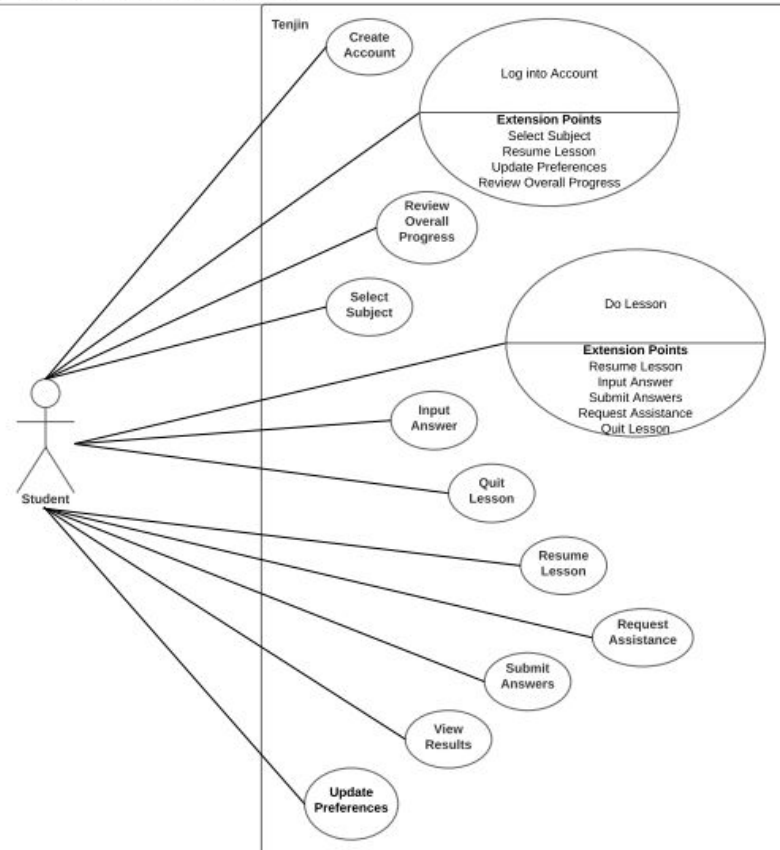
Non-Functional Requirements			
ID	Topic	Description	Priority
NFR-001	Visual aesthetics	The Graphical User Interface will be intuitive for a primary school-age child to understand.	High
NFR-003	Human Factor	All menus in the system will be consistent, well labeled, and uncluttered.	High
NFR-004	Availability	The system will be downloadable on a computer from Github.	Medium
NFR-005	Portability	The system can be accessed from Windows, Mac/OSX, Linux	Medium

# Use Case Diagrams: *Created With LucidCharts*

Actors: Student

## TENJIN - USE CASE OVERVIEW

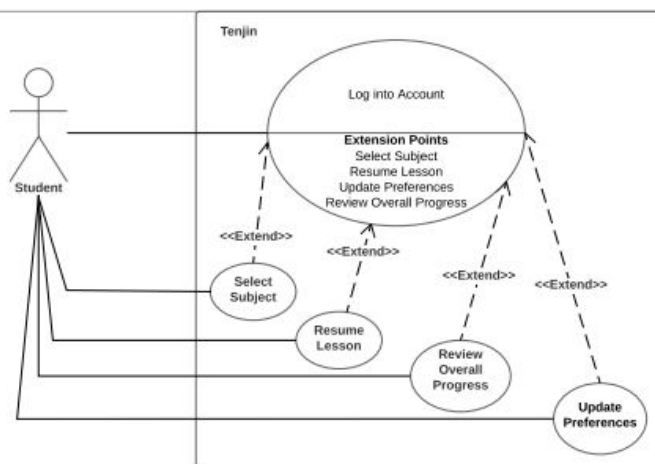
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Sub-diagrams:

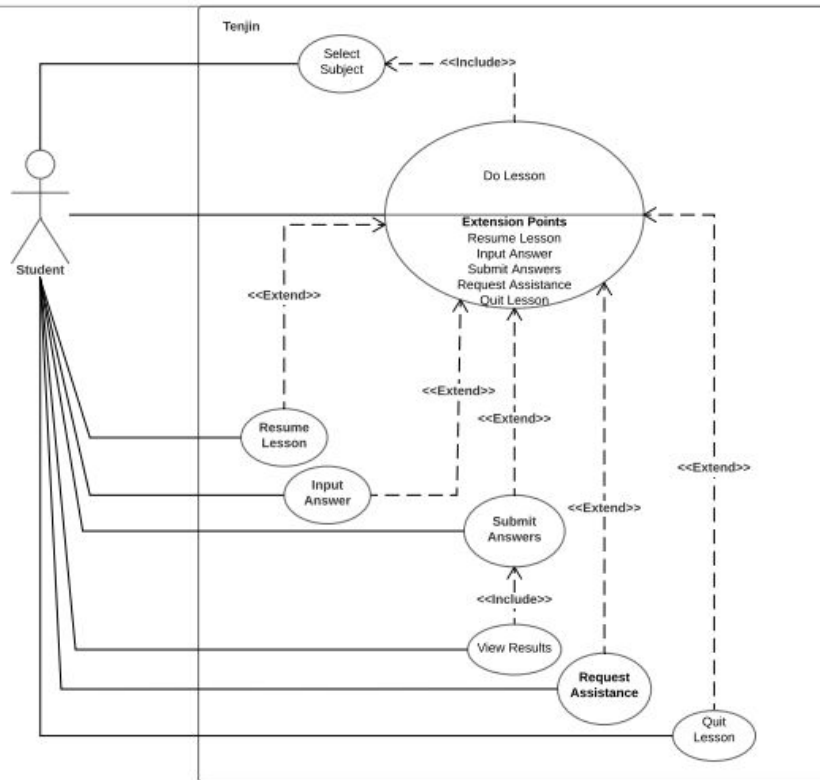
## TENJIN - LOG INTO ACCOUNT

Erik Eakins, Amber Womack, Mike Watson



## TENJIN - DO LESSON

Erik Eakins, Amber Womack, Mike Watson



# Use Case Documents:

USE CASE 1		Date:	2/18/2016
		Time:	2000
Use Case ID	UC-01		
Use Case Name:	Create Account		
Description:	The user will be able to create an account for a personalized profile page		
Actor:	Student		
Pre-conditions:	User must be on login screen		
Post-Conditions:	None		
Frequency of Use:	Once per user		
Flow of Events:		Actor Action:	System Response:
	1	Click Create Account button (on main page)	Displays Create Account page
	2	Input profile information	
	3	Click Create Account button (on create page)	Checks if username is unique
	4		Stores new account information
Variations:	3. Actor clicks Cancel button 3. If username is not unique, system displays user name used. System displays create account page		
Notes and Issues:	Click Cancel button returns to login page without saving profile information		
Developer Notes:	None		

USE CASE 2		Date:	2/18/2016
		Time:	2100
Use Case ID	UC-02		
Use Case Name:	Log into Account		
Description:	The user will be able to login to existing account to see profile and resume progress		
Actor:	Student		
Pre-conditions:	Actor has created a profile previously		
Post-Conditions:	None		
Frequency of Use:	As needed by the user		
Flow of Events:		Actor Action:	System Response:
	1	Clicks Username drop down list	Displays drop down list of all stored usernames
	2	Selects personal username	
	3	Clicks login button	Displays profile page
Variations:	None		
Notes and Issues:	None		
Developer Notes:	None		



USE CASE 3		Date:	2/18/2016
		Time:	2130
Use Case ID	UC-03		
Use Case Name:	Review Overall Progress		
Description:	The user will be able to see an overall progress summary of all completed lessons to identify problematic areas		
Actor:	Student		
Pre-conditions:	Actor has logged in and is on their personal profile page		
Post-Conditions:	None		
Frequency of Use:	Depends on the user		
Flow of Events:		Actor Action:	System Response:
	1	Clicks View Progress button	Loads user completed subject statistics
	2		Displays overall progress page
Variations:	None		
Notes and Issues:	None		
Developer Notes:	None		

USE CASE 4		Date:	2/18/2016
		Time:	2200
Use Case ID	UC-04		
Use Case Name:	Select Subject		
Description:	The user will be able to select the subject of choice		
Actor:	Student		
Pre-conditions:	Actor has logged in and is on their personal profile page		
Post-Conditions:	None		
Frequency of Use:	Depends on the user		
Flow of Events:		Actor Action:	System Response:
	1	Clicks Subject drop down list	Displays subjects (Addition, Subtraction, Multiplication, Division)
	2	Selects subject (Addition, Subtraction, Multiplication, Division)	Activates Begin Lesson button
Variations:	None		
Notes and Issues:	None		
Developer Notes:	None		

USE CASE 5		Date:	2/18/2016
		Time:	2210
Use Case ID	UC-05		
Use Case Name:	Do Lesson		
Description:	The user will be able to begin a lesson module in the selected subject area.		
Actor:	Student		
Pre-conditions:	Actor has logged in and selected a subject		
Post-Conditions:	None		
Frequency of Use:	Each use of program		
Flow of Events:		Actor Action:	System Response:
	1	Clicks Start Lesson button	Generates lesson
	2		Displays question
	3	Input Answer - refer to UC - 06	Input Answer - refer to UC - 06
	4	Submit Answer - refer to UC - 10	Submit Answer - refer to UC - 10
	5	View Results - refer to UC - 11	View Results - refer to UC - 11
Variations:	1. Resume Lesson - refer to UC - 08 3. Quit Lesson - refer to UC - 07 3. Request Assistance - refer to UC -09		
Notes and Issues:	None		
Developer Notes:	None		

USE CASE 6		Date:	2/18/2016
		Time:	2230
Use Case ID	UC-06		
Use Case Name:	Input Answer		
Description:	The user will be able to input and submit the answer to the given questions.		
Actor:	Student		
Pre-conditions:	Actor has logged in, selected a subject, and begins a lesson		
Post-Conditions:	None		
Frequency of Use:	Each lesson use		
Flow of Events:		Actor Action:	System Response:
	1	Clicks numerical buttons to input answer	
	2	Clicks Next Question button	Stores answer
			Displays question
Variations:	2. Actor clicks specific question (from navigation list), system stores answer and displays question		
Notes and Issues:	None		
Developer Notes:	None		

USE CASE 7		Date:	2/18/2016
		Time:	2300
Use Case ID	UC-07		
Use Case Name:	Quit Lesson		
Description:	The user will be able to quit an active lesson and save current progress		
Actor:	Student		
Pre-conditions:	Actor has logged in, selected a subject, and in an active lesson		
Post-Conditions:	None		
Frequency of Use:	Depends on the user		
Flow of Events:		Actor Action:	System Response:
	1	Clicks Quit button	Displays quit confirmation
	2	Clicks Yes button	Saves progress
	3		Displays profile page
	4		Activates Resume button
Variations:	2. Actor clicks No, system removes display		
Notes and Issues:	None		
Developer Notes:	None		

USE CASE 8		Date:	2/18/2016
		Time:	2330
Use Case ID	UC-08		
Use Case Name:	Resume Lesson		
Description:	The user will be able to resume my progress on a previously saved lesson.		
Actor:	Student		
Pre-conditions:	Actor has logged in and has a in progress lesson		
Post-Conditions:	None		
Frequency of Use:	Depends on the user		
Flow of Events:		Actor Action:	System Response:
	1		Activates Resume button
	2	Clicks Resume button	Loads previous progress
	3		Displays question
Variations:	None		
Notes and Issues:	None		
Developer Notes:	None		

USE CASE 9		Date:	2/19/2016
		Time:	1200
Use Case ID	UC-09		
Use Case Name:	Request Assistance		
Description:	The user will be able to request assistance if I come across a problem that I don’t understand.		
Actor:	Student		
Pre-conditio ns:	Actor has logged in, selected a subject, and in the middle of a lesson		
Post-Conditi ons:	None		
Frequency of Use:	Depends on the user		
Flow of Events:		Actor Action:	System Response:
	1	Clicks Help button	Displays question specific help
Variations:	None		
Notes and Issues:	None		
Developer Notes:	None		

USE CASE 10		Date:	2/19/2016
		Time:	1230
Use Case ID	UC-10		
Use Case Name:	Submit Answers		
Description:	The user will be able to complete lessons by submitting my answers at the end.		
Actor:	Student		
Pre-conditions:	Actor has logged in, selected a subject, and on the last question of a lesson		
Post-Conditions:	None		
Frequency of Use:	Each use of lesson		
Flow of Events:		Actor Action:	System Response:
	1	Clicks Submit button	Counts questions answered
	2		Displays submit confirmation
	3	Clicks Yes button	Stores answer
Variations:	3. Actor clicks No button		
Notes and Issues:	None		
Developer Notes:	None		



USE CASE 11		Date:	2/19/2016
		Time:	1300
Use Case ID	UC-11		
Use Case Name:	View Results		
Description:	The user will have the ability to view lesson results at the end of the lesson module.		
Actor:	Student		
Pre-conditions:	Actor has logged in, selected a subject, and submitted their last answer for of a lesson		
Post-Conditions:	None		
Frequency of Use:	Depends on the user		
Flow of Events:		Actor Action:	System Response:
	1		Grades lesson
	2		Displays results
Variations:	None		
Notes and Issues:	None		
Developer Notes:	None		

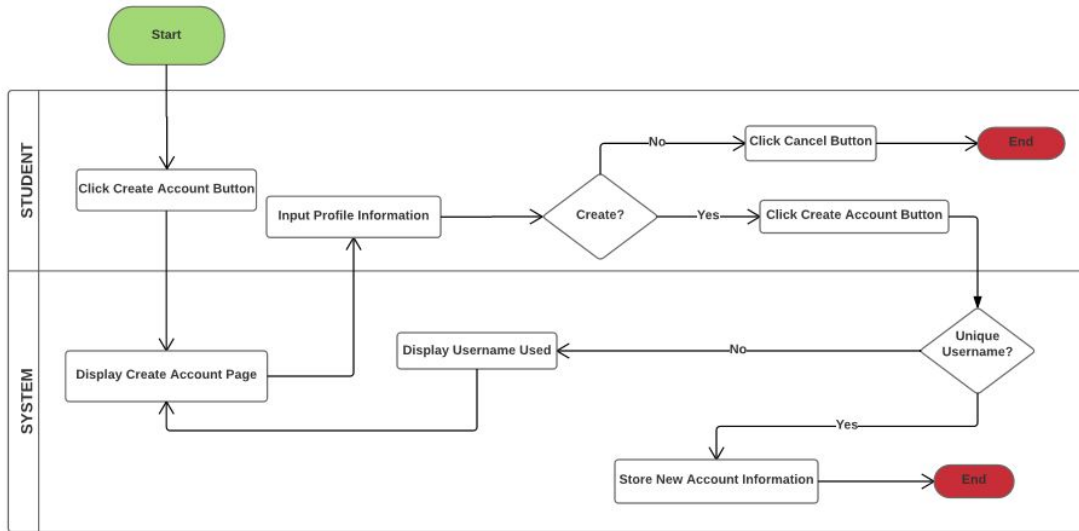
USE CASE 12		Date:	2/19/2016
		Time:	1330
Use Case ID	UC-12		
Use Case Name:	Update Preferences		
Description:	The user will be able to update their personal profile preferences.		
Actor:	Student		
Pre-condition s:	Actor is logged in and at the main window.		
Post-Condi ti ons:	Actor will be returned to the main window.		
Frequency of Use:	Depends on the user		
Flow of Events:		Actor Action:	System Response:
	1	Clicks Preferences button	Displays preferences page
	2	Makes changes to preferences	
	3	Clicks Save button	Application saves profile preferences
	4		Displays profile page
Variations:	2. Actor clicks cancel button, system displays profile page 3. Actor clicks cancel button, system displays profile page		
Notes and Issues:	None		
Developer Notes:	None		

# Activity Diagrams: *Created With LucidCharts*

UR - 01;

UC - 01: CREATE ACCOUNT

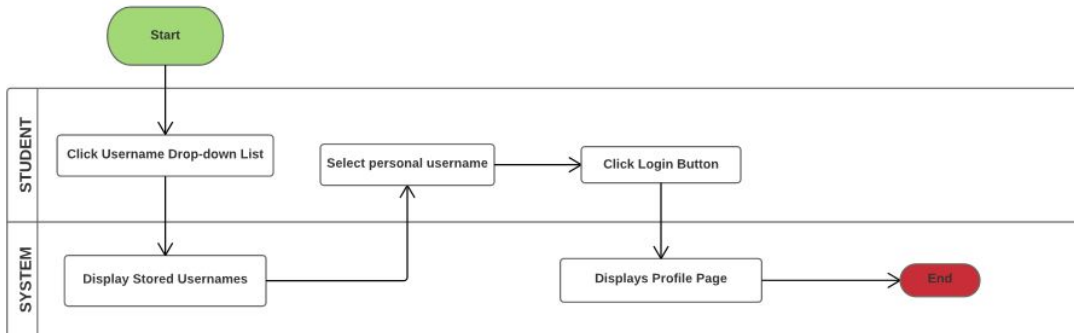
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UR - 02;

UC - 02: LOG INTO ACCOUNT

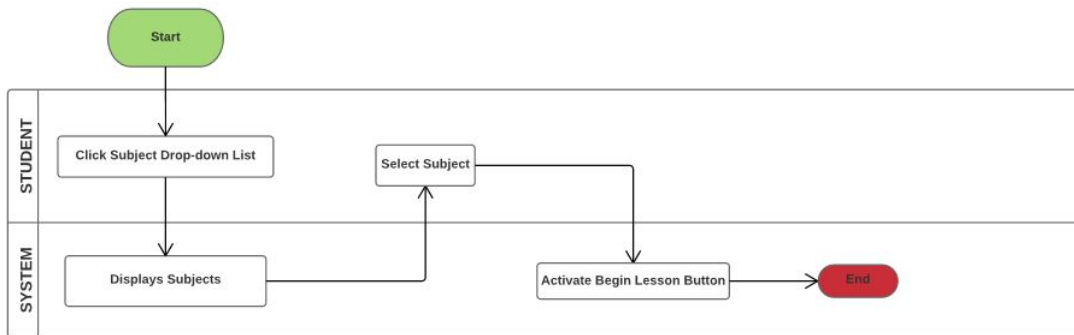
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UR - 04;

UC - 04: SELECT SUBJECT

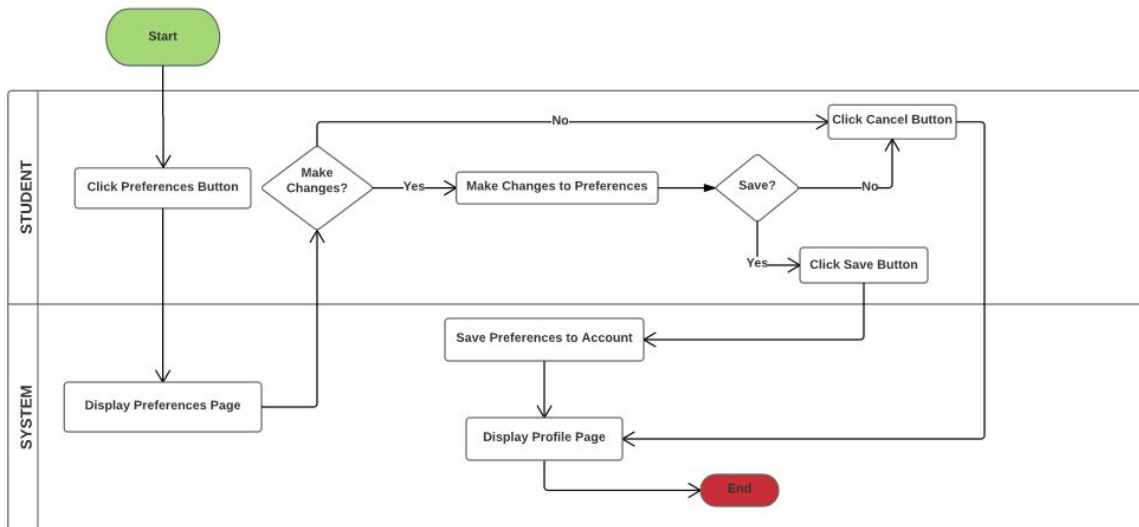
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UR - 12;

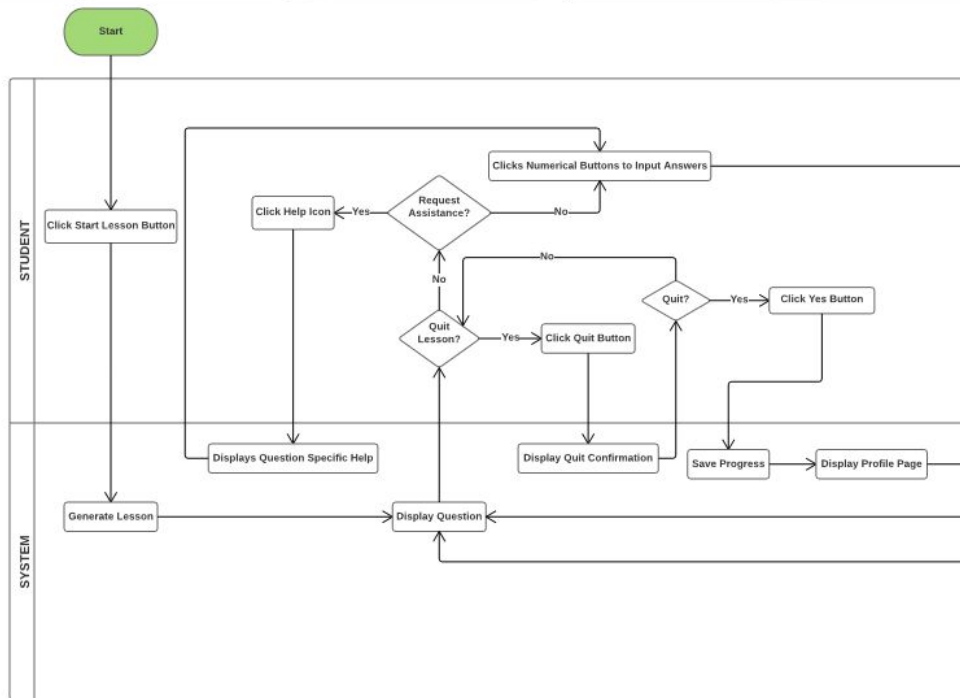
UC - 12: UPDATE PREFERENCES

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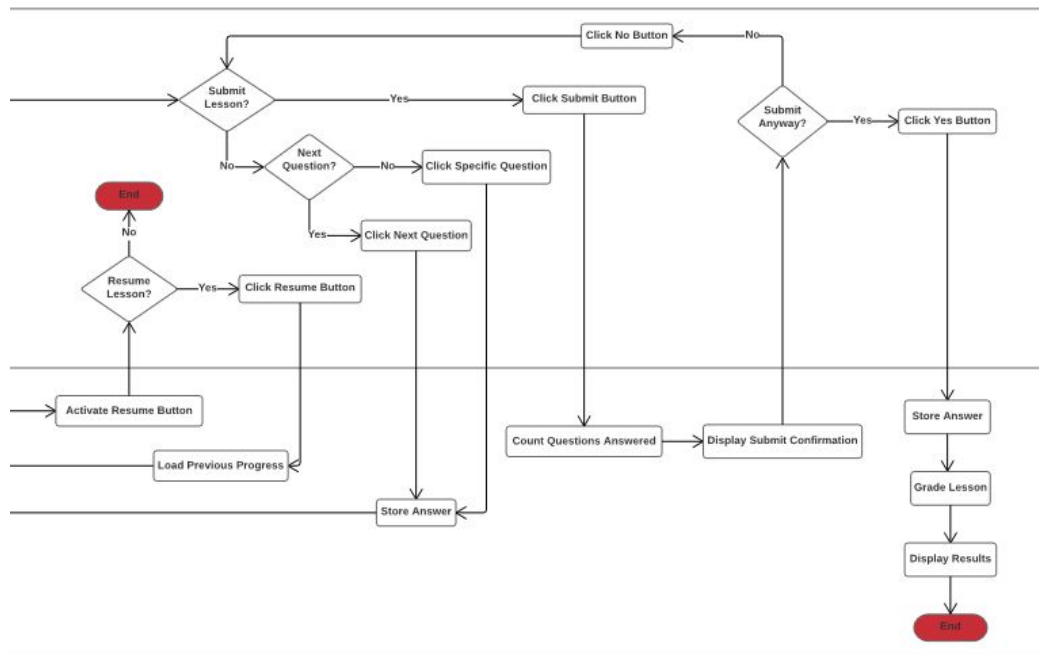


UR - 05; UR - 06; UR - 07; UR - 08; UR - 09; UR - 10; UR - 11;

UC - 05: DO LESSON, UC - 06: INPUT ANSWER, UC - 07: QUIT LESSON, UC - 08: RESUME LESSON,  
UC - 09: REQUEST ASSISTANCE, UC - 10: SUBMIT ANSWERS, UC - 11: VIEW RESULTS



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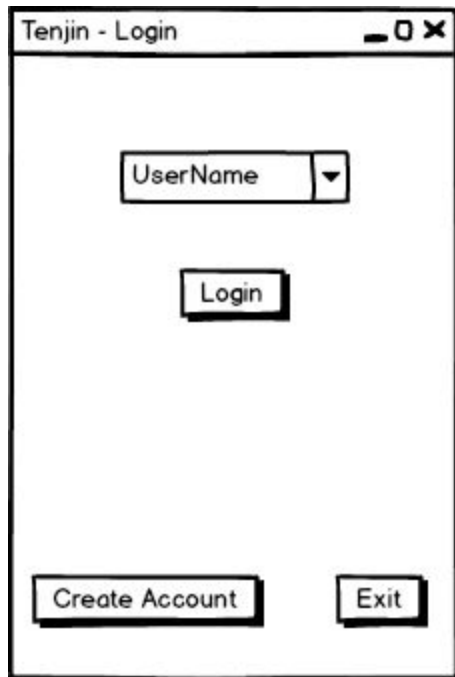
# Data Storage & Classes:

Data Storage: Flat text files

Classes:

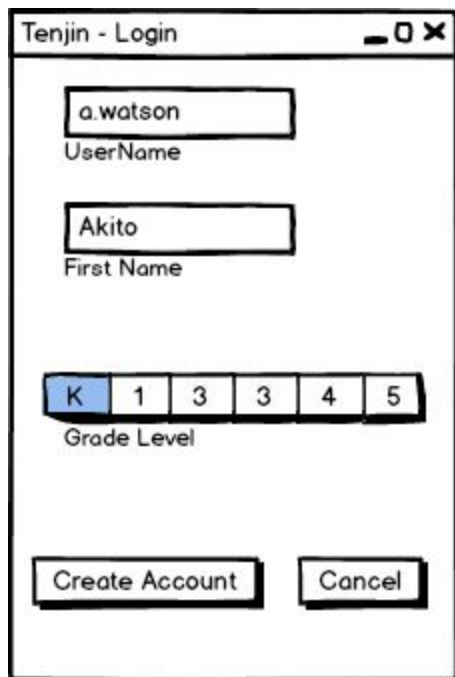
- User class to store information about the user's username and preferences
- Module class to store information about the user's current progress and completed milestones

# UI Mockups:



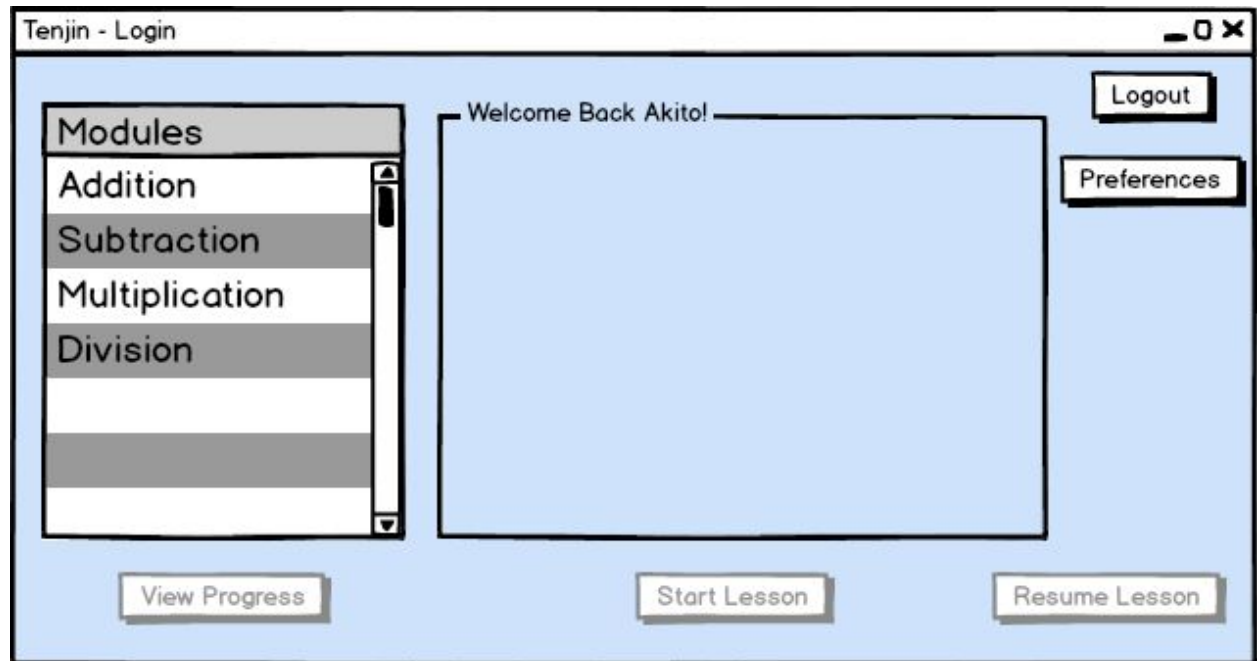
A window titled "Tenjin - Login" with standard window controls (minimize, maximize, close). The interface contains a "UserName" label above a text input field, a "Login" button centered below the input, and two buttons at the bottom: "Create Account" on the left and "Exit" on the right.

<Login Page>

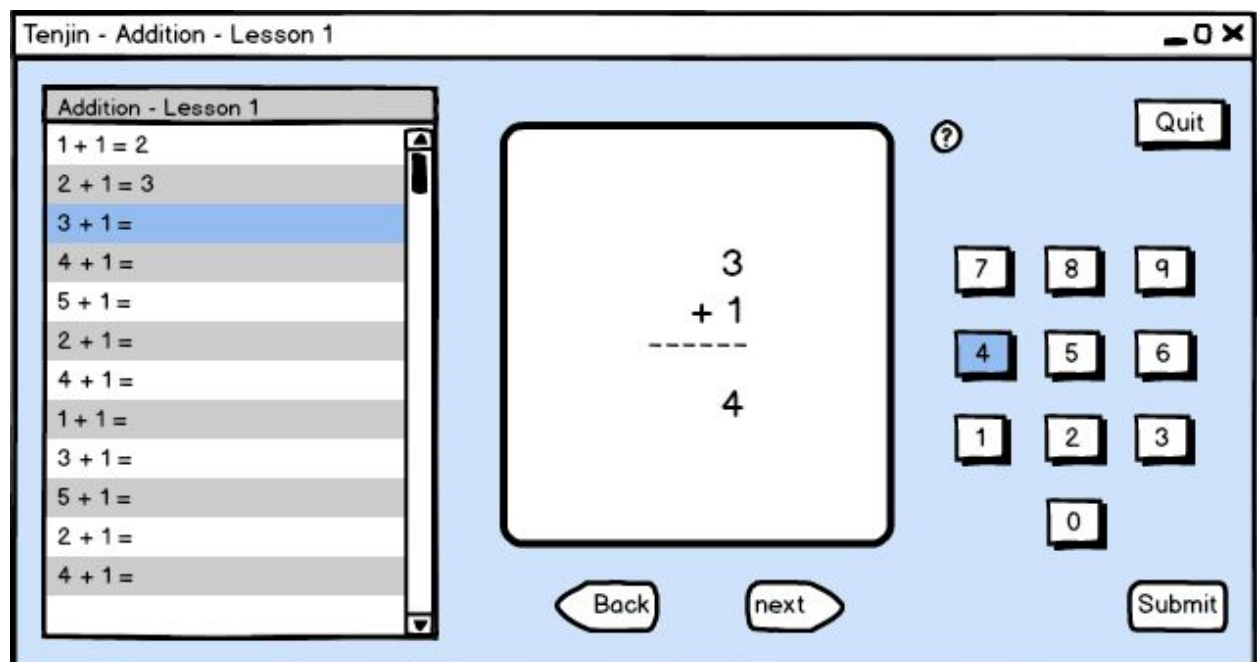


A window titled "Tenjin - Login" with standard window controls. The interface shows the "Create Account" form filled with data: the "UserName" field contains "a.watson", the "First Name" field contains "Akito", and the "Grade Level" field is a segmented control with options "K", "1", "3", "3", "4", and "5", where "K" is currently selected. At the bottom, there are two buttons: "Create Account" on the left and "Cancel" on the right.

<Create Account Page>

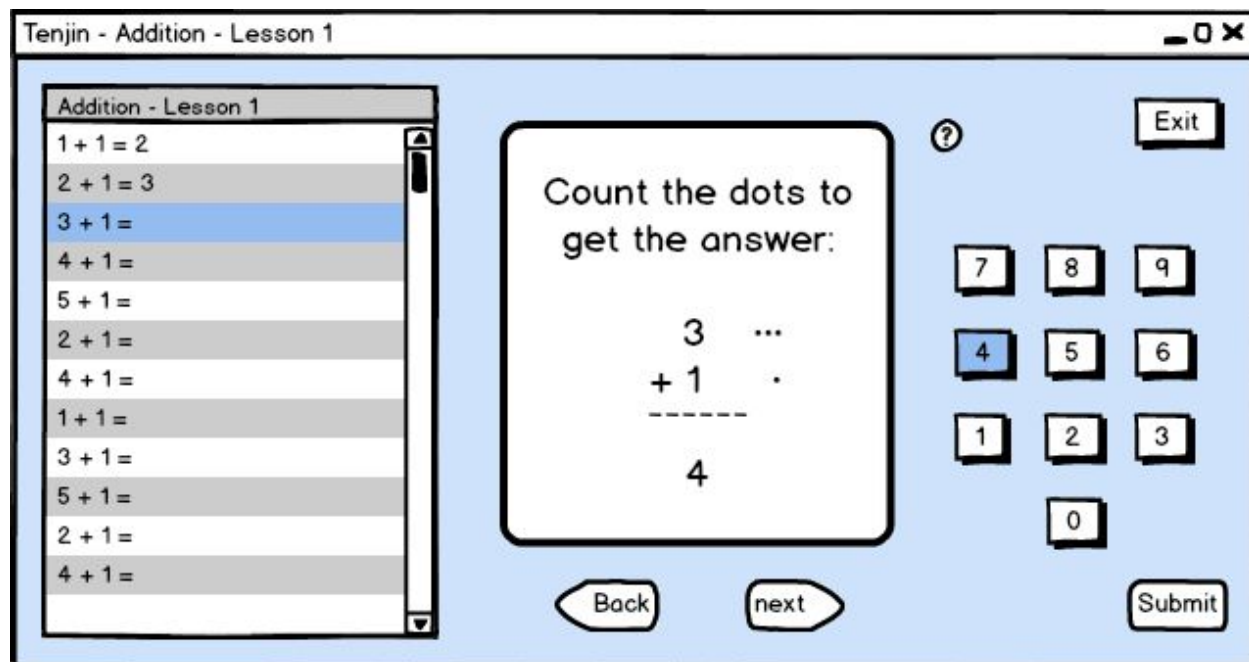


<Main Profile Page>

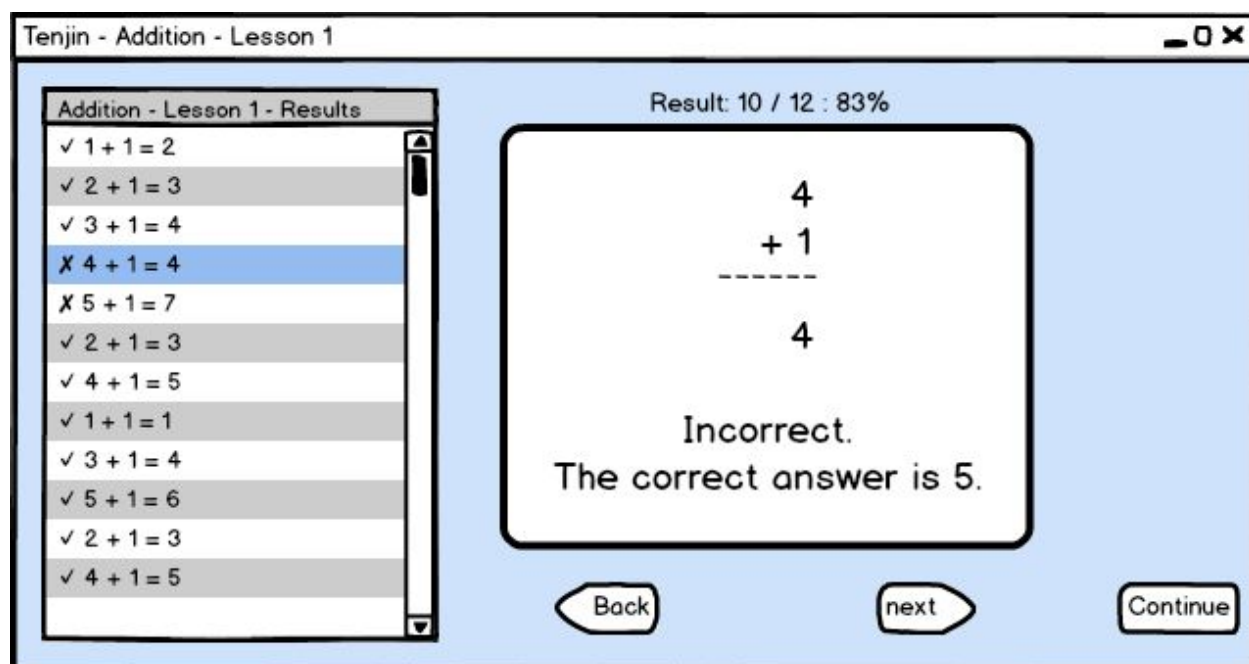


<Lesson Page>





<Request Assistance>



<View Results>

Tenjin - Login

Progress

Addition

Add numbers ≤ 5 with 1	<div><div></div></div>
Add numbers ≤ 10 with 1	<div><div></div></div>
Add numbers ≤ 5 with 2	<div><div></div></div>
Add numbers ≤ 5 with 3	<div><div></div></div>
Add numbers ≤ 5 with 4	<div><div></div></div>

Logout

Settings

View Progress

<View Overall Progress>

Tenjin - Preferences

Blue

Background Color

K 1 3 3 4 5

Grade Level

Save

Cancel

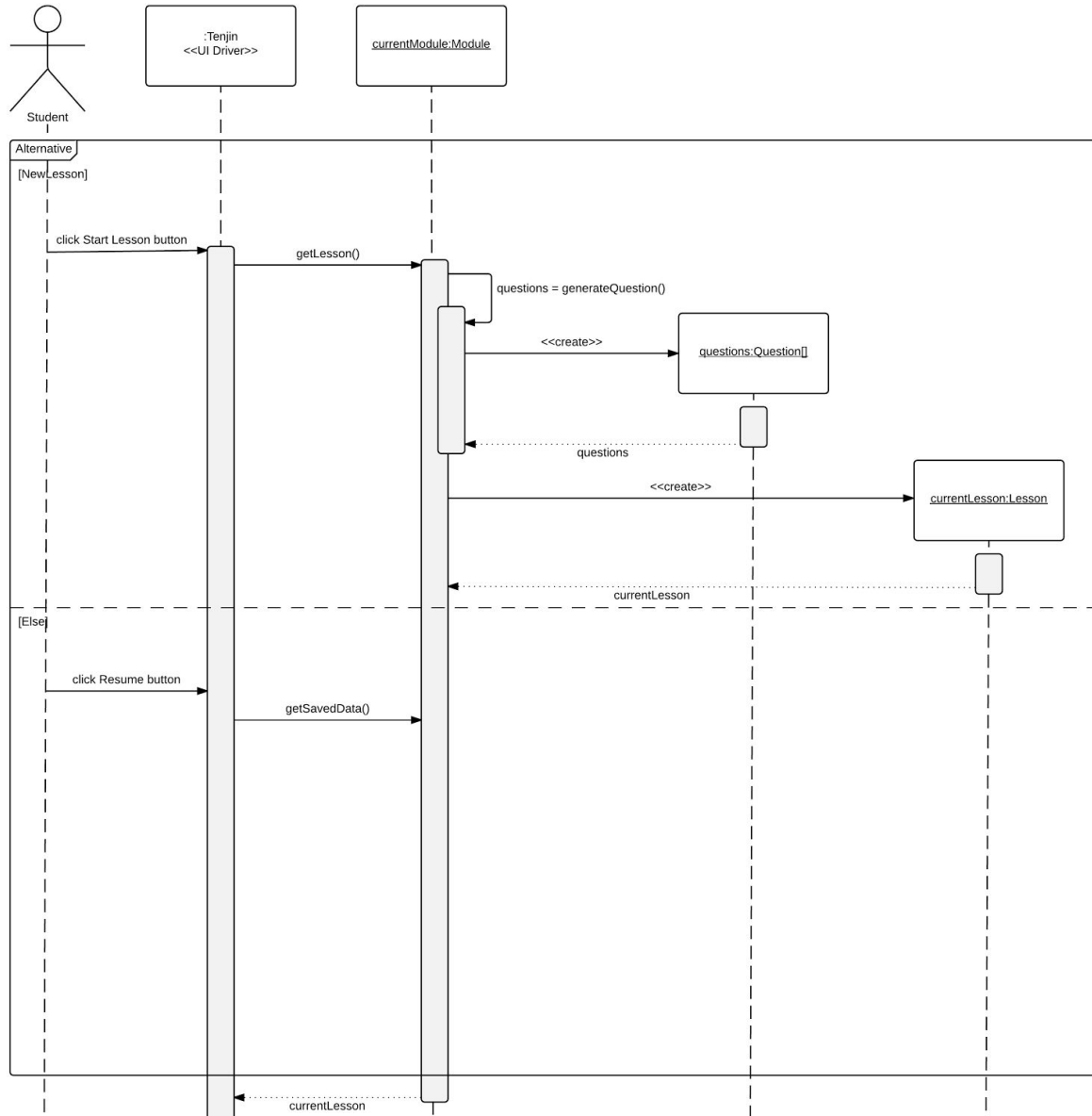
<User Preference Page>

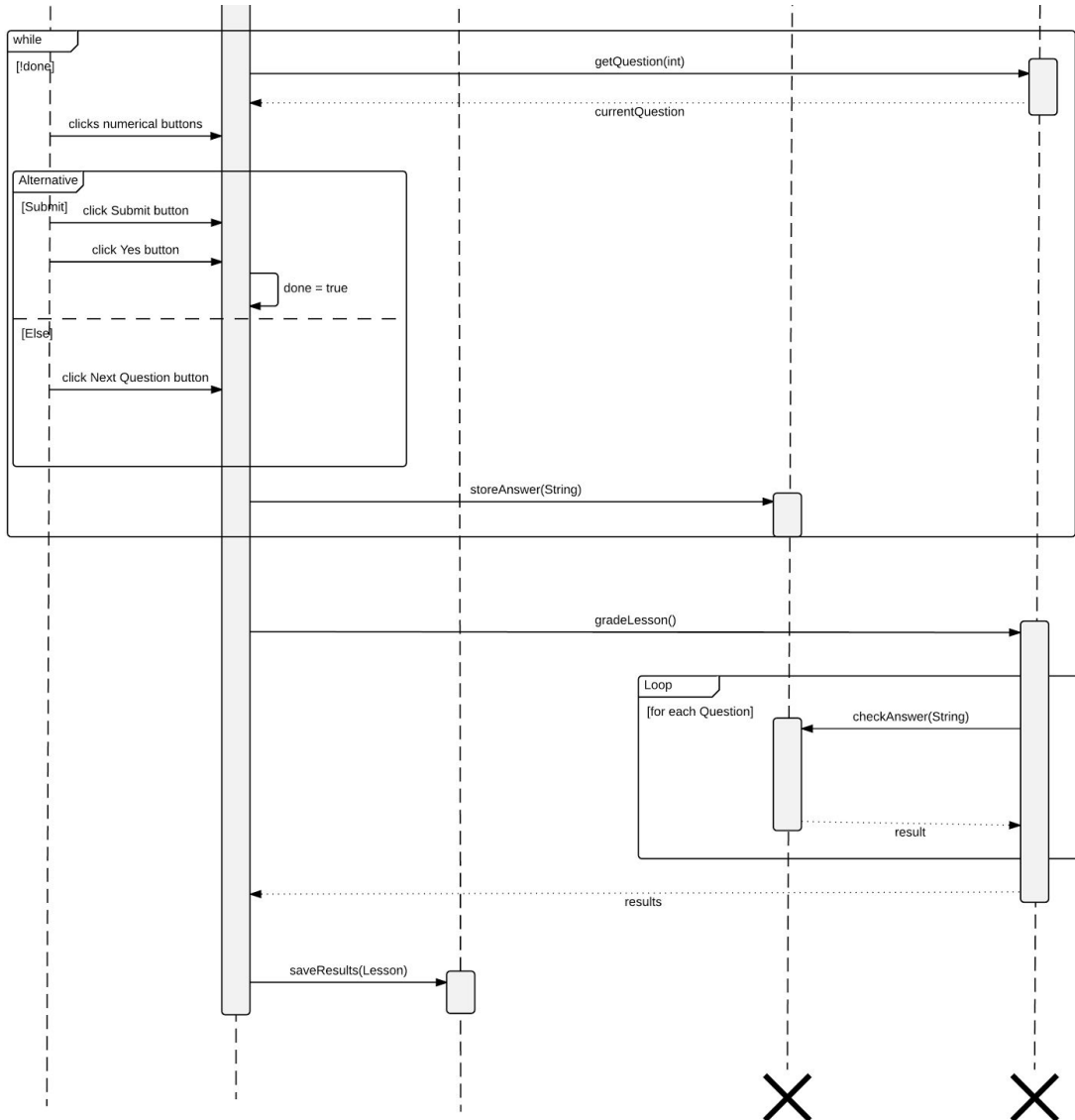
# Sequence Diagram: *Created With LucidCharts*

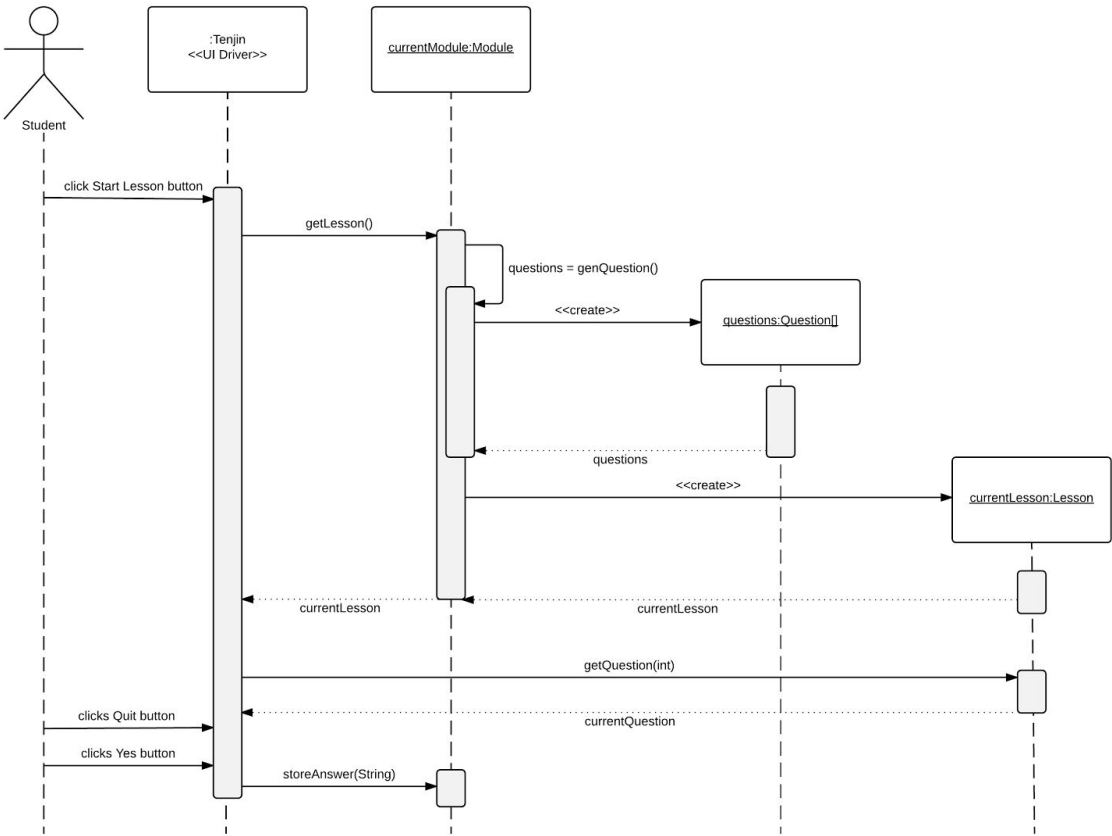
UR - 05; UC - 05: Do Lesson; UR - 08; UC - 08: Resume Lesson

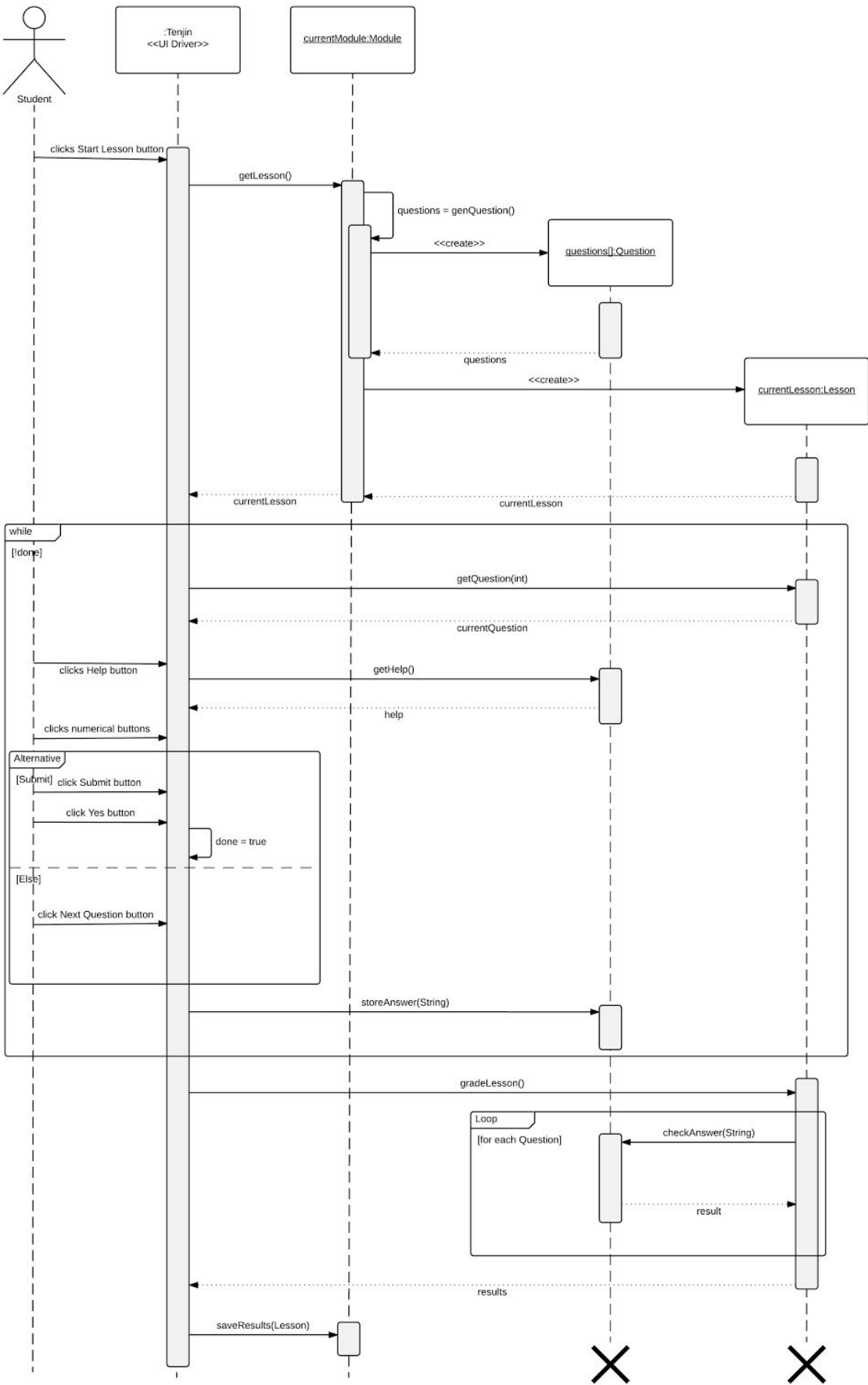
UR - 10; UC - 10: Submit Lesson; UR - 11; UC - 11: View Results

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## Class Diagram: *Created With LucidCharts*

