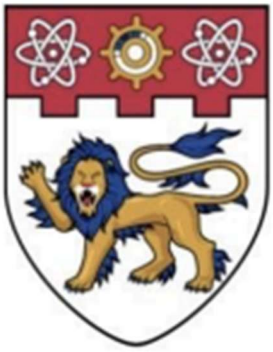

NANYANG TECHNOLOGICAL UNIVERSITY
SINGAPORE

SC2006-Software Engineering

Supporting Documents: Use Cases

Group Member	**Matric Number**
Lim Kiat Yang Ryan	U2421937D
Yu Wenhao	U2421425F
Yong Chee Seng	U2420563K
Peng Sizhe	U2423895H
Tarun Ilangovan	U2422251A

Use Case ID:	UCQ-1		
Use Case Name:	Query School		
Created By:	Yong Chee Seng	Last Updated By:	Yong Chee Seng
Date Created:	4 September 2025	Date Last Updated:	15 November 2025

Actor:	User (Initiating)
Description:	Users shall be able to query schools based on different criteria, and the system shall show a list of schools that satisfy all the criteria.
Preconditions:	1. The system initiated UCSY-1 Fetch School Data from Government API and retrieved the latest school dataset.
Postconditions:	1. The system displays a list of schools that match all selected criteria or shows “no results” if none is found.
Priority:	High
Frequency of Use:	Estimated 50–200 per day across all users
Flow of Events:	1. The user navigates to the “Query School” page. 2. The system displays the full list of schools. 3. The system displays available query criteria (e.g., name, region, subject, CCA). 4. The user enters one or more criteria. 5. The user submits the query. 6. The system validates the query input. 7. The system filters the school data according to criteria. 8. The system displays a list of matching schools.
Alternative Flows:	AFS6: **No Criteria Entered** 1. The system continues showing all schools. AFS8: **No Results Found** 1. If no school satisfies all the criteria, the system displays the message “No result found”.
Exceptions:	NA
Includes:	1. UCSY-1 Fetch School Data from Government API

Special Requirements:	1. The system shall allow selection of criteria from predefined options where applicable (e.g., when filtering by subject, the system shall provide a list of available subjects instead of requiring manual text input). 2. The system shall complete the filter within 2 seconds under normal load condition.
Assumptions:	1. The “Query School” page is the main entry point of the application.
Notes and Issues:	NA

Use Case ID:	UCD-1		
Use Case Name:	View School Details		
Created By:	Yong Chee Seng	Last Updated By:	Yong Chee Seng
Date Created:	4 September 2025	Date Last Updated:	15 November 2025

Actor:	User (Initiating)
Description:	The user shall be able to view the details of a selected school, and the system shall display the full information of that school.
Preconditions:	1. The system has received the identifier of the selected school (e.g., unique ID). 2. The system initiated UCSY-1 Fetch School Data from Government API and retrieved the latest school dataset.
Postconditions:	1. The system displays the full details of the selected school. 2. The system displays any available user comments associated with the school. 3. The system displays any available user replies to the comments associated with the school.
Priority:	High
Frequency of Use:	Estimated 100–500 per day across all users
Flow of Events:	1. The user selects a school from the query results (or other entry points). 2. The system displays the full details of the selected school. 3. The system retrieves users' comments related to the school, and the replies to these comments. 4. System displays the retrieved user comment and replies
Alternative Flows:	AFS2: **School Not Found** 1. If a school with the identifier is not found, the system displays error "School not found". AFS4: **Comments Or Replies Unavailable** 1. If comments or replies cannot be retrieved, the system displays error "Comments / Replies unavailable at the moment".
Exceptions:	NA

Includes:	1. UCSY-1 Fetch School Data from Government API
Special Requirements:	1. The system shall show the details within 2 seconds under normal load condition.
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCS-4		
Use Case Name:	Save School as Favourite		
Created By:	Yong Chee Seng	Last Updated By:	Yong Chee Seng
Date Created:	4 September 2025	Date Last Updated:	15 November 2025

Actor:	User (Initiating)
Description:	The user shall be able to save a school as favourite.
Preconditions:	1. The user has logged in to an account. 2. The user has navigated to a valid entry point (e.g., Query School).
Postconditions:	1. The system saves the school. 2. The system visually indicates the saved status of the school.
Priority:	Medium
Frequency of Use:	Estimated 5-10 per day across all users
Flow of Events:	1. The user navigates to a valid entry point. 2. The user selects a school to save as favourite. 3. The system stores the school as a favourite for the user. 4. The system displays a clear sign the school is saved as favourite.
Alternative Flows:	AFS3a: **User Not Logged In** 1. The system displays the message “You need to login to save the school”. AFS3b: **User Already Saved as Favourite** 1. If the user has already saved the school previously, the system removes it from saved schools and updates the UI indicator. AFS4: **System Error** 1. If the school cannot be stored or removed due to a system error, system displays: “Unable to save school. Please try again later.”
Exceptions:	NA
Includes:	UCA-1 Login
Special Requirements:	1. The system shall complete the process within 5 seconds under normal load conditions.

Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCD-2		
Use Case Name:	Compare School		
Created By:	Yong Chee Seng	Last Updated By:	Yong Chee Seng
Date Created:	4 September 2025	Date Last Updated:	15 November 2025

Actor:	User (Initiating)
Description:	The user shall be able to view and compare the details of 2 or more selected schools side by side.
Preconditions:	1. The user has logged in to an account. 2. The user has more than 2 schools saved to his account. 3. The system initiated UCSY-1 Fetch School Data from Government API and retrieved the latest school dataset.
Postconditions:	1. The system displays the full details of all selected schools side by side. 2. System suggests the most suitable school after taking into account the user's Natural Language input
Priority:	Medium-High
Frequency of Use:	Estimated 10–50 per day across all users
Flow of Events:	1. User selects more than 2 schools from their saved schools 2. The system displays the full details of the all selected schools side by side. 3. The system prompts user to input a Natural Language prompt to add context to their situation 4. The system suggests the most suitable school from the selected schools and justifies based on the user's prompt.
Alternative Flows:	NA
Exceptions:	NA
Includes:	1. UCSY-1 Fetch School Data from Government API 2. UCA-1 Login
Special Requirements:	1. The system shall show the details within 2 seconds under normal load condition. 2. The system shall present the comparison of both schools in a responsive layout that avoids UI overlay issues or excessive horizontal scrolling across all supported devices. 3. The system shall return the LLM-generated text within 30 seconds of submitting the user's prompt.
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCA-1		
Use Case Name:	Login		
Created By:	Yong Chee Seng	Last Updated By:	Yong Chee Seng
Date Created:	4 September 2025	Date Last Updated:	15 November 2025

Actor:	User (Initiating)
Description:	The user shall be able to login to their account by providing valid credentials.
Preconditions:	1. The user has signed up for an account.
Postconditions:	1. The system recognizes the user as authenticated and grants access to logged-in user functionalities. 2. The system displays the account username in the UI.
Priority:	Medium-High
Frequency of Use:	Estimated 5-10 per day across all users
Flow of Events:	1. The user navigates to the “Login” page. 2. User inputs username and password. 3. The system retrieves the user account information corresponding to the entered username. 4. If the user exists, the system validates the entered password against the stored password. 5. If the password is correct, the system creates a session for the authenticated user. 6. The system displays the message “Login successfully”. 7. The system redirects the user to the home page.
Alternative Flows:	AFS4a: **User Not Found** 1. If the entered username does not exist, the system displays error “Wrong username or password”. AFS4b: **User Unavailable** 1. If the system cannot access user data, the system displays error “Login unavailable. Please try again later”. AFS5: **Incorrect Password** 1. If the password is incorrect, the system displays error “Wrong username or password”.
Exceptions:	NA
Includes:	NA
Special Requirements:	1. The system shall complete the login process within 5 seconds under normal load conditions.
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCA-2		
Use Case Name:	Signup		
Created By:	Yong Chee Seng	Last Updated By:	Yong Chee Seng
Date Created:	4 September 2025	Date Last Updated:	15 November 2025

Actor:	User (Initiating)
Description:	The user shall be able to sign up an account by providing valid credentials.
Preconditions:	NA
Postconditions:	1. The system stores user credentials securely. 2. The system allows user to login with the provided credentials
Priority:	Medium-High
Frequency of Use:	Estimated 3-5 per day across all users
Flow of Events:	1. The user navigates to the “Signup” page. 2. The user inputs username, password, and confirm password. 3. The system checks whether the username is already taken. 4. If the username is available, the system validates that the password meets the security policy (e.g., minimum length of 8 characters, includes uppercase, lowercase, number, and special symbol). 5. If the password is secure, the system verifies that the password and confirms the password match. 6. If the confirm password is the same as the password, the system stores user credentials. 7. The system displays the message “Account created. You can login now”. 8. The system redirects the user to the “Login” page.
Alternative Flows:	AFS4a: **Username Taken** 1. If the entered username exists, the system displays error “Username already exists. Please choose another”. AFS4b: **User Unavailable** 1. If the system cannot access user data, the system displays error “Signup unavailable. Please try again later”. AFS5: **Weak Password** 1. If the password does not meet the security policy, the system displays error: “Password does not meet security requirements”. AFS6: **Password Mismatch** 1. If the password and confirm password do not match, the system displays the error: “Passwords do not match”.

	AFS7: **System Error** 1. If credentials cannot be stored due to a system error, system displays error: “Signup unavailable. Please try again later”.
Exceptions:	NA
Includes:	NA
Special Requirements:	1. The system shall enforce a strong password policy (e.g., minimum length of 8 characters, including uppercase, lowercase, numbers, and special symbols). 2. The system shall complete the signup process within 5 seconds under normal load conditions. 3. The system shall store all user passwords using industry-standard encryption methods (e.g., bcrypt). 4. The system shall ensure that users explicitly agree to the Terms and Conditions and Privacy Policy in a clear and visible manner before account creation.
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCS-1		
Use Case Name:	Create Comment		
Created By:	Yong Chee Seng	Last Updated By:	Yong Chee Seng
Date Created:	4 September 2025	Date Last Updated:	15 November 2025

Actor:	User (Initiating)
Description:	The user shall be able to create and submit a comment under any "School Details" page.
Preconditions:	1. The user has logged in to an account. 2. The user has navigated to a valid "School Details" page.
Postconditions:	1. The system stores the submitted comment. 2. The system displays the new comment under the related school's comments section.
Priority:	Low
Frequency of Use:	Estimated 3-5 per day across all users
Flow of Events:	1. The user navigates to the "School Details" page. 2. The user inputs a comment into the comment input field. 3. The user submits the comment. 4. The system validates the input (e.g., not empty, within allowed length). 5. If valid, the system stores the comment. 6. The system refreshes or updates the page. 7. The system displays the newly created comment in the comments section.
Alternative Flows:	AFS2: **User Not Logged In** 1. The system displays the message "You need to login to comment". AFS5: **Invalid Input** 1. The system displays a clear error message explaining why input is invalid (e.g., empty or too long). AFS6: **System Error** 1. If a comment cannot be stored due to a system error, the system displays error: "Create comment unavailable. Please try again later".
Exceptions:	NA
Includes:	UCA-1 Login
Special Requirements:	1. The system shall complete the comment creation process within 5 seconds under normal load conditions. 2. System shall protect against automated/bot attack (e.g., reCAPTCHA or an equivalent).

	3. The system shall sanitize and validate user input to prevent malicious attacks (e.g., XSS, SQL injection).
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCS-2		
Use Case Name:	Reply Comment		
Created By:	Yong Chee Seng	Last Updated By:	Lim Kiat Yang Ryan
Date Created:	4 September 2025	Date Last Updated:	4 Nov 2025

Actor:	User (Initiating)
Description:	The user shall be able to reply to a comment under any “School Details” page.
Preconditions:	1. The user has logged in to an account. 2. The user has navigated to a valid “School Details” page.
Postconditions:	1. The system stores the submitted reply. 2. The system displays the new reply under the related comments.
Priority:	Low
Frequency of Use:	Estimated 3-5 per day across all users
Flow of Events:	1. The user navigates to the “School Details” page. 2. The user selects to reply to a comment. 3. User inputs reply into the input field. 4. The user submits the reply. 5. System validates the input (e.g., not empty, within allowed length). 6. If valid, the system stores the reply. 7. The system refreshes or updates the page. 8. The system displays the newly created reply under the related comment.
Alternative Flows:	AFS3: **User Not Logged In** 1. The system displays the message “You need to login to reply”. AFS6: **Invalid Input** 1. The system displays a clear error message explaining why input is invalid (e.g., empty or too long). AFS7: **System Error** 1. If reply cannot be stored due to a system error, system displays error: “Reply unavailable. Please try again later”.
Exceptions:	NA
Includes:	UCA-1 Login
Special Requirements:	1. The system shall complete the reply creation process within 5 seconds under normal load conditions. 2. System shall protect against automated/bot attack (e.g., reCAPTCHA or an equivalent). 3. The system shall sanitize and validate user input to prevent malicious attacks (e.g., XSS, SQL injection).
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCS-3		
Use Case Name:	Vote Comment		
Created By:	Yong Chee Seng	Last Updated By:	Lim Kiat Yang Ryan
Date Created:	4 September 2025	Date Last Updated:	4 November 2025

Actor:	User (Initiating)
Description:	The user shall be able to upvote or downvote a comment under any “School Details” page.
Preconditions:	1. The user has logged in to an account. 2. The user has navigated to a valid “School Details” page.
Postconditions:	1. The system stores the submitted upvote or downvote. 2. The system displays the new vote count under the related comment.
Priority:	Low
Frequency of Use:	Estimated 5-10 per day across all users
Flow of Events:	1. The user navigates to the “School Details” page. 2. The user selects a comment to upvote or downvote. 3. The system stores the vote. 4. System refreshes or updates the page 5. The system displays the new upvote and downvote count under the related comments.
Alternative Flows:	AFS3a: **User Not Logged In** 1. The system displays the message “You need to login to upvote or downvote”. AFS3b: **User Already Voted** 1. If the user has already voted the comment, the system toggles the vote. AFS4: **System Error** 1. If reply cannot be stored due to a system error, system displays error: “Upvote and downvote unavailable. Please try again later”.
Exceptions:	NA
Includes:	UCA-1 Login
Special Requirements:	1. The system shall complete the process within 5 seconds under normal load conditions. 2. System shall protect against automated/bot attack (e.g., reCAPTCHA or an equivalent).
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCSY-1		
Use Case Name:	Fetch School Data from Government API		
Created By:	Yong Chee Seng	Last Updated By:	Yong Chee Seng
Date Created:	4 September 2025	Date Last Updated:	15 November 2025

Actor:	Government API
Description:	The system shall retrieve available school data from MOE API.
Preconditions:	NA
Postconditions:	1. The system caches the retrieved school data in the system. 2. The system returns school data when requested.
Priority:	High
Frequency of Use:	Estimated 100-500 per day across all users
Flow of Events:	1. The system initiates UCSY-1 Fetch School Data from Government API. 2. The system calls the MOE API to retrieve all school data. 3. The Government API returns all school data. 4. The system caches the retrieved school data in the system.
Alternative Flows:	NA
Exceptions:	EX1: **MOE API Unavailable** 1. The system throws an exception to be caught by initiating a process.
Includes:	NA
Special Requirements:	1. The system shall complete the process within 5 minutes under normal load conditions. 2. The system shall initiate the process on startup before any user request. 3. The system shall initiate the process at a configurable interval between 1 and 7 days.
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCS-5		
Use Case Name:	Edit User Profile		
Created By:	Yong Chee Seng	Last Updated By:	
Date Created:	15 November 2025	Date Last Updated:	

Actor:	User (Initiating)
Description:	The user shall be able to edit their profile under the “User” page.
Preconditions:	1. The user has logged in to an account. 2. The user has navigated to a “User” page.
Postconditions:	1. The system stores the edited profile. 2. The system displays the new profile under the “User” page.
Priority:	Medium
Frequency of Use:	Estimated 3-5 per day across all users
Flow of Events:	1. The user navigates to the “User” page. 2. The user inputs a new profile into the corresponding field. 3. The user submits the input. 4. The system validates the input. 5. If valid, the system stores the new profile. 6. The system refreshes or updates the page. 7. The system displays the profile in the “User” page.
Alternative Flows:	AFS2: **User Not Logged In** 1. The system displays the message “You need to login”. AFS5: **Invalid Input** 1. The system displays a clear error message explaining why input is invalid (e.g., empty or too long). AFS6: **System Error** 1. If a comment cannot be stored due to a system error, the system displays error: “Create comment unavailable. Please try again later”.
Exceptions:	1. NA
Includes:	1. UCA-1 Login
Special Requirements:	1. The system shall complete the edit profile process within 5 seconds under normal load conditions. 2. System shall protect against automated/bot attack (e.g., reCAPTCHA or an equivalent). 3. The system shall sanitize and validate user input to prevent malicious attacks (e.g., XSS, SQL injection).
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCS-6		
Use Case Name:	Edit User Role		
Created By:	Yong Chee Seng	Last Updated By:	
Date Created:	15 November 2025	Date Last Updated:	

Actor:	Admin (Initiating)
Description:	The admin shall be able to edit the user role.
Preconditions:	1. The admin has logged in to an admin account.
Postconditions:	1. The system stores the edited role.
Priority:	Low
Frequency of Use:	Estimated 1 per month across all users
Flow of Events:	1. The admin inputs user ID and role 2. The admin submits the input. 3. The system stores the new role.
Alternative Flows:	AFS1: **User Not Admin** 1. The system displays the error message “Insufficient permission”. AFS3a: **User Not Found** 1. The system displays the error message “User not found". AFS3b: **Demoting Last Admin** 1. If the user is the last admin and is demoted to user, the system displays the error message “User is last admin”.
Exceptions:	1. NA
Includes:	1. UCA-1 Login
Special Requirements:	1. The system shall complete the edit role process within 5 seconds under normal load conditions.
Assumptions:	NA
Notes and Issues:	NA

Use Case ID:	UCS-7		
Use Case Name:	Edit School Cut Off Point		
Created By:	Yong Chee Seng	Last Updated By:	
Date Created:	15 November 2025	Date Last Updated:	

Actor:	Admin (Initiating)
Description:	The admin shall be able to edit a school cut-off point.
Preconditions:	1. The admin has logged in to an admin account.
Postconditions:	1. The system stores the edited cut-off point.
Priority:	Low
Frequency of Use:	Estimated 350 per year across all users
Flow of Events:	1. The admin inputs school ID, minimum cut-off point, and maximum cut-off point 2. The admin submits the input. 3. The system stores the edited cut-off point.
Alternative Flows:	AFS1: **User Not Admin** 1. The system displays the error message “Insufficient permission”. AFS3a: **School Not Found** 1. The system displays the error message “School not found". AFS3b: **Invalid Cut Off Point Range** 1. The system displays the error message “Cut-off point must be in the range of 4-32”. AFS3c: Maximum Cut Off Point Smaller Than Minimum Cut Off Point 1. The system displays the error message “Maximum cut-off point larger or equal to minimum cut-off point”.
Exceptions:	1. NA
Includes:	1. UCA-1 Login
Special Requirements:	1. The system shall complete the edit cut-off point process within 5 seconds under normal load conditions.
Assumptions:	NA
Notes and Issues:	NA