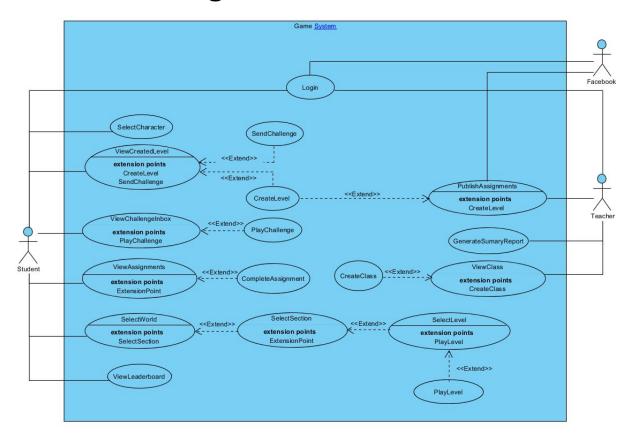
Use Case Diagram



Use Case Description

Use Case ID:	1		
Use Case Name:	Login		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Student, Teacher, SocialMedia	
Description:	Users can login to the system through their Facebook accounts. After logging in successfully, users will be brought to the Homepage where the following options are available: (For students) "Choose/Change Character", "Select Campaign", "View Created Level(s)", "Challenge Inbox", "Assignment Inbox", and "Leaderboard". (For teachers)	
	"Summary Report", "Publish Assignments", and "View Class".	
Preconditions:	Users must have an existing Facebook/Twitter account.	
Postconditions:	User logins to the system successfully.	
Flow of Events:	 System displays the Login page. User enters his/her username and password in the respective input fields. System validates the login credentials. If the login credentials are valid, the system redirects to the Homepage. 	
Alternative Flows:	AF-S4: If the login credentials are invalid. 1. System displays the error message "Invalid username/password.". 2. System returns to step 2.	
Exception:	N/A	

Includes:	N/A
Extends:	Register for an account
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	2		
Use Case Name:	SelectCharacter		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Student
Description:	There are 4 different characters for the user to choose from on the Character Selection page. Each character has a unique perk.
Preconditions:	The student has logged in to the system successfully.
Postconditions:	The student's character is updated to his/her latest choice.
Flow of Events:	 The student clicks on the "Select/Change Character" button on the Homepage. System redirects to the Character Selection page where the available characters for selection are displayed. The student clicks on one of the characters. The selected character lights up, indicating the student's current choice. The student clicks on the "Confirm" button.
Alternative Flows:	N/A
Exception:	N/A
Includes:	N/A
Extends:	N/A
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	3		
Use Case Name:	ViewCreatedLevel		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Student
Description:	Students can view/create level(s) and challenge other students with the levels they have designed on the View Created Level(s) page. The View Created Level(s) page consists of the student's customized levels, a "Create Level" button, and a "Send Challenge" button.
Preconditions:	The student has logged in to the system successfully.
Postconditions:	The system displays the student's customized levels and the options to create level and send challenge.
Flow of Events:	 The student clicks on the "View Created Level(s)" button on the Homepage. System redirects to the View Created Level(s) page. If the student clicks on the "Create Level" button, the extended use case CreateLevel is used. If the student wants to send his/her customized level to challenge other students, the extended use case SendChallenge is used.
Alternative Flows:	N/A
Exception:	N/A
Includes:	N/A
Extends:	CreateLevel, SendChallenge
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	4		
Use Case Name:	CreateLevel		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	N/A	
Description:	The Level Creation page allows users to create a customized level. For each question, it displays a Question And Options template which consists of a question field and 4 MCQ option fields. A "Next" button, a "Previous" button, a "Complete" button, and a "Exit" button will be located at the bottom of the page. The "Previous" and "Complete" buttons will be greyed out (indicates that they are unavailable) for the first question. Each MCQ option field has a checkbox. Checking the checkbox indicates that the corresponding MCQ option is the correct option for the question. Only 1 option can be selected as the correct answer.	
Preconditions:	The user has logged in to the system successfully.	
Postconditions:	The level is created successfully. The View Created Level(s) page is updated accordingly.	
Flow of Events:	 System displays the Level Creation page. System displays a new Question And Options template. The user enters the question and options in respective fields provided. The user sets the correct option for the question by checking the checkbox of the one of the options. If the user clicks on the "Next" button, go back to step 2. If the user clicks on the "Complete" button, the system prompts for user confirmation. If the user clicks on the "Yes" button in the prompt message, the system redirects back to the View Created Level(s) page. System updates the View Created Level(s) page to display the newly created level. 	

	System displays the message "Level created successfully!" for 2 seconds.
Alternative Flows:	 AF-S5: If the user clicks on the "Previous" button. 1. System displays the previous question that the user has designed. 2. The user makes his/her desired changes. 3. Return to step 5.
	 AF-S6: If the user clicks on the "Exit" button, the system prompts for user confirmation. 1. If the user clicks on the "Yes" button, the system redirects back to the View Created Level(s) page. 2. If the user clicks on the "No" button, the user can make any changes to the current question and return to step 5. AF-S7: If the user clicks on the "No" button on the prompt message. 1. The user can make any changes to the current question. 2. Return to step 5.
Exception:	 EX1: If there are missing user input in any fields of a Question And Options template. 1. System display error message "Please fill in missing fields.". 2. System highlights the missing fields in red.
Includes:	N/A
Extends:	N/A
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	5		
Use Case Name:	SendChallenge		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	N/A
Description:	Students can send their customized levels as challenges to other students.
Preconditions:	The student has logged in to the system successfully.
Postconditions:	Student's selected customised levels are published in the selected class group(s).
Flow of Events:	 The student selects the level(s) he/she would like to send as the challenge. The student clicks on the "Send Challenge" button. System displays a list of class group(s) that the student belongs to. The student selects the class group(s) he/she would like to send the challenge to. The student clicks on the "Confirm" button. System prompts for the student's confirmation. If the student clicks on the "Yes" button, the system sends the selected level(s) to the selected class group(s). System redirects back to the View Created Level(s) page. System displays the message "Challenge sent successfully!" for 2 seconds.
Alternative Flows:	AF-S7: If the student clicks on the "No" button. 1. System redirects back to the View Created Level(s) page.
Exception:	EX1: The student does not have any customised level. 1. At the section that displays the level(s), the message "No level(s) available." is displayed.

	The "Send Challenge" button will be greyed out, indicating that it is unavailable.
	EX2: The student is not enrolled in any class group. 1. When the student clicks on the "Send Challenge" button after selecting level(s), the system displays the message "No class group(s) available. Please contact your teacher(s) for assistance.".
Includes:	N/A
Extends:	N/A
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	6		
Use Case Name:	ViewChallengeInbox		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Student		
Description:	Students can receive and accept challenges from other students of the same class group(s) through the Challenge Inbox page.		
Preconditions:	The student has logged in to the system successfully.		
Postconditions:	The challenge is selected successfully and the challenge starts(PlayChallenge use case).		
Flow of Events:	 The student clicks on the "Challenge Inbox" button on the Homepage. System redirects to the Challenge Inbox page where the available challenges are displayed. If the student clicks on one of the challenges, the extended use case PlayLevel is used. 		
Alternative Flows:	N/A		
Exception:	EX1: The student has not received any challenges from other students. 1. At the section that displays the challenge(s), the message "No challenge(s) available." is displayed.		
Includes:	N/A		
Extends:	PlayChallenge		
Assumptions:	N/A		
Notes and Issues:	N/A		

Use Case ID:	7		
Use Case Name:	PlayChallenge		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	N/A
Description:	Students can play the challenge(s) designed by other students.
Preconditions:	 The student has logged in to the system successfully. The student has received challenge(s) from other students. The student has selected a challenge from the Challenge Inbox page.
Postconditions:	The student completes/fails the challenge.
Flow of Events:	 System displays a question from the challenge. The student selects one of the 4 options for the displayed question. If the student's answer is correct, the student's character will launch an attack at the monster representing the challenge. Repeat steps 1 to 3 until all questions have been answered. Depending on the student's remaining health points, 1 to 3 stars is given.
Alternative Flows:	AF-S3: If the student's answer is incorrect. 1. The monster will launch an attack at the student's character. 2. Go back to step 4.
Exception:	EX1: The student's character reaches 0 health points before the monster. 1. The student fails the challenge. 2. The student receives 0 stars.
Includes:	N/A

Extends:	N/A
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	8		
Use Case Name:	ViewAssignments		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Student
Description:	Students can view the assignment(s) designed by their teachers through the Assignment Inbox page.
Preconditions:	The student has logged in to the system successfully.
Postconditions:	The student completes/fails the assignment.
Flow of Events:	 The student clicks on the "Assignment Inbox" button on the Homepage. System redirects to the Assignment Inbox page where the available assignments are displayed. If the student clicks on one of the assignments, the extended use case PlayLevel is used.
Alternative Flows:	N/A
Exception:	EX1: The student has not received any assignments from his/her teacher(s). 1. At the section that displays the assignment(s), the message "No assignment(s) available." is displayed.
Includes:	N/A
Extends:	CompleteAssignment
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	9		
Use Case Name:	CompleteAssignment		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	N/A
Description:	Students can complete the assignment(s) designed by their teachers.
Preconditions:	 The student has logged in to the system successfully. The student has received an assignment from his/her teacher(s). The student has selected an assignment from the Assignment Inbox page.
Postconditions:	The student completes/fails the assignment.
Flow of Events:	 System displays a question from the assignment. The student selects one of the 4 options for the displayed question. If the student's answer is correct, the student's character will launch an attack at the monster representing the assignment. Repeat steps 1 to 3 until all questions have been answered. Depending on the student's remaining health points, 1 to 3 stars is given.
Alternative Flows:	AF-S3: If the student's answer is incorrect.1. The monster will launch an attack at the student's character.2. Go back to step 4.
Exception:	EX1: The student's character reaches 0 health points before the monster. 1. The student fails the challenge. 2. The student receives 0 stars.
Includes:	N/A

Extends:	N/A
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	10		
Use Case Name:	ViewLeaderboard		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Student
Description:	The leaderboard keeps the record of the scores attained by all students. It is accessible to all the students to keep them engaged for higher ranks.
Preconditions:	The student has logged in to the system successfully.
Postconditions:	The leaderboard is displayed successfully.
Flow of Events:	 The student clicks on the "Leaderboard" button on the Homepage. System redirects to the Leaderboard page where the scores of every student are displayed.
Alternative Flows:	N/A
Exception:	N/A
Includes:	N/A
Extends:	N/A
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	11		
Use Case Name:	SelectWorld		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Student	
Description:	Students can select one of the several worlds available through the Select World page. Each world represents the different phases in the life cycle of Software Engineering.	
Preconditions:	The student has logged in to the system successfully.	
Postconditions:	The corresponding sections of the world selected are displayed.	
Flow of Events:	 The student clicks on the "Select Campaign" button on the Homepage. System redirects to the Select World page where all the available worlds are displayed. If the student selects a world, the SelectSection use case is used. 	
Alternative Flows:	N/A	
Exception:	N/A	
Includes:	N/A	
Extends:	SelectSection	
Assumptions:	N/A	
Notes and Issues:	N/A	

Use Case ID:	12		
Use Case Name:	SelectSection		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Student	
Description:	Students can select one of the sections available in the world selected. Each section of a world represents a certain topic ranging from basic to advanced ones.	
Preconditions:	 The student has logged in to the system successfully. The student has selected a world. 	
Postconditions:	The corresponding levels of the section selected are displayed.	
Flow of Events:	 System redirects to the Select Section page where all the available sections of the corresponding world selected are displayed. If the student selects a section, the SelectLevel use case is used. 	
Alternative Flows:	N/A	
Exception:	N/A	
Includes:	N/A	
Extends:	SelectLevel	
Assumptions:	N/A	
Notes and Issues:	N/A	

Use Case ID:	13		
Use Case Name:	SelectLevel		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Student
Description:	Students can select one of the levels available in the section selected. Each level of a section consists of questions of increasing difficulties.
Preconditions:	 The student has logged in to the system successfully. The student has selected a section.
Postconditions:	The corresponding questions of the level selected are displayed.
Flow of Events:	 System redirects to the Select Level page where all the available levels of the corresponding section selected are displayed. If the student selects a level, the PlayLevel use case is used.
Alternative Flows:	N/A
Exception:	N/A
Includes:	N/A
Extends:	PlayLevel
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	14		
Use Case Name:	PlayLevel		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	N/A
Description:	Students can clear the levels available in various sections of various worlds.
Preconditions:	 The student has logged in to the system successfully. The student has selected a level from the Select Level page.
Postconditions:	The student completes/fails the level.
Flow of Events:	 System analyzes the student's playing history and adjusts the difficulty of the questions accordingly. System displays a question from the level. The student selects one of the 4 options for the displayed question. If the student's answer is correct, the student's character will launch an attack at the monster representing the level. Repeat steps 2 to 4 until all questions have been answered. Depending on the student's remaining health points, 1 to 3 stars is given.
Alternative Flows:	AF-S4: If the student's answer is incorrect. 1. The monster will launch an attack at the student's character. 2. Go back to step 5.
Exception:	EX1: The student's character reaches 0 health points before the monster. 1. The student fails the challenge. 2. The student receives 0 stars.
Includes:	N/A

Extends:	N/A
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	15		
Use Case Name:	PublishAssignments		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Teacher	
Description:	Teachers can create assignments (in the form of in-game levels). These assignments can then be published on Facebook for the students to complete. The Publish Assignments page consists of the assignments created by the teacher, a "Create Assignment" button, and a "Publish" button.	
Preconditions:	 The teacher has logged in to the system successfully. The teacher has enabled permission for the system to share the assignments through his/her Facebook. 	
Postconditions:	 The assignment is published to the selected class group(s). Students of the selected class group(s) receive a notification on Facebook to alert them of the new assignment. 	
Flow of Events:	 The teacher clicks on the "Publish Assignments" button on the Homepage. System redirects to the Publish Assignments page. If the teacher clicks on the "Create Assignment" button, the extended use case CreateLevel is used. The teacher selects the assignment(s) he/she would like to publish. The teacher clicks on the "Publish" button. System displays a list of class group(s) that the teacher has created. The teacher selects the class group(s) he/she would like to send the assignment to. The teacher clicks on the "Confirm" button. System prompts for the teacher's confirmation. 	

	 10. If the teacher clicks on the "Yes" button, the system sends the selected assignment(s) to the selected class group(s). 11. System redirects back to the Publish Assignments page. 12. System displays the message "Assignment(s) published successfully!" for 2 seconds.
Alternative Flows:	AF-S10: If the teacher clicks on the "No" button. 1. System redirects back to the Publish Assignments page.
Exception:	 EX1: The teacher does not have any assignments created. 1. At the section that displays the assignment(s), the message "No assignment(s) available." is displayed. 3. The "Publish" button will be greyed out, indicating that it is unavailable. EX2: The teacher has not created any class group. 1. When the teacher clicks on the "Publish" button after selecting assignments(s), the system displays the message "No class group(s) available. You can create class groups via View Class at the Homepage.".
Includes:	N/A
Extends:	CreateLevel
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	16		
Use Case Name:	GenerateSummaryRep	ort	
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Teacher	
Description:	The Summary Report page consists of the the analysis results of the playing history of students. The analysis results shows: - average score for each level/section/world - depending on the average score, parts that are well-mastered by the students are highlighted in green, and parts that are not are highlighted in red.	
Preconditions:	The teacher has logged in to the system successfully.	
Postconditions:	Summary report of the analysis is displayed successfully.	
Flow of Events:	 The teacher clicks on the "Summary Report" button on the Homepage. System redirects to the Summary Report page. The teacher can choose to analyse the playing history of all students or students of a particular class group or students of the class groups created by the teacher. 	
Alternative Flows:	N/A	
Exception:	N/A	
Includes:	N/A	
Extends:	N/A	
Assumptions:	N/A	
Notes and Issues:	N/A	

Use Case ID:	17		
Use Case Name:	ViewClass		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Teacher
Description:	Teachers can view their class group(s).
Preconditions:	The teacher has logged in to the system successfully.
Postconditions:	1.
Flow of Events:	 The teacher clicks on the "View Class" button on the Homepage. System redirects to the View Class page. System displays the list of all class groups created by the teacher. If the teacher clicks on the "Create Class" button, the extended use case CreateClass is used. The teacher clicks on one of the class groups. System displays the list of students of the selected class group. The teacher can add/remove students from the list.
Alternative Flows:	N/A
Exception:	EX1: The teacher does not have any class groups created.1. At the section that displays the class group(s), the message "No class group(s) available." is displayed.
Includes:	N/A
Extends:	N/A
Assumptions:	N/A
Notes and Issues:	N/A

Use Case ID:	18		
Use Case Name:	CreateClass		
Created By:	Yuen Kim Hwee	Last Updated By:	Yuen Kim Hwee
Date Created:	05/02/2020	Date Last Updated:	07/02/2020

Actor:	Teacher
Actor.	reacher
Description:	Teachers can create class group(s) consisting of students.
Preconditions:	The teacher has logged in to the system successfully.
Postconditions:	The new class is created successfully.
Flow of Events:	 The teacher clicks on the "Create Class" button on the Homepage. System redirects to the Create Class page. System displays the list of all students. The teacher selects the students to add the new class. The teacher clicks on the "Confirm" button. System prompts for teacher's confirmation. If the teacher clicks on the "Yes" button, the system redirects back to the View Class page. System displays the message "Class created successfully!" for 2 seconds.
Alternative Flows:	AF-S7: If the teacher clicks on the "No" button. 1. System redirects back to the View Class page.
Exception:	N/A
Includes:	N/A
Extends:	N/A
Assumptions:	N/A
Notes and Issues:	N/A