

# A Properly Using LLMs in UIC Homework Assignment Helper System

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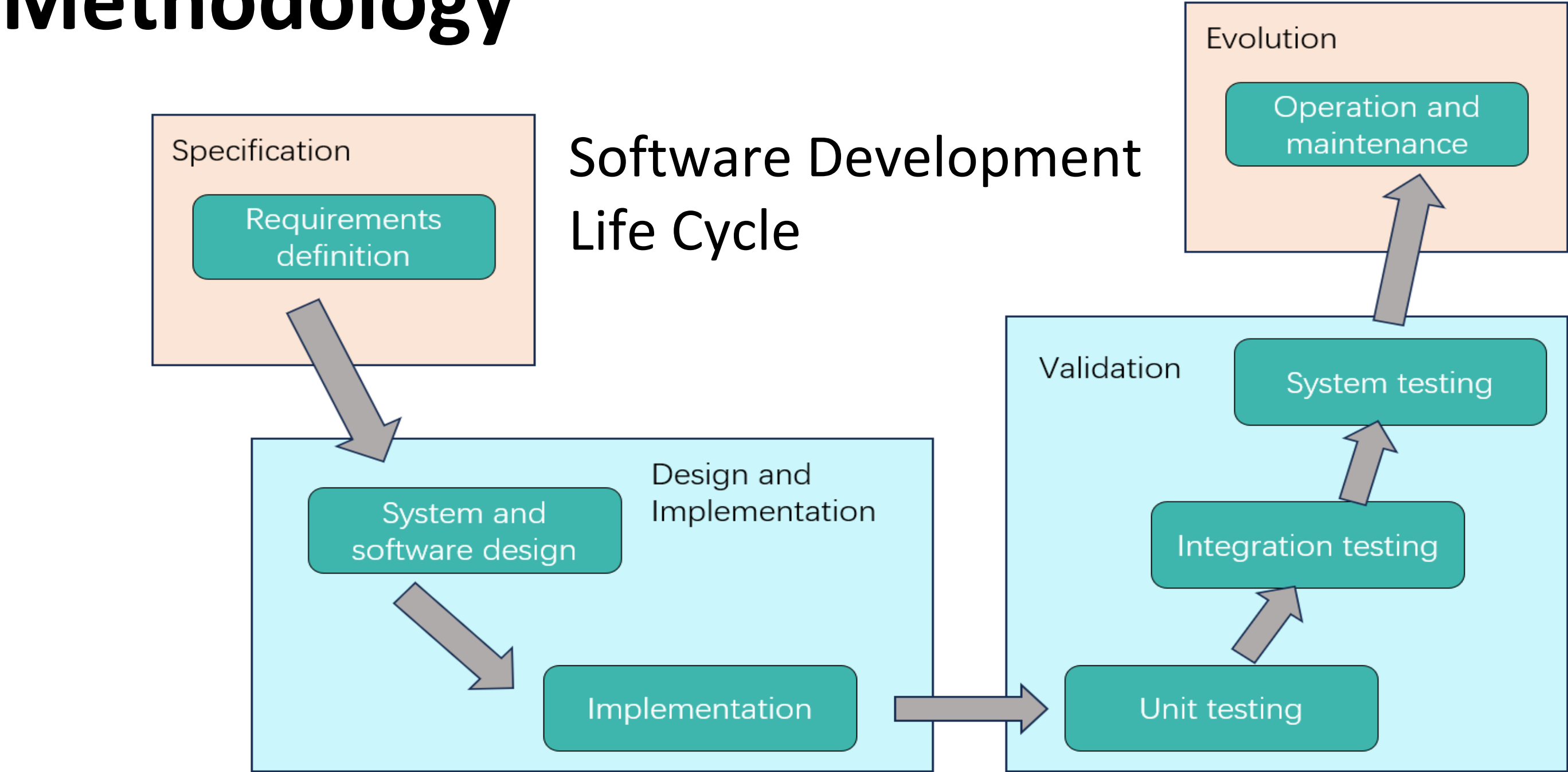
## Abstract and Motivation

Recently Large Language Models (LLMs) such as ChatGPT by OpenAI have taken the world by storm. Bill Gates said the ChatGPT demonstration he saw was, “the most stunning demo I’ve ever seen”. Some education institutions such as New York City public schools and UIC banned, at least temporarily, the use of ChatGPT in the classroom, fearing students could do homework assignments using LLMs without learning the class material.

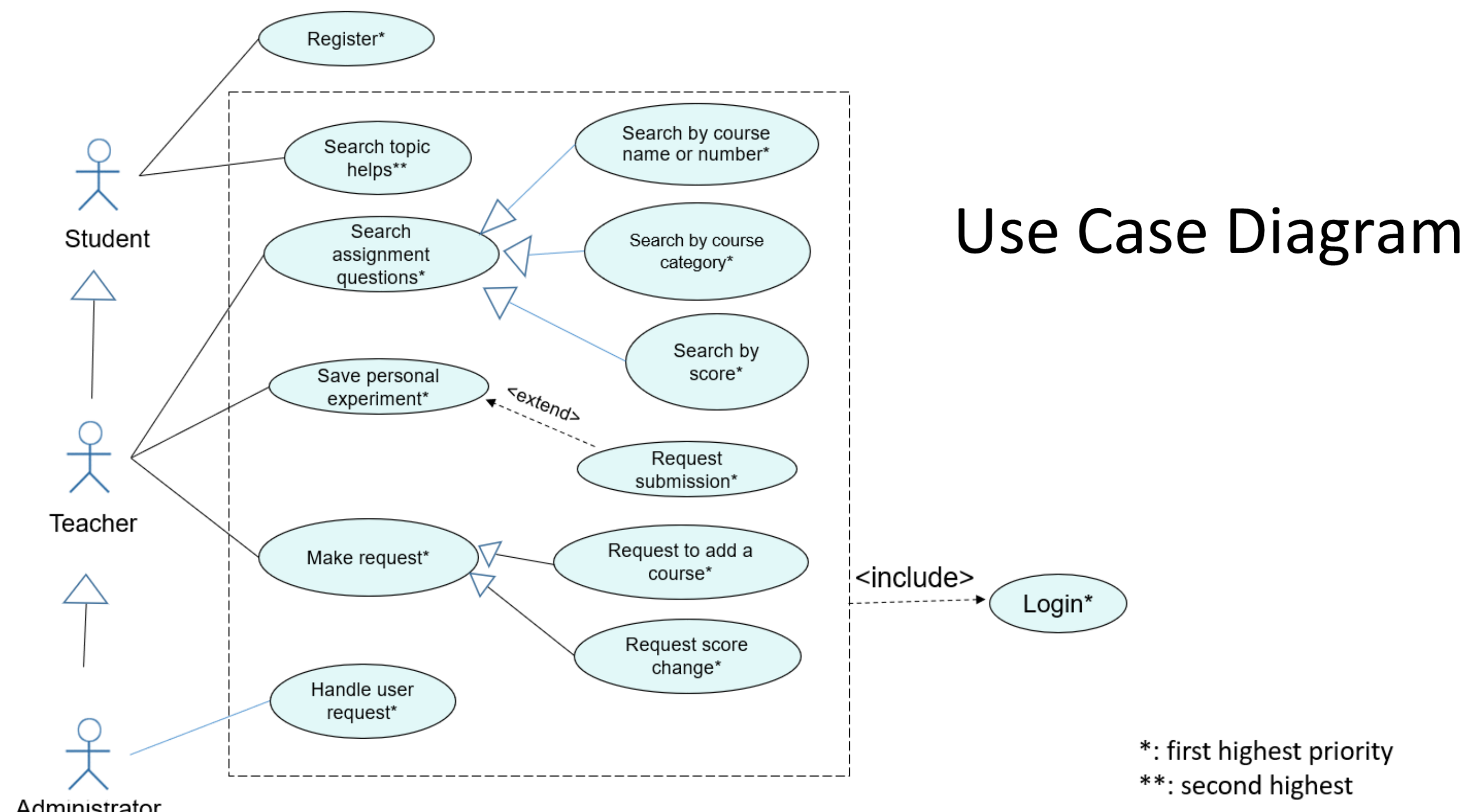
An app is needed to help teachers to create homework assignments that could not be easily done using LLMs without the students learning the class material. This app is sorely needed because few teachers are aware of what LLMs could and could not do. Furthermore, if used properly, LLMs can actually help students to learn the course material.

We in the CST program are in better position than other programs in UIC to understanding the ability and limitation of LLMs. So, we build a website to help teachers and students to use LLMs properly and avoid their misuse.

## Methodology

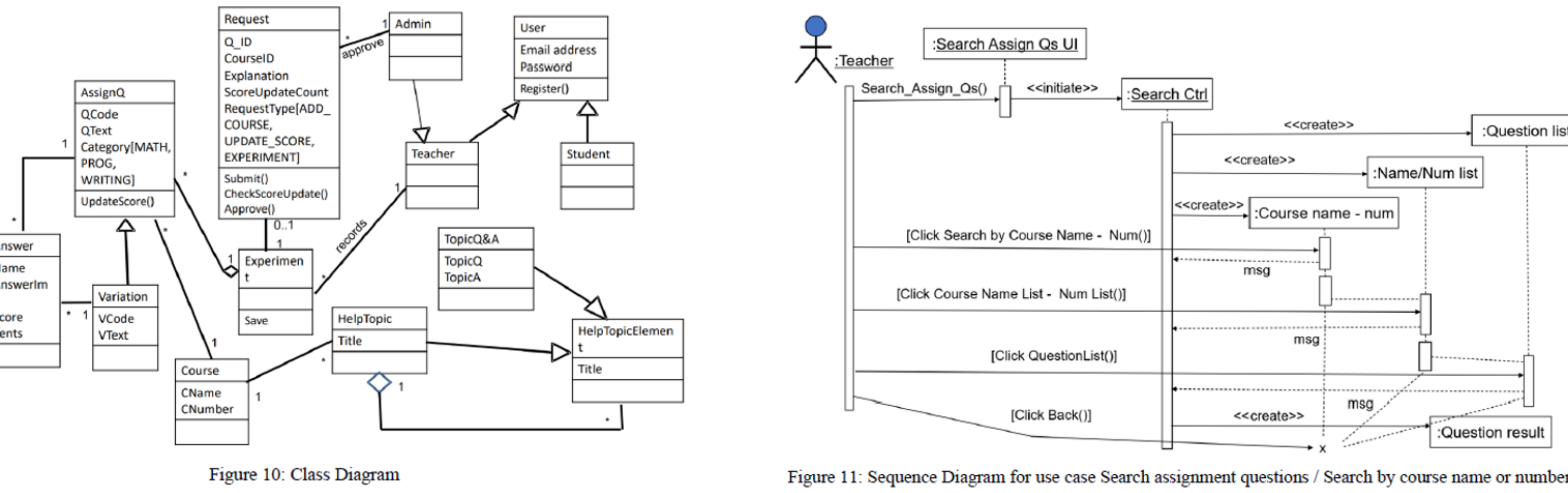


### ➤ Specification

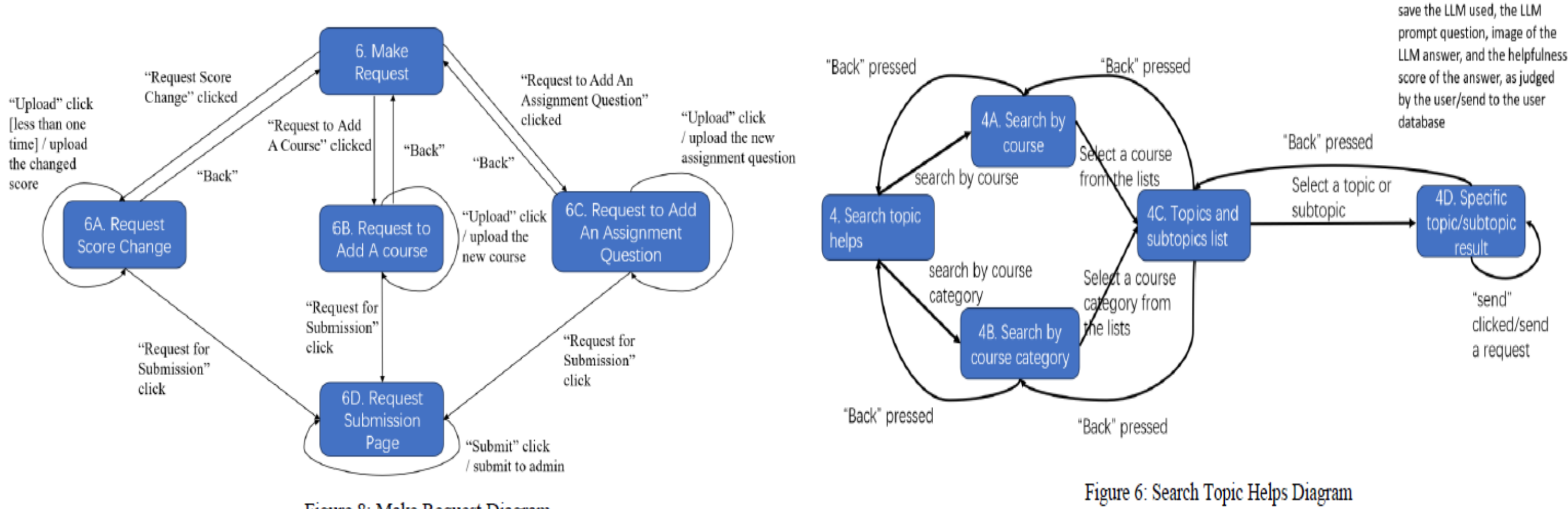
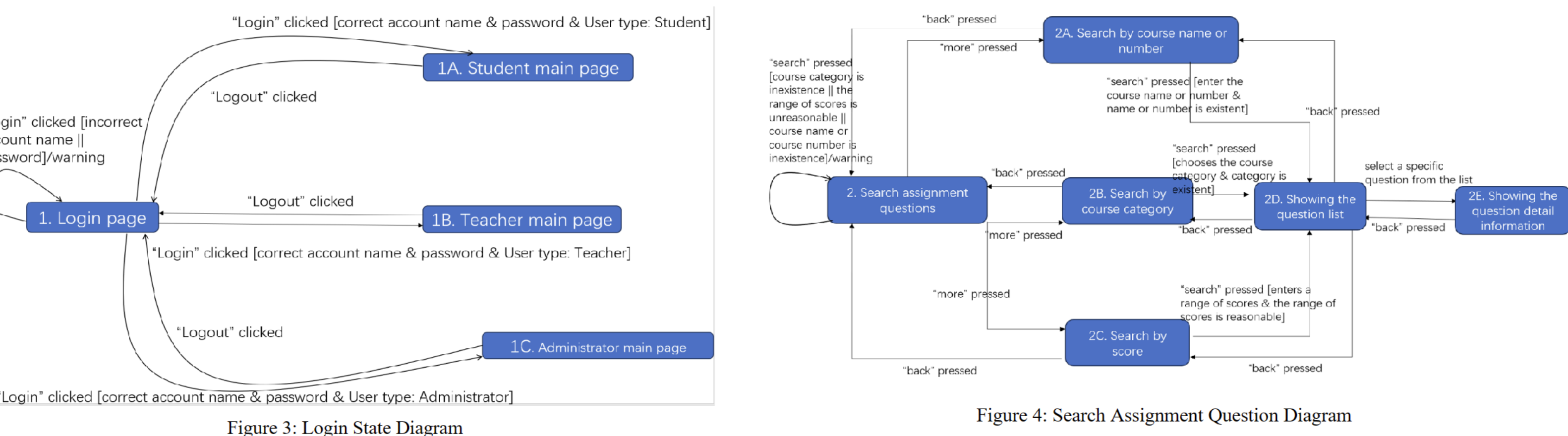


### Requirements definition

➤ Task: 2. Write a detailed Software Requirements Specification (SRS)



### ➤ Design and Implementation



### ➤ Validation: Integration testing

Test ID	Test case description	Expected result	Actual result
D1	Test case description: Condition: The change in score is in score range (0-5) and he teacher only modify once. Teacher information: The score requests for changing: <4>. The original assignment information: LLM Answer ID: 2 Used LLM: ChatGPT Current Score: 5 Comment: testing Image data: [Image of a score change interface]	The assignment score successfully modified	LLM Answer ID: 2 Used LLM: ChatGPT Current Score: 4 Comment: testing Image data: [Image of a score change interface]
D2	Condition: The change in score is not in score range (0-5) Teacher information: The score requests for changing: <4.5>	Window popped-up shows Input error	Window popped-up shows Input error
D3	Condition: The change in score is empty Teacher information: The score requests for changing: <>	Window popped-up shows Input error	Window popped-up shows Input error
D4	Condition: The change in score is invalid (Special symbols or letters, etc) Teacher information: The score requests for changing: <@abc>	Window popped-up shows Input error	Window popped-up shows Input error
D5	Condition: The teacher has modified the score more than once Teacher information: First time The score requests for changing: <3> Second time The score requests for changing: <4>	Window popped-up shows user have already modified the scores for this answer	Window popped-up shows user have already modified the scores for this answer
D6	Condition: The change in score is invalid (user input float number rather than an integer number, etc) We define the score in our system should be integers (i.e. 0, 1, 2, 3, 4, 5) including average score which takes round up strategy. Teacher information: The score requests for changing: <4.5>	Window popped-up shows Input error	Window popped-up shows Input error

## Database

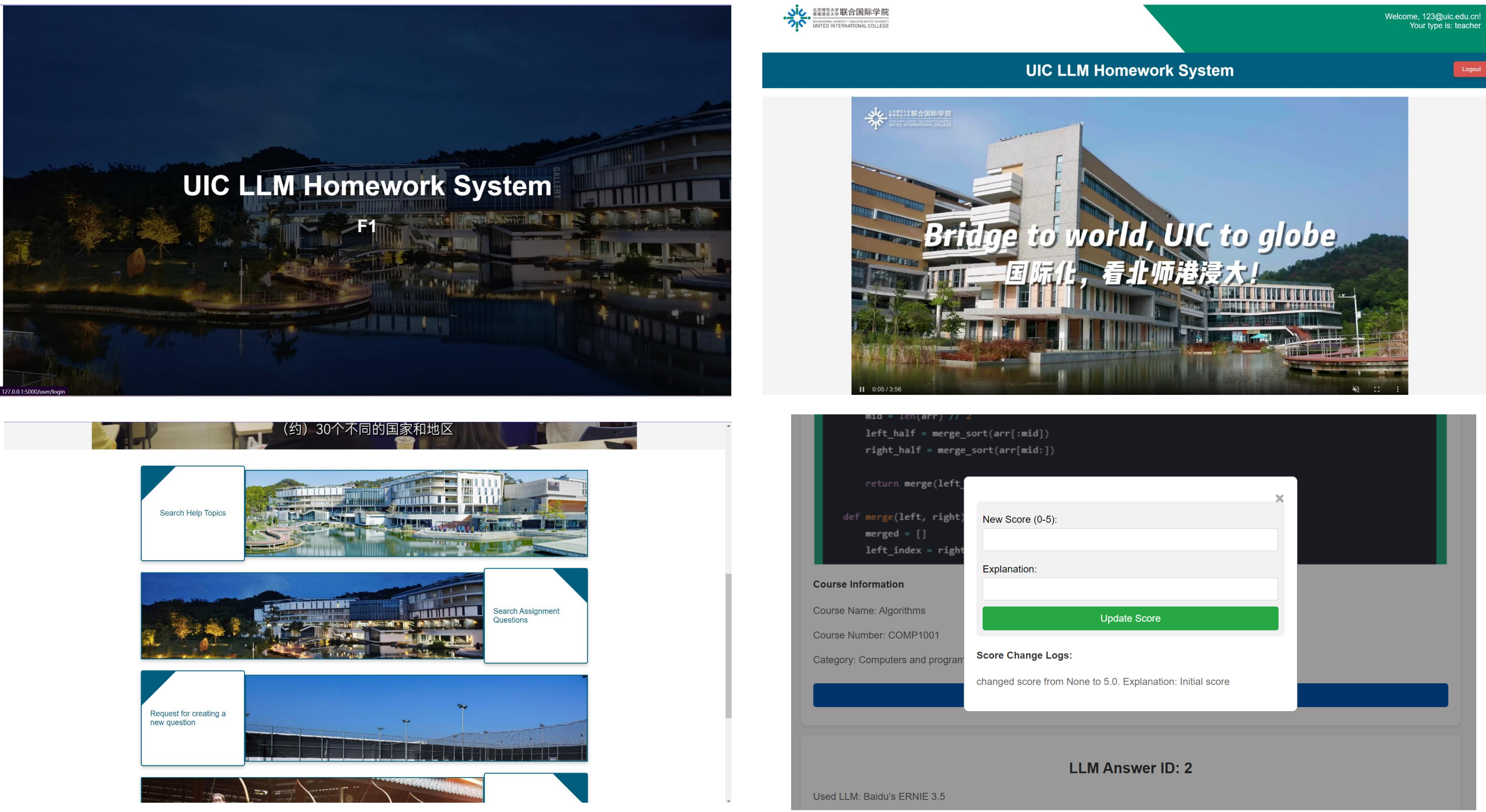
Chat GPT-3.5, Chat GPT-4, Claude 2, Baidu’s ERNIE

Example:

Short Summary					
Each question for different model has different mark.					
UIC Class	Homework Problem	LLM Model and version	Solution and score	Scores	Comments
Calculus (Math problems)	Evaluate integral: $\int_1^9 \frac{4}{5}x^3 - \frac{3}{4}x^2 + \frac{2}{x} dx$	ChatGPT4.0	See figure 1	3/3	In few seconds Correct answer, Detailed explanation
		Claude 2.0	See figure 2	1/3	In few seconds.

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## Page Showcase



## Conclusion

**For teacher:** Reduce the likelihood of students relying on LLM to complete assignments by designing assignment questions that cannot be answered through superficial understanding alone.

**For student:** Help students learn course material and better understand course content by using LLM to generate more explanations and examples for course topics.

## Open-source

We have open sourced the project to github, feel free to download it. 🙌  
Guo, Yuchen. A Properly Using LLMs in Homework Assignment Helper System. GitHub, Sep. 2024, [https://github.com/Eurekaarrow/UIC\\_LLMs\\_Helper](https://github.com/Eurekaarrow/UIC_LLMs_Helper).