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### Designing a Use Case Diagram with UML

Application development involves two actors: client (specific person, or group of people, or organization) and developer. Because there are two characters, a lot depends on the degree of their mutual understanding. Therefore, one of the key stages of application development is to determine what the application being developed should do. Usually, when designing information systems, developers depict the system using various diagrams, since it is easy for a person to understand such a representation.

Unified Modeling Language (UML) –graphical description language intended for modeling. With the UML language, you can represent any process in diagrams, which, depending on the situation, are able to describe various actions.

In order to describe the different groups of users and their capabilities in the future program, a so-called use case diagram is created. Use case diagram – a diagram showing the relationships that exist between actors and their use cases. Let's take a closer look at a specific example. We decide an information system to support learning to solve tasks in a physics course and design a use case diagram.

Each user group in the use case diagram is represented by a stickman, under which is written the name of the group of people it represents. In UML terminology, this stickman is called an actor. Let's depict the user groups «Teachers», «Students» and «System»(Figure 1):



Figure 1: Actors

In the use case diagram, a system function is represented by an ellipse, inside which the function name is written in the form of a verb with explanatory words. In UML terminology, this ellipse is called a use case. For example (Figure 2):

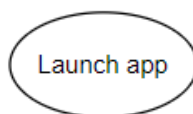


Figure2:Use case

On the designing diagram, it is necessary to show such elements as:

- Character or actor. The actors in this information system will be the users of the information system - this is a student and a teacher, and the system itself, which performs the necessary functions.
- Use cases. They are a sequence of actions performed by the system in response to an event initiated by an object, that is a user or the system.

The main use cases that are initiated by the student are: launch app, view educational literature, log in/register, choose tasks.

The main use cases that are initiated by the teacher are: launch app, view educational literature, log in/register, add tasks.

And the main use cases that are executed in response to an event initiated by the system are: check stages of solution, show information about the correct / incorrect answer, and write data to database.

Based on this data, you can proceed to design a use case diagram. The design result is shown on Figure 3.

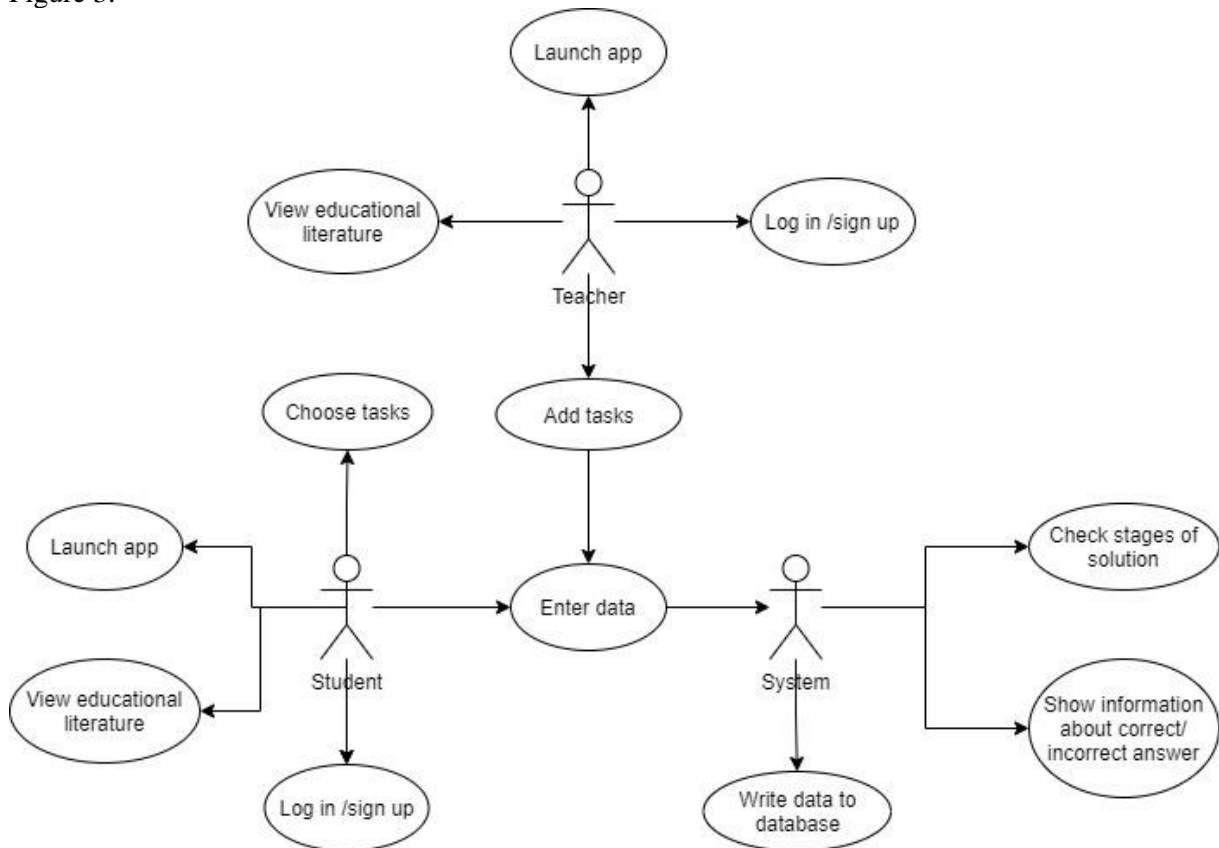


Figure3: Use case diagram

So, I tried to tell you about designing a use case diagram at the design stage of information systems.