Faculty of Computers, Informatics and Microelectronics

Technical University of Moldova

Object-Oriented Modeling and Analysis

Laboratory work #5

Modeling your project with Class Diagrams. SWOT Analysis. Design Principles.

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1 Tasks

– Model your application using Class Diagrams;

– Perform the SWOT analysis of your project.

2 Theory

COUPLING - An indication of the strength of interconnections between program units. Highly coupled have program units dependent on each other. Loosely coupled are made up of units that are independent or almost independent.

COHESION - Measure of how well module fits together. A component should implement a single logical function or single logical entity. All the parts should contribute to the implementation.

SEPARATION OF CONCERNS (SoC) is a design principle for separating a computer program into distinct sections, such that each section addresses a separate concern. A concern is a set of information that affects the code of a computer program. A concern can be as general as the details of the hardware the code is being optimized for, or as specific as the name of a class to instantiate. A program that embodies SoC well is called a modular program. Modularity, and hence separation of concerns, is achieved by encapsulating information inside a section of code that has a well-defined interface. Encapsulation is a means of information hiding. Layered designs in information systems are another embodiment of separation of concerns (e.g., presentation layer, business logic layer, data access layer, persistence layer).

CONCEPTUAL INTEGRITY is the principle that anywhere you look in your system, you can tell that the design is part of the same overall design. This includes low-level issues such as formatting and identifier naming, but also issues such as how modules and classes are designed, etc.

3 Class Diagrams

In Figure 3.1 is represented the class diagram for the website.

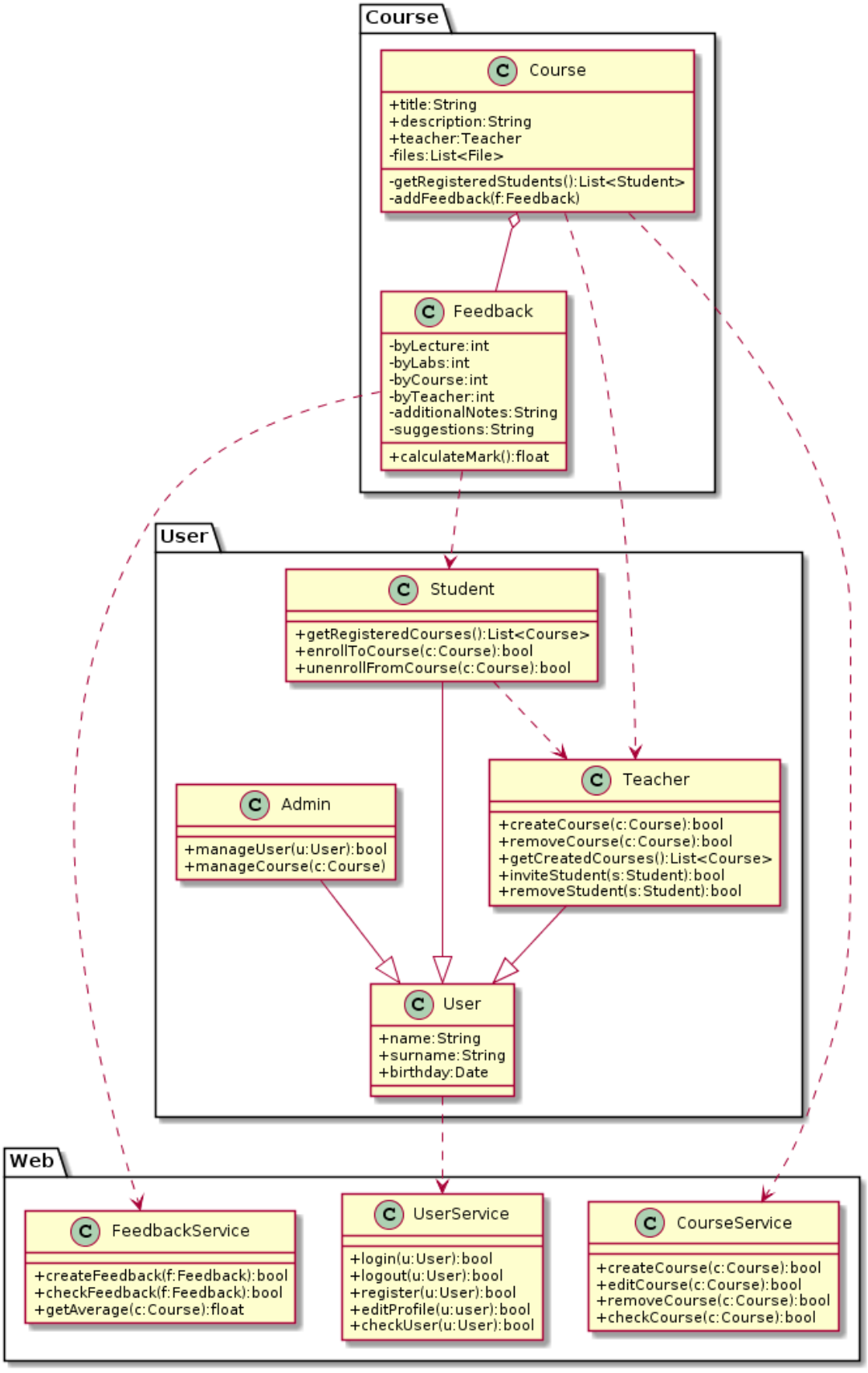

Figure 3.1– Class diagram

The diagram is divided in 3 packages: User, Web, Course. The "Course package" contains the classes Feedback and Course. Feedback is part of Course, that's why they are in agregation relationship. The "User" package contains 3 classses: Admin, Teacher and Student which inherit from the User class. The Feedback depends of Student. The Stdent depends of the Teacher (enroll/unenroll). Also the Course depends of the Teacher.

There is the third package, "Web". It includes FeedbackService, UserService and CourseService, each being a "dependee" for Feeback, User and Course classes respectively.

4 SWOT analysis

4.1 Strengths

- Customer-centric design and messaging
- Useful and relevant content
- Intuitive navigation and search
- Quick and easy enrollment process
- Responsive design with full mobile support

4.2 Weaknesses

- The lack of a content specialist within the web team.
- Minor updates and not thinking strategically.
- Limitations over the type of content published

4.3 Opportunities

- New technologies to improve user experience
- Emerging new and untapped markets
- New niches and market segments
- New design trends to better convey messages
- More effective marketing tactics
- Positive changes in social factors

4.4 Threats

- Competitors copying features or ideas
- Emergence of new competitors
- Changing customer needs
- New laws or regulations
- SPAM & unsolicited advertising
- Upgraded browser software

5 Conclusion

In this laboratory work we learned to create Class Diagrams and perform SWOT analysis.