Technical University of Moldova

04.05.2018

AMOO Laboratory 8

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Semester 2

Chisinau 2018

Topic:

Modeling your project with Component Diagrams. Project setup. Top-down and bottom-up design.

Theory:

Top Down Design[1]

We know that a system is composed of more than one sub-systems and it contains a number of components. Further, these sub-systems and components may have their on set of sub-system and components and creates hierarchical structure in the system.

Top-down design takes the whole software system as one entity and then decomposes it to achieve more than one sub-system or component based on some characteristics. Each sub-system or component is then treated as a system and decomposed further. This process keeps on running until the lowest level of system in the top-down hierarchy is achieved.

Top-down design starts with a generalized model of system and keeps on defining the more specific part of it. When all components are composed the whole system comes into existence.

Top-down design is more suitable when the software solution needs to be designed from scratch and specific details are unknown.

Bottom-up Design

The bottom up design model starts with most specific and basic components. It proceeds with composing higher level of components by using basic or lower level components. It keeps creating higher level components until the desired system is not evolved as one single component. With each higher level, the amount of abstraction is increased.

Bottom-up strategy is more suitable when a system needs to be created from some existing system, where the basic primitives can be used in the newer system.

Both, top-down and bottom-up approaches are not practical individually. Instead, a good combination of both is used.

Tasks:

In figure 1 we can see the process of logging in.

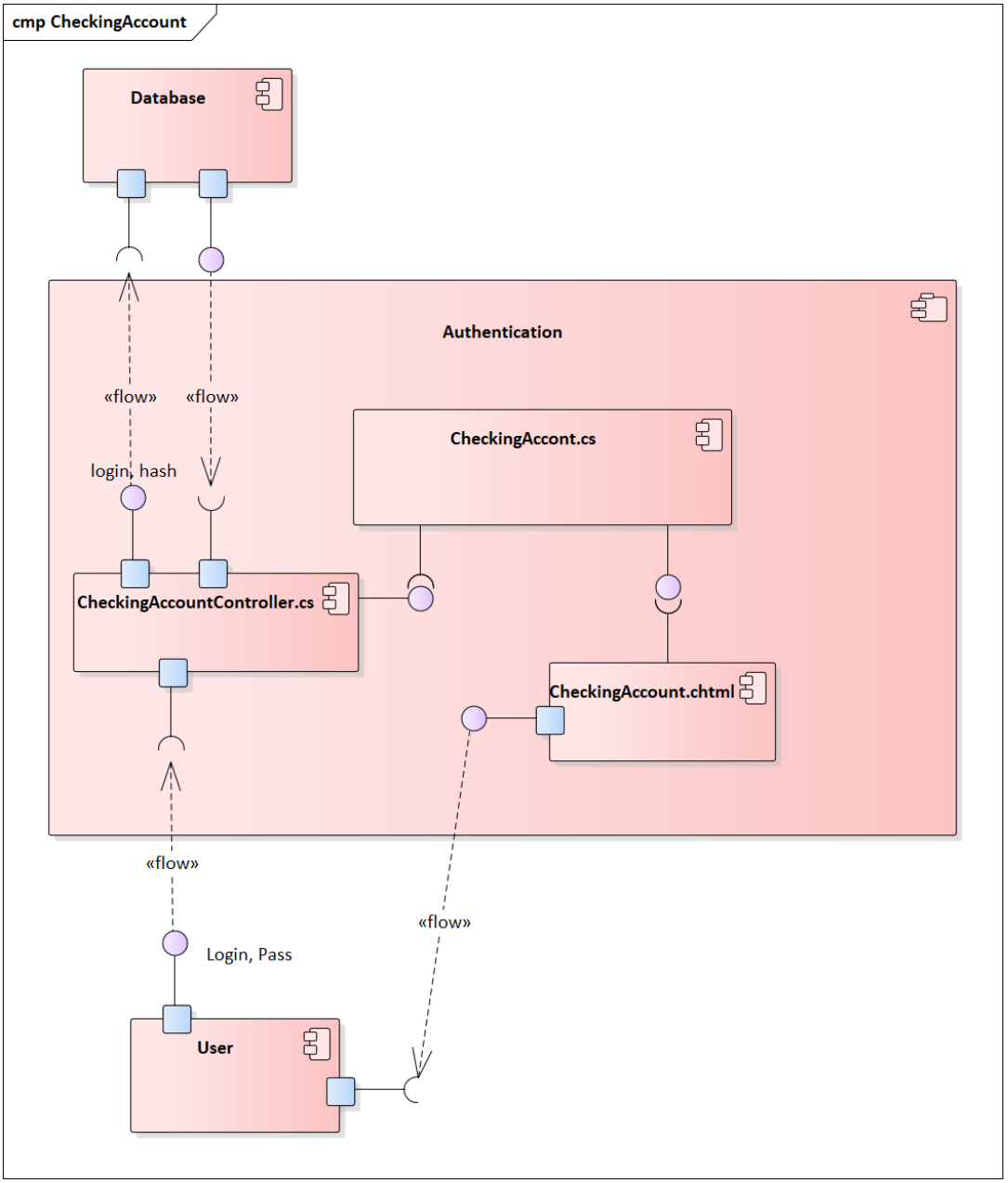

Figure 1: Activity diagram for Codewars Logging process

So first of all user enters his login and password, it is sent to the controller. The controller sent to the database login and hashed password for verification, after receiving affirmative answer it passes information to create relevant model/ update it. The model configures everything and returns a View. Finally User receives a web page, with his account [2]

Application Setup.

Codewars is web site so it basically does not need any installation, or delivery or installation. It is pretty comfortable for users. The only thing User must have is Google/ Mozilla Firefox/ Edge/ Opera/ Safari Browser, Access to the world wide web, and Windows/ Linux/MacOs operational systems installed on the machine.

Conclusion

During This lab work i did a component diagrams for the logging in process. I observed that Component diagrams illustrate the pieces of software, that will make up a system. A component diagram has a higher level of abstraction than a Class Diagram. They are building blocks so a component can eventually encompass a large portion of a system.[**?**]

References

[1] Tutorialspoint, Software Design Approaches https://www.tutorialspoint.com/software_engineering/software_design_strategies.htm

[2] Sparx Systems, UML 2 Component Diagram https://sparxsystems.com.au/resources/uml2_tutorial/uml2_componentdiagram.html