University of Vienna
Faculty of Computer Science
Research Group Software Architecture

Assignment 2

Structural Patterns

2016S – 050054 PR – Software Architectures

May 12, 2016

General Remarks

- You can get **15 points** for this exercise. If you do not attend the presentation talk, you will get **0 points** for the exercise. This means that you have to hand in this exercise **and** attend the presentation talk in order to pass this assignment.
- The **deadline** for this assignment is **May 30, 2016 at 23:59 CET**. No deadline extensions are given.
- This is a **group work**. You and your work group members are allowed to work together in solving this assignment.
- If you copy code or other elements from sources other than the lecture slides, please provide a reference to it in a comment above the corresponding entry.
- If you encounter problems, please post your question in the Moodle[1] discussion page. Alternatively, you can contact the tutors via swa.tutor@swa.univie.ac.at. As a last resort you can contact the course lecturer directly via swa@swa.univie.ac.at.

Submission Guidelines

All files required by this assignment have to be submitted to our GitLab[2] server into the proper project (repository) in the Submission and Feedback System[3]. If this task is an **individual work** assignment, you have to submit (commit,push) your changes and solutions in your **personal project** to the **2016s_swa_task2** branch. Otherwise, if this task is a **group work** assignment, you have to submit (commit,push) your changes and solution to your **work group project** to the **2016s_swa_task2** branch. For any questions regarding the **GitLab**-based task submission please refer to the Git[Lab Submission] Tutorial[4].

[1] https://moodle.univie.ac.at/course/view.php?id=50738
[2] https://gitlab.swa.univie.ac.at
[3] https://gitlab.swa.univie.ac.at/submission
[4] https://gitlab.swa.univie.ac.at/submission/tutorial

Assignment 2: Structural Patterns

Description

"Connect Four" [5] is a two-player connection game in which the players take turns dropping coloured discs from the top into a seven-column, six-row vertically suspended grid. The pieces fall straight down, occupying the lowest available space within the column. The objective of the game is to connect four of one's own discs of the same colour next to each other vertically, horizontally, or diagonally before your opponent. A variant of the game ("Pop Out") allows each player, instead of dropping in a new disc, to remove a disc of one's own color from the bottom.

Implementation **Scenario:A**

Implement the "Connect Four" game using the **Layers** architectural pattern with three layers (Presentation, Business Logic, and Data Access). Ensure that the communication between the layers is appropriately handled. Regarding the presentation layer, you should create an appropriate graphical user interface that allows two competing players to mark corresponding fields in a grid with two different colours (red and blue).

Useful links on the Layers pattern:

- https://en.wikipedia.org/wiki/Multilayered_architecture
- https://msdn.microsoft.com/en-us/library/ff648105.aspx
- http://www.c-sharpcorner.com/UploadFile/dacca2/understand-3-tier-architecture-in-C-Sharp-net/

Task

Your submission will consist of:

- All sources files directly in your GitLab Work Group Project in the **2016s_swa_task2** branch. Please **do not** provide use any archives like `.zip`, `.7z`, `.rar` etc.
- The submission must also contain a document file (`.txt`, `.md`, or `.pdf`) documenting and explaining your assumptions, thought process, and decisions while working through the assignment. Lack of the documentation file will result in the **immediate deduction of 3 points** from your final score for this assignment.
- Keep in mind that this is a **group work** assignment, but each member of the **work group** should know all the details about the submitted solution. If the solution of this task required a division of labour between the group participants, please note this in the documentation file.

[5] https://en.wikipedia.org/wiki/Connect_Four