



Software Praktikum (SoPra) - FS22

Milestone 3 - Assignment

1 General Information

With Milestone 3, we enter the implementation phase of SoPra. The deadline is on Sunday, **01.05.2022 23:59 CET** and includes the deliverables listed below. On the following Monday, **02.05.2022**, you will present a short progress update for Milestone 3.

1.1 Deliverables Overview

Report: as PDF with a name of form *FS22-Group-XX-M3-Report.pdf*.

Presentation Slides: as PDF with a name of form *FS22-Group-XX-M3-Slides.pdf*.

Source Code and Project Board hosted on GitHub (git tag "M3").

Team Collaboration Reflection (weekly, individually): completed after your TA meetings.

Continuous Progress (weekly, individually): completion of 2 meaningful development tasks.

Brownie Points (individually): submitted via OLAT.

2 Assignment Description

Based on the previous assignment of Milestone 2, you should have specifications, diagrams, user interface mock-ups, Sprint planning, and a deployment pipeline ready to support the upcoming implementation phase. In this milestone, we will focus on implementation and testing.

2.1 Implementation and Testing

At the end of Milestone 3, you are expected to have a running and usable version of your application (even if not all features are implemented yet). We expect you to develop your application for a modern browser and a popular desktop display size. The target platform is **Google Chrome** version 99. The screen real estate for testing is **1366px x 768px** (this is the most common desktop resolution according to W3Counter¹).

Advice: We strongly recommend finishing all tasks that you specified as *required* by the end of

¹<https://www.w3counter.com/globalstats.php>

Milestone 3. Milestone 4 will be about finishing up and polishing your application for the final presentation. Depending on progress, you can start with optional features, but you will also have some time to work on them in Milestone 4.

After Milestone 3, there will be a beta testing phase where you will get a project URL of another group to provide feedback. Likewise, another group will test your application and prepare feedback on your application. Notice that beta testing requires a certain maturity of your project by the end of Milestone 3, too.

Proper software implementations include rigorous and extensive testing, too. You must have a high degree of test coverage for the server in terms of unit, integration, and REST interface tests. As an indication of how much code you should test, we require the test coverage to be at least 50%. Check SonarQube for test metrics. We expect that every task (from the back-end) has at least 1 test associated with it.

2.2 Project Maintenance with GitHub

While programming, you are required to ensure traceability of your progress. Your GitHub Issues and project boards should always be up to date. There are two ways to achieve consistency and traceability between your source code and your development tasks:

- **Manual:** Open a GitHub Issue and type the SHA² of the commit as an Issue comment. You can then proceed to close the GitHub Issue manually.
- **Automated:** Reference and close GitHub Issues in your git commit message³.

Note: we expect every completed development task to link to at least one commit.

2.3 Weekly TA Meetings

During the Sprint of Milestone 3, you will keep having regular weekly meetings with your teaching assistant. However, during the implementation phase, they should be held in the shape and form of a "Daily Scrum"⁴. This specific Scrum event is a short status update for your Scrum Master (TA) and your team. During the meeting, every team member should provide a 3-minute update where they answer the following questions:

- What did I do last week?
- What will I do this week?
- What are the obstacles to progress?

We suggest discussing your progress using the "Sprint Backlog View" which was created as part of assignment 2.

2.4 Planning of Sprint 2

Towards the end of this milestone, you should start planning for the second and final Sprint. Go through the remaining user stories and decide which ones to implement for Milestone 4. Set a GitHub Milestone (e.g., "Sprint 2") to mark selected stories. Follow the guidelines provided in the previous assignment sheet for instructions on how to decompose these stories into development tasks.

²<https://docs.github.com/en/github/writing-on-github/autolinked-references-and-urls#commit-shas>

³<https://github.com/gitbucket/gitbucket/wiki/How-to-Close-Reference-issues-and-pull-request>

⁴<https://scrumguides.org/docs/scrumguide/v2020/2020-Scrum-Guide-US.pdf>

3 Grading and Deliverables

SoPra is a pass/fail course, and the grade for M3 will be pass/fail as well. Overall, you have to pass 3 out of 4 milestones, where M1 and M4 have to be passed. You need to hand in reasonable reports for all the milestones. You will receive feedback on your deliverables, including an assessment (either pass, borderline pass, or fail) in the upcoming week after the deadline.

Report

The report should be submitted as PDF to OLAT with a name of form *FS22-Group-XX-M3-Report.pdf* by the group leader. Please make sure the title page contains the group name, group leader, and information about all group members (name and matriculation number). In the report, please include a diagram showing your latest database layout/structure and 2-3 screenshots of your user interface. Moreover, include one *complex* unit, one integration, and one REST interface test with descriptions of their use cases in the report. Explain why these particular tests are well-written for the tested functionality, how they are able to capture future regressions, and elaborate on why the three examples are good representatives of their categories. We will evaluate the quality of your database structure diagram, the user interface screenshots, and the 3 test cases.

Presentation (Slides)

The slides should be submitted as PDF to OLAT with a name of form *FS22-Group-XX-M3-Slides.pdf* by the group leader. The presentation should not take more than 4 minutes (hard cut-off), and should consist of 3 components: project introduction and motivation (30 secs), a live demo (3 mins), and a short outlook on your Sprint Planning for M4 (30 secs). Notice that we expect the demo to be live (but take some backup screenshots in case anything goes wrong). Further, we suggest you focus on the exciting parts of your application during the demo: feel free to skip the setup phase (e.g., registering users or setting up a lobby) to have more time to showcase the core parts of your project.

Finally, the title slide should consist of the group name and the names of all group members. Underline the name of the presenter(s) on the title slide. The slides and the presentations have to be in English. Please note that each team member has to present at least once (M1+M2, M3, or M4).

Source Code and Project Board The source code on GitHub is submitted by adding git tags "M3" to commits in the "main" branches that should be taken into consideration for grading. We will partially assess the source code of your application and the implementation progress. By the end of Milestone 3, we expect a deployed and reasonable prototype which is ready for beta testing. In terms of testing, we will check whether your tests are meaningful, i.e., they serve the purpose of identifying bugs. Tests that cover getter/setter are not valuable. Aim for tests that deal with the core logic of your application. We expect that every task (from the back-end) has at least 1 test associated with it and that you achieve a test coverage of 50% on SonarCube.

Similarly, your GitHub Projects board is submitted implicitly and should already be set to "public". The board should show your Product Backlog, including user stories and development tasks, and provide a view of your upcoming Sprint Backlog. We will assess your Sprint planning in terms of the covered development effort, the user stories decomposition into development tasks, and the overall quality and consistency of your project management activities.

Team Collaboration Reflection Tasks

To support your group work, you are required to participate in the weekly reflection tasks after your TA meeting, which will be sent out each Monday. These tasks serve to assist your collaboration and as a basis for reflection throughout and at the end of the semester.

Continuous Progress

During the remaining milestones, each team member has to contribute to the project continuously. More specifically, every member has to complete at least 2 meaningful tasks per week, where a single development task should have a granularity of 0.5-1 day. The completed tasks have to be shown in the weekly TA meetings, and you are required to ensure traceability of your work by linking git commits to development tasks. You have one "Joker" to miss one weekly TA meeting and another "Joker" to skip continuous progress once over the remaining weeks of the course. Please note that you cannot make up for "missed" continuous progress, but you can "work ahead" by completing twice the amount of work in one week to skip progress on a subsequent week without using your "Joker". Please communicate your planning ahead of time.

Note: If a team member fails to show continuous progress, they will individually fail the milestone (unless there is a valid reason).

Brownie Points

In addition to the report assessment, we will use a "brownie points" system for which you have to distribute brownie points to your team members. The brownie points serve to reflect on how you feel about the extent to which the other team members contributed to your learning, the assignment, and your team's performance. The distribution will be an opportunity to reward the members of your team who worked hard on your behalf. You can split the brownie points equally if you think everyone did the same. Every student has a total of 40 brownie points to distribute to the 4 other team members (if you have only 3 team members, only distribute 30 brownie points). These brownie points will also allow us to see any concerns in a team early on. The brownie points can decide whether individual group members pass or fail for borderline submissions.