thws
Technische Hochschule
Würzburg-Schweinfurt

Backend Systems

Portfolio 04

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1 Introduction

This document outlines the requirements and evaluation criteria for project documentation for this semester's portfolio exam. The expected documentation concerns a software project in which students implemented a distributed system using a hexagonal architecture based on the REST paradigm. Teams must submit a report describing their solution, decisions, and learning outcomes.

2 Expected Contents

Your document must have a title and name all team members as authors (including the immatriculation numbers). Your document should follow this structure:

1. **The first section should introduce the topic of your project.** Summarize the domain and describe a few (but not all) use cases of your software. This might be similar to the first requirements document.

2. **The second section should describe the software architecture of your solution.** Explain your interpretation of the hexagonal architecture. What belongs to the domain? What is the business logic? What are the infrastructure components? How did you implement ports and adapters? What was the most difficult aspect to learn when implementing this architecture?

3. **The third section should explain the API technology you chose for your implementation.** How did you implement the REST paradigm? Do you see any advantages of this technology for this project?

4. **The fourth section should explain some details of your implementation.** For example, how did you implement authentication? How did you implement the mapping in the adapters? Why did you choose external libraries and/or frameworks in addition to Quarkus and RESTEasy?

5. **The fifth section should explain your testing strategy.** How did you implement unit and integration tests?

6. **The last section should summarize your learning outcomes.** What did you learn from this project? What worked well, and what would you do differently in the future? Reflect on team collaboration and the use of hexagonal architecture.

3 Deliverables

You have to deliver one document authored by all team members. It is unnecessary to indicate who wrote which part of the document. The formal requirements are:

1. Deliver a PDF document in the English language.

2. The document must be written with LaTeX. You are free to use any document template. All team members must be listed as authors. It is not necessary, but it is recommended to cite some literature.

3. The document should be between 4 and 6 pages.

4. You are allowed to use AI assistants. How you use these assistants should match the following acknowledgments (that should be placed at the end of your paper): *This article was drafted and refined using GPT-5 based on an outline containing related information. The GPT-5 output was reviewed, revised, and enhanced with additional content to improve its quality. It was then edited for improved readability and active tense, partially using Grammarly.*

4 Rubrics

You can earn $18 + 6$ points for this assignment. When we grade your solution, we will look at the following points:

1. **Introduction of the Project Topic (2 Points)**
   - Clear and concise summary of the domain. (1 Point)
   - Description of use cases is relevant and demonstrates an understanding of the problem domain. (1 Point)
2. **Description of the Software Architecture (4 Points)**
   - Correct and thorough explanation of the hexagonal architecture. (1 Point)
   - Clear distinction between domain, business logic, and infrastructure components. (1 Point)
   - Explanation of ports and adapters, and how they were implemented. (1 Point)
   - Reflection on challenges faced during implementation. (1 Point)
3. **Explanation of the API Technology (3 Points)**
   - Interpretation of REST (1 Point)
   - Identification of advantages relevant to the project. (1 Point)
   - Consideration of any limitations or trade-offs of the chosen technology. (1 Point)
4. **Implementation Details (3 Points)**
   - Explanation of implementation choices (e.g., authentication, adapter mapping). (1 Point)
   - Justification of additional libraries and framework choice. (1 Point)
   - Level of detail in the technical description (must be clear and understandable). (1 Point)
5. **Testing Strategy (3 Points)**

- Explanation of the testing strategy, including unit and integration tests. (1 Point)
- Description of how tests were implemented and what was tested. (1 Point)
- Reflection on the effectiveness of the testing strategy. (1 Point)

6. **Learning Outcomes and Reflection (3 Points)**
   - Clear articulation of key learning outcomes from the project. (1 Point)
   - Honest reflection on what worked well and what could be improved. (1 Point)
   - Insightful discussion of team collaboration and the use of hexagonal architecture. (1 Point)
7. **Bonus (6 point):** If the document includes exceptional aspects (e.g., innovative solutions, well-researched citations, or a professional layout), the evaluator may award up to 6 additional points.