# 180.456 Advanced Software Engineering, VO

## Online Exam

10th March 2021

| | max. Points | Points | Grade |
|---|---|---|---|
| Theory questions | 100 | | |

- Please note the instructions for the online exam on the announced TUWEL page!

Grading scheme (max. 100 Points):

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|---|---|
| Excellent | 100 - 89 |
| Good | 88 - 77 |
| Satisfactory | 76 - 65 |
| Sufficient | 64 - 51 |
| Unsatisfactory | 50 - 0 |

1. Describe the main ideas behind the *DevOps* movement! 6 P

2. What is meant by *Technical Debts*? Name three examples of technical debts and their possible causes! 6 P

3. Explain the *n+1 queries problem*! How can it be avoided? 6 P

4. What are the differences between *localization* and *internationalization*? Explain typical focus points! 6 P

5. Compare and contrast *components* and *services* after Fowler! 6 P

6. What are *Software Product Lines*? Name their characteristics! 6 P

7. What is the key concept of microservices? Name and explain two typical challenges when developing microservices. 6 P

8. When to use which form of transaction management? 6 P

9. Compare and contrast *logging* and *auditing*. Explain two characteristics of good logging output. 6 P

10. Explain the idea behind *Continuous Integration*! What's the difference between *Continuous Integration*, *Continuous Delivery* and *Continuous Deployment*? 6 P

11. What are *cross cutting concerns*? Why should cross cutting concerns be separated from business logic? 6 P

12. Discuss the difference between *simple* and *easy*. Discuss also the difference between *complex* and *complicated*. Give for each quadrant two examples of systems that matches the respective criteria! 6 P

| | |
|---|---|
| **easy + simple** | **complicated + simple** |
| **easy + complex** | **complicated + complex** |

13. Explain the differences between *Build Time Modularization* and *Runtime Modularization* and name one popular Java technology for one of them! 6 P

14. State and explain three major benefits of Collective Intelligence Systems in software engineering projects from an internal perspective! 6 P

15. What is SCRUM Poker, how does it work and what are possible outcomes of a round. 4 P

16. What is *Dependency Management*? What problems can be solved with Dependency Management? Name two Dependency Management Tools! 6 P

17. Name two constituents and two concerns of Hyperscale Computing! 6 P