



**Compliance to the code of conduct**

I hereby assure that I solve and submit this exam myself under my own name by only using the allowed tools listed below.

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Signature or full name if no pen input available

## Software Engineering for Business Applications - Master

**Exam:** IN2087 / Sample Exam

**Date:** Tuesday 8<sup>th</sup> June, 2021

**Examiner:** Prof. Dr. Florian Matthes

**Time:** 17:00 – 17:45

### Working instructions

- This exam consists of **6 pages** with a total of **4 problems**.  
Please make sure now that you received a complete copy of the exam.
- The total amount of achievable credits in this exam is 24 credits.
- Detaching pages from the exam is prohibited.
- Allowed resources: none
- The working time is 45 minutes.
- Subproblems marked by \* can be solved without results of previous subproblems.
- **Answers are only accepted if the solution approach is documented.** Give a reason for each answer unless explicitly stated otherwise in the respective subproblem.
- Do not write with red or green colors nor use pencils.





## Problem 1 (7 credits)

You have recently become a consultant in an IT consulting company. One of your customers wants to develop and deploy a new platform. You discuss different business models with the customer.

0 ☐

1 ☐

a)\* Briefly describe the Brokerage Model.

0 ☐

1 ☐

b)\* Which two kinds of variations of the formula for fees/commissions for transactions were presented in the lecture?

0 ☐

1 ☐

2 ☐

3 ☐

4 ☐

c)\* Briefly describe "Auction Broker" and "Transaction Broker" as two variations of the Brokerage Model. Furthermore, give one example for each of these two variations.

0 ☐

1 ☐

d)\* How would you avoid that the two parties circumvent the broker as soon as the contact between them is established?





## Problem 2 (6 credits)

After you have acquired the project for your consulting company, you collect the requirements for the platform to be developed. First of all, it should be clarified what kind of web application will be developed.

a)\* What are Single-Page Applications (SPA)? What is their difference to traditional websites from a usability perspective?

<input type="checkbox"/>	0
<input type="checkbox"/>	1
<input type="checkbox"/>	2

b)\* Name and describe two SPA architecture styles.

<input type="checkbox"/>	0
<input type="checkbox"/>	1
<input type="checkbox"/>	2

c)\* Briefly describe the communication flow in a "serverless" Single-Page-Application.

<input type="checkbox"/>	0
<input type="checkbox"/>	1
<input type="checkbox"/>	2





### Problem 3 (6 credits)

In a next appointment you explain to your customer that you would like to do a development based on React for the project. However, the customer is initially skeptical, partly because he has not yet fully grasped the concepts behind React. Therefore, you explain some background information about React to the customer.

0 ☐

1 ☐

2 ☐

3 ☐

4 ☐

a)\* Name two basic concepts of React and describe them briefly.

0 ☐

1 ☐

b)\* Briefly explain what JSX is.

0 ☐

1 ☐

c)\* Modify the following React code in a way so that the String "Hello World" is rendered to the DOM. (The red number is not part of the code and indicates the gap.)

```
class Hello extends React.Component {  
  render() {  
    return (  
      <h1 className={'title'}> Hello {this.props.name} </h1>  
    )  
  }  
}  
  
ReactDOM.render(  
  < 1) _____ />, document.getElementById('root')  
)
```

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## Problem 4 (5 credits)

Next, you discuss potential paradigms and backend interface design with your customer. Explain the concepts behind Representational State Transfer (REST), as well as advantages and disadvantages of the paradigm.

a)\* What does "stateless" mean in the context of REST?

☐ 0  
☐ 1

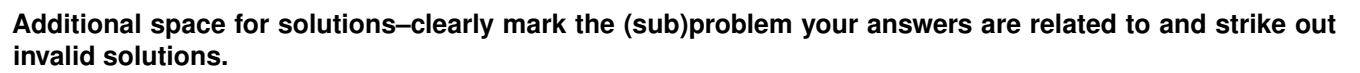
b)\* Briefly describe the benefits of a stateless client-server architecture regarding visibility, reliability, and scalability as presented in the lecture.

☐ 0  
☐ 1  
☐ 2  
☐ 3

c)\* Briefly describe a disadvantage of stateless client-server architectures as presented in the lecture.

☐ 0  
☐ 1



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