Exam Instructions

2023-08-16. **Duration:** 3 hours

Start by reading all the questions in the 3 sections, to see if anything is unclear. If a question is unclear, please write down your assumptions about the question when you are answering it.

The exam has a total of 40 points and you need 21 points to pass the exam (extra points will be added afterwards, once the exam is already graded). The grade is on the scale U/G.

Answers must be written in English. Dictionaries may be used.

For each question, I give the maximum points of the answer.

The format and extension of your answer should adapt to the type of questions:

- **Specific questions:** a concept, a list... the *optimal* answer is usually around a single paragraph.

- **Short questions:** explanations, reviews, comparisons... the *optimal* answer is usually a few (2 or 3) paragraphs.

- **Questions for reasoning:** your arguments are presented in a concise, well-reasoned way,... and written with your own words. The *optimal* answer of the whole question, meaning counting all subquestions, is usually around 2 pages or 3.000 characters. If the question asks you to provide an example, counter example, or justification:
  - Make sure it is original. An example or counter example is considered original if it has not been described in the slides of the course.
  - Make sure that is related with the scenario or application described at the beginning of the question.

A checklist of common mistakes that cost points:

- Answer all **5** questions. A bad answer never gives less points than no answer.

- Read the question again after you have written the answer. Verify that you have actually answered the question. Verify that you answered all parts. Verify that you have not hidden the answer between many other irrelevant comments about the topic. *Cursives are added to highlight the key elements of the questions.*

- In particular, don't forget to give an example if that is requested, and make it a concrete one.

- When a question asks you to compare two things A and B, make sure to highlight the contrasts: their differences. I do not want a full description of A and a full description of B,

leaving it to me to find the differences. It is better to use tables than paragraphs of text to compare.

1 Question 1

Question 1 [3 points].

Which aspects of the project planning are highlighted by an activity network? Which are hidden? *Enumerate* two (2) aspects highlighted and one (1) aspect hidden. Three (3) in total.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 3

2 Question 2

Question 2 [3 points].

Compare over-the-shoulder and pre-checking code review processes: Indicate one (1) *advantage* and one (1) *difference* between them. Two (2) in total.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 3

i Question 3

Question 3 [6 points].

3a (2/6 points) Describe the 3-tier physical architecture.

3b (4/6 points) Give an example where it would be reasonable to implement a Model-View-Controller logical architecture on top of a 3-tier physical architecture. Explain your answer.

3 Question 3a

3a (2/6 points) Describe the 3-tier physical architecture.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 2

4 Question 3b

3b (4/6 points) Give an example where it would be reasonable to implement a Model-View-Controller logical architecture on top of a 3-tier physical architecture. Explain your answer.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 4

Question 4

Question 4 [18 points].

4a (5/18 points) *Explain* step by step the process of requirements engineering, with special emphasis on *which* actors and/or stakeholders are responsible of each step of the process and what are their responsibilities.

4b (4/18 points) Your the team is using an incremental development process. During the first scrum retrospective, decides to evaluate switching to a V-Model process to build the next product. *Describe how* this change will affect your requirements engineering process.

4c (5/18 points) After a trial period using the V-Model, the team has to decide if they want, or not, to standarize the new process. *Describe what* would be the process to follow to decide which process to use for now on.

4d (4/18 points) **Your team has decided to keep using the original agile process.** Months after the decision, the team wants to evaluate how well they are performing. In the context of the scenario proposed, *explain how you will evaluate* in what stage your team is using the Tuckman Model.

5 Question 4a

4a (5/18 points) *Explain* step by step the process of requirements engineering, with special emphasis on *which* actors and/or stakeholders are responsible of each step of the process and what are their responsibilities.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 5

6 Question 4b

4b (4/18 points) Your the team is using an incremental development process. During the first scrum retrospective, decides to evaluate switching to a V-Model process to build the next product. *Describe how* this change will affect your requirements engineering process.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 4

7 Question 4c

4c (5/18 points) After a trial period using the V-Model, the team has to decide if they want, or not, to standarize the new process. *Describe what* would be the process to follow to decide which process to use for now on.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 5

8 Question 4d

4d (4/18 points) **Your team has decided to keep using the original agile process.** Months after the decision, the team wants to evaluate how well they are performing. In the context of the scenario proposed, *explain how you will evaluate* in what stage your team is using the Tuckman Model.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 4

Question 5

Question 5. [10 points].

Your company has been tasked with the development of VegaVision, an online service to monitor your health and provide you with coffee when you most needed.

VegaVision has a browser plugin - a small program attached to your browser - that constantly monitors you through your webcam. The biometrical information is then sent to a cloud architecture, which evaluates how much coffee you need. The cloud architecture, somehow informs about your coffee needs to VegaMoka, a smart coffee maker machine in your home that prepares you coffee when instructed.

5a (6/10 points) *Formulate* one (1) complete functional requirement, without a corresponding diagram, related to the application described at the beginning of this question. Include at least one (1) alternate flow and one (1) exception flow.

5b (2/10 points) *Compare* functional and non-functional requirements. Indicate at least two (2) *differences* between them.

5c (2/10 points) *Formulate* two (2) non-functional requirements, each one of different type, for the software described at the beginning of this question. *Indicate* the type of each requirement.

9 Question 5a

Question 5. [10 points].

Your company has been tasked with the development of VegaVision, an online service to monitor your health and provide you with coffee when you most needed.

VegaVision has a browser plugin - a small program attached to your browser - that constantly monitors you through your webcam. The biometrical information is then sent to a cloud architecture, which evaluates how much coffee you need. The cloud architecture, somehow informs about your coffee needs to VegaMoka, a smart coffee maker machine in your home that prepares you coffee when instructed.

5a (6/10 points) *Formulate* one (1) complete functional requirement, without a corresponding diagram, related to the application described at the beginning of this question. Include at least one (1) alternate flow and one (1) exception flow.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 6

10 Question 5b

Question 5. [10 points].

Your company has been tasked with the development of VegaVision, an online service to monitor your health and provide you with coffee when you most needed.

VegaVision has a browser plugin - a small program attached to your browser - that constantly monitors you through your webcam. The biometrical information is then sent to a cloud architecture, which evaluates how much coffee you need. The cloud architecture, somehow informs about your coffee needs to VegaMoka, a smart coffee maker machine in your home that prepares you coffee when instructed.

5b (2/10 points) *Compare* functional and non-functional requirements. Indicate at least two (2) *differences* between them.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 2

11 Question 5c

Question 5. [10 points].

Your company has been tasked with the development of VegaVision, an online service to monitor your health and provide you with coffee when you most needed.

VegaVision has a browser plugin - a small program attached to your browser - that constantly monitors you through your webcam. The biometrical information is then sent to a cloud architecture, which evaluates how much coffee you need. The cloud architecture, somehow informs about your coffee needs to VegaMoka, a smart coffee maker machine in your home that prepares you coffee when instructed.

5c (2/10 points) *Formulate* two (2) non-functional requirements, each one of different type, for the software described at the beginning of this question. *Indicate* the type of each requirement.

Write your answer here

Teckenf...

Ord: 0

Totalpoäng: 2