CO4217/CO7217 - Agile Cloud Automation - Coursework 1 - RUBRIC

Intended learning outcomes

1. Demonstrate understanding of NoSQL principles and technology
2. Discuss issues and solution approaches for questions of scalability and consistency
3. Explain agile principles and practices for developing cloud systems

Group exercises

Note: for each subsequently higher grade for a row in the rubric, you must also fulfil the requirement in the columns to the right. E.g. for Outstanding you must achieve Excellent plus the additional criteria on the right.

Exercise	Mark (Band)	Column1	Intended learning outcome	Outstanding	Excellent	Competent	Satisfactory	Marginal	Little Effort	Nominal
Exercise 1	9	Explain data set (schema, context) and intented query	1	The presentation of this component serves as a motivation for the project, possibly adding references to factual data from independently researched sources (news, IT magazines/journals), offering a sound introduction to the topic.	The query is illustrated with examples.	Sufficient context is additionally provided, introducing the aim of the topic.	The structure of the dataset is clearly explained. The query is well presented.	The dataset has been chosen and it is explained informally. The goal of the intended query is reasonably understood.	A dataset has been chosen but the schema has not been identified.	No submission.
Exercise 2	9	Explain query in Groovy and interpret results	3	Full grasp of Groovy as a scripting language and how it is used in the mini project. Potential alternatives and/or optimizations of the query are discussed and the choice made is justified. Results are displayed graphically (using charts) or textually (in tabular format) helping the	The explanation of the query follows from the dataset in exercise 1. The query is correctly implemented in Groovy using appropriate Collection operations. The code is perfectly intelligible and well	The query is explained using Groovy syntax, with a clear goal in mind. All aspects of the query are covered (selection, projection, filtering, combination/grouping).	A query in Groovy syntax is presented. Some aspects of the query may not be explained fully but it is clear how Groovy has	Content involves Groovy but the presentation is generic and somewhat detached from the purpose of the mini	A minimal attempt at explaining what Groovy is.	No submission.

Exercise	Mark (Band)	Column1	Intended learning outcome	Outstanding	Excellent	Competent	Satisfactory	Marginal	Little Effort	Nominal
				audience understand what has been achieved.	explained. Results obtained are sensible and a correct interpretation is explained.	Results from the query are shown too. The application of Groovy collection operations is mostly correct although it may not be the most optimal.	been used to implement the query.	project: data manipulation and definition of query.		
Exercise 3	9	Explain cloud solution (Groovy/MongoDB) and interpret results	2	Full grasp of MongoDB API and how it is used in the mini project. Groovy is used to make the code concise. Potential alternatives and/or optimizations of the query are discussed and the choice made is justified. Results are displayed graphically (using charts) or textually (in tabular format) helping the audience understand what has been achieved, using a different approach to the one used in exercise 2 (if the same representation of results is used, then it falls under the next category on the right).	The explanation of the query follows from the dataset in exercise 1. The query is correctly implemented in Groovy/MongoDB using appropriate methods from the MongoDB Java Driver API. The code is perfectly intelligible and well explained. Results obtained are sensible and a correct interpretation is explained. Same graphical/textual representation may be reused from exercise 2.	The query is explained using Groovy and the MongoDB API, with a clear goal in mind. All aspects of the query are covered (selection, projection, filtering, combination/grouping). Results from the query are shown too. The application of the MongoDB API is mostly correct although it may not be the most optimal.	A query implemented using the MongoDB API from Groovy syntax is presented. Some aspects of the query may not be explained fully but it is clear how MongoDB has been be to implement the query.	Content involves MongoDB API but the presentation is generic and somewhat detached from the purpose of the mini project: data manipulation and definition of query.	A minimal attempt at explaining what MongoDB is.	No submission.

Exercise	Mark (Band)	Column1	Intended learning outcome	Outstanding	Excellent	Competent	Satisfactory	Marginal	Little Effort	Nominal
Exercise 4 - general + only one of the topics bleo	15	Critical comparison		Comparison criteria is approached from a critical point of view too, showing awareness of nuances when applying it. Additional research in the bibliography (going beyond the contents of the taught units) may have been performed. In addition, see below for each topic.	Some conclusions are inferred. Conclusions follow strictly from the comparison criteria. In addition, see below for each topic.	Comparison criteria are used effectively. In addition, see below for each topic.	Comparison criteria are defined. In addition, see below for each topic.	See below for each topic.	See below for each topic.	No submission.
Exercise 4 - Topic 1		Critical comparison of solutions regarding evolution/maintece	3	Evolution trade-offs in the solution of the evolution problem are explained both for the solution in exercises 2 and 3. The comparison ends with a brief summary of conclusions that is well justified.	A solid, detailed comparison of the two approaches from the point of view of evolution problem, discussing forward and backward compatibility, as explained in the lecture notes.	Evolution is presented within the context of the miniproject. The two solutions are put side-by-side and analysed from the point of view of evolution.	The notion of evolution presented is mostly related to the exercise but there may be innacuracies. The two solutions are put side-by-side and analysed with some references to evolution.	A generic notion of evolution is presented but it is not directly linked to the mini project. or The two solutions are compared	Brief description of evolution. or The two solutions are compared without a direct link	

Exercise	Mark (Band)	Column1	Intended learning outcome	Outstanding	Excellent	Competent	Satisfactory	Marginal	Little Effort	Nominal
								with a weak link to evolution.	to evolution.	
Exercise 4 - Topic 2		Critical comparison of solutions regarding scalability	2	Scalability is explained in the MongoDB solution, and advantages/disadvantages with respect to the Groovy-only solution are extensively explained without missing the point. Replication/sharding schemes and their implementation in MongoDB are discussed from the point of view of the exercise. The comparison ends with a brief summary of conclusions that is well justified.	A solid, detailed comparison of the two approaches from the point of view of scalability, making appropriate references to replication/sharding schemes explained in the lecture notes.	Scalability is presented within the context of the miniproject. The two solutions are put side-by-side and analysed from the point of view of scalability.	The notion of scalability presented is mostly correct but there may be innacuracies. The two solutions are put side-by-side and analysed with some references to scalability. Comparison criteria are defined.	A generic notion of scalability is presented but it is not directly linked to the mini project. or The two solutions are compared with a weak link to scalability.	Brief description of scalability. or The two solutions are compared without a direct link to scalability.	

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Exercise 4 - Topic 3		Critical comparison of solutions regarding consistency	2	Consistency trade-offs are explained in the MongoDB solution, and advantages/disadvantages with respect to the Groovy-only solution are extensively explained without missing the point. The comparison ends with a brief summary of conclusions that is well justified.	A solid, detailed comparison of the two approaches from the point of view of consistency, making appropriate references to the CAP theorem and eventual consistency, as explained in the lecture notes.	Consistency is presented within the context of the miniproject. The two solutions are put side-by-side and analysed from the point of view of consistency.	The notion of consistency presented is mostly correct but there may be innacuracies. The two solutions are put side-by-side and analysed with some references to consistency. Comparison criteria are defined.	A generic notion of consistency is presented but it is not directly linked to the mini project. or The two solutions are compared with a weak link to consistency.	Brief description of consistency. or The two solutions are compared without a direct link to consistency.	
Exercise 5	20	Open-ended component	1	This section wraps up the whole presentation, building on what has been discussed previously and discussing aspects that have not been covered before. Genuine conclusions are inferred and students are likely to have researched the bibliography/additional online resources to build the solution.	Queries and datasets that are chosen are relevant for the discussion. Conclusions are drawn from the criteria. A very good use of content delivered in taught units.	The subjects (either exercise 2 and 3, or other) to be compared and the comparison criteria to be analysed are clearly exposed. Additional datasets may have been obtained by applying data transformations in Groovy, e.g. by	The work presented builds atop one of the aspects discussed in previous exercises (evolution, scalability, consistency), by providing more examples	A proposal for discussing one aspect of the exercises 2 and 3 (evolution, scalability and consisteny) in more detail. The key components (subjects to be discussed	An incipient idea is explained although it has not been developed.	No submission.

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						extracting data from a format other than JSON.	(more queries, more datasets on the same topic).	and comparison criteria) are explained but the solution has not been fully implemented.		
Project Management	8	Workload management, conflict management, task allocation, and meetings	1-3	The project manager effectively led the group, ensuring balanced workload distribution and efficient task allocation. All group meetings were well-organized, with minutes recorded and shared. Conflicts were addressed proactively and resolved swiftly. Task allocation and contributions were consistently updated and agreed upon by all team members. Communication within the team was seamless, fostering smooth collaboration.	The project manager ensured the workload was well-distributed, and task allocation was clear. Regular meetings were held, and most were well-organized, with key decisions recorded. Conflicts were managed effectively, though some minor issues may have arisen. Task allocation and contributions were regularly updated, and communication within the team was good.	The project manager ensured most tasks were fairly allocated, and regular meetings were held. Some minor issues with workload balance or task clarity, but conflicts were managed, albeit with some delays or challenges. Task allocation was mostly up to date, and team communication was sufficient for project progress.	The project manager ensured that tasks were allocated, though workload may have been uneven. Meetings were held but not consistently well-organized. Some conflicts were managed, but not all were resolved effectively. Task allocation and contributions	The project manager's role was minimal, with little effort to balance workload or manage meetings effectively. Conflicts were largely unresolved, and task allocation was unclear or rarely updated.	Minimal effort was made by the project manager, with poor task allocation, no effective meetings, and unresolved conflicts.	No submission.

Exercise	Mark (Band)	Column1	Intended learning outcome	Outstanding	Excellent	Competent	Satisfactory	Marginal	Little Effort	Nominal
							were updated but not consistently.			

Individual reflection

Note that the responses to the individual reflection may be contrasted with your performance in the video recording and with the rest of the group project.

Criterion	Expert	Master	Competent	Novel	ChatGPT Passenger	No Submission
1. Understanding and Application of NoSQL Concepts	I went beyond the basics, optimizing the NoSQL solution and proposing improvements, demonstrating a deep understanding of NoSQL concepts in practice.	I applied NoSQL concepts independently, solving problems and making decisions on data schema design and queries without assistance.	I successfully applied NoSQL concepts to a dataset with occasional support, showing good understanding of key principles.	I demonstrated a basic understanding of NoSQL but relied heavily on guidance and external help.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
2. Proficiency with Groovy for Data Manipulation	I utilized advanced Groovy techniques and demonstrated innovation in data processing, going beyond standard use cases.	I independently implemented Groovy solutions, optimizing data manipulation tasks and demonstrating a deep grasp of its features.	I implemented Groovy-based solutions correctly, using its syntax and collection operations to manipulate data efficiently.	I used Groovy in the project with some guidance but struggled to fully grasp its capabilities.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
3. Proficiency with MongoDB API	I applied advanced MongoDB features, like sharding or replication, and critically evaluated different methods to improve scalability and consistency.	I independently handled complex MongoDB queries and operations, optimizing the data retrieval and storage process effectively.	I correctly implemented MongoDB queries and operations, following best practices and showing a solid understanding of the API.	I used MongoDB with assistance and implemented basic queries, but lacked confidence in more complex tasks.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
4. Critical Analysis of NoSQL Principle Trade-offs	I explored the trade-offs comprehensively, proposing innovative solutions to balance	I presented a well-reasoned, independent analysis of the trade-offs, justifying my	I demonstrated a solid understanding of the trade-offs, applying the	I identified basic trade-offs in scalability and consistency but found it	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or	No submission.

Criterion	Expert	Master	Competent	Novel	ChatGPT Passenger	No Submission
	scalability and consistency, including advanced techniques like replication or query optimization.	choices with relevant technical evidence.	concepts in the comparison of solutions (e.g., Groovy vs. MongoDB).	difficult to analyze them in detail.	defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	
5. Understanding and Implementing Data Integration	I went beyond standard data integration techniques, optimizing the process, and proposing innovative ways to handle and merge disparate data sources for better business insights.	I independently handled complex data integration tasks, ensuring that different datasets were combined efficiently and meaningfully for analysis.	I successfully implemented basic data integration techniques, managing multiple datasets with MongoDB and Groovy.	I struggled to integrate data from different sources without significant assistance.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
6. Research Skills (Dataset Selection and Project Ideation)	I demonstrated exceptional research skills, selecting a dataset that offers rich analytical potential, and formulated a project goal that pushes the boundaries of typical data analytics in this context.	I independently identified a high-quality dataset and designed a clear and impactful project goal, linking the data to meaningful business insights or social trends.	I identified a relevant dataset and formulated a clear project goal, demonstrating basic research skills and understanding of data analytics.	I selected a dataset and project goal but needed significant guidance in identifying a relevant dataset and formulating a goal.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
7. Problem Formulation and Query Design (Exercise 1)	I formulated a highly complex and insightful query, demonstrating innovation in data analytics, and providing a clear motivation tied to a broader business or social problem.	I developed a complex query that extracted meaningful insights from the data, and I was able to align the dataset structure with the project goals effectively.	I formulated a relevant query based on the dataset, showing good understanding of the data structure and a clear goal in mind for data analysis.	I formulated a basic query but struggled with the conceptualization of the problem or lacked a clear understanding of the dataset's structure and purpose.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
8. Analytic Skills (Scalability, Evolution, Consistency – Exercise 4)	I delivered an in-depth analysis that incorporated advanced technical knowledge, linking the trade-offs in scalability, evolution, or consistency to industry best practices or broader technical discussions.	I provided a nuanced analysis of the chosen dimension (scalability, evolution, or consistency), explaining the trade-offs thoroughly and showing awareness of real-world implications.	I demonstrated a solid understanding of scalability, evolution, or consistency, effectively comparing the two approaches and discussing the trade-offs.	I identified basic aspects of scalability, evolution, or consistency, but struggled to provide in-depth analysis or to link the dimensions to real-world systems.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.

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9. Research and Literature Review (Exercise 5)	I conducted a thorough and advanced literature review, using high-quality academic sources to build a robust argument, going beyond the course materials to deepen the analysis.	I provided a well-researched and comprehensive review, integrating a range of sources that were directly relevant to the project, and drawing meaningful conclusions from the literature.	I used relevant literature effectively to support my conclusions, demonstrating a solid understanding of research skills and ability to apply them to the project.	I referred to a few relevant sources but struggled to find or cite appropriate literature, and my review of the research was incomplete or superficial.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
10. Critical Thinking (Exercise 4 and 5)	I demonstrated advanced critical thinking, exploring multiple dimensions of the problem, making sophisticated judgments, and proposing innovative ways to resolve complex issues.	I demonstrated strong critical thinking skills, evaluating the solutions comprehensively, weighing trade-offs, and linking the results back to the project goals.	I applied critical thinking to compare the two solutions (Groovy vs MongoDB), providing some rationale for the trade-offs and making clear, reasoned decisions.	I identified basic elements of critical thinking but struggled to demonstrate a deeper evaluation of the different solutions or trade-offs involved.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
11. Teamwork and Collaboration	I went beyond project management, resolving conflicts, and guiding the team to work more efficiently and cohesively, while enhancing the quality of the final output.	I took a leadership role, organizing meetings, facilitating collaboration, and managing task allocation effectively within the team.	I actively contributed to meetings, task allocation, and helped ensure tasks were completed on time.	I participated in group meetings but contributed minimally to discussions and task management.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
12. Problem-Solving and Adaptation to Challenges	I solved advanced, unexpected problems creatively, considering multiple approaches and choosing the most efficient solution, even improving team approaches to similar challenges.	I demonstrated resourcefulness in solving complex issues, adapting and iterating on solutions until I achieved optimal results.	I solved most problems independently, applying logical thinking and adapting my approach when faced with obstacles.	I encountered challenges and solved them with guidance, but had difficulty adapting solutions to unexpected issues.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
13. Project Management and Organizational Skills	I demonstrated advanced project management, including conflict resolution and dynamic reallocation of tasks when needed, ensuring	I led the project management process, ensuring that the project progressed smoothly with regular check-ins, updates, and clear task allocation.	I took an active role in project management, helping to ensure tasks were distributed fairly and meetings were organized.	I contributed minimally to task allocation and project planning, relying on others to lead.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look	No submission.

Criterion	Expert	Master	Competent	Novel	ChatGPT Passenger	No Submission
	the project stayed on track despite obstacles.				complete, I don't fully grasp the concepts or underlying logic.	
14. Transferable Skills and Industry Relevance	I made detailed, insightful connections between my work and industry practices, proposing ways to further develop and apply the skills learned for future career success.	I demonstrated a strong understanding of how my skills apply to industry, drawing clear parallels between my project work and real-world business problems.	I recognized relevant transferable skills and explained how the project work relates to industry expectations (e.g., teamwork, communication, NoSQL skills).	I can identify some skills relevant to industry, but found it challenging to link them directly to the project work.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
15. Presentation and Communication Skills	I delivered an engaging, professional presentation, using storytelling or advanced communication techniques, and effectively explaining complex technical ideas in an accessible way.	I presented the project in a clear, organized, and engaging way, using visuals effectively, and ensuring that the audience could easily follow.	I communicated the project clearly, using an organized structure, and included relevant information, but some areas could be refined for better clarity.	I presented the key ideas, but the flow and structure of the presentation could be improved. The communication lacked clarity or conciseness.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
16. Documentation and Technical Writing Skills	My documentation was comprehensive, clear, and professional, including explanations of design choices, code snippets, and technical diagrams where appropriate.	I provided well-organized documentation with detailed technical explanations, ensuring that all steps and decisions were thoroughly explained and easy to follow.	I documented my work with a clear structure, and most technical explanations were correct and sufficient, although some areas could be expanded or clarified.	I provided basic documentation, but it lacked clarity or structure, and some technical explanations were incomplete or unclear.	I used ChatGPT to assist with coding/writing/research, but I'm not yet able to fully explain or defend the ideas it generated. While the solution may look complete, I don't fully grasp the concepts or underlying logic.	No submission.
17. Use of Generative AI for Technical Writing	I demonstrated expert use of AI, guiding the tool to enhance my technical writing, but maintaining full control over the narrative, technical details, and clarity. The result is a polished, professional document that represents my deep understanding of the material.	I strategically used AI to assist with technical writing, guiding its prompts and making significant revisions to ensure that the content aligned with the project's goals and technical details. My voice and understanding are clearly reflected in the final version.	I used AI to draft parts of the technical writing, then revised and edited the content to reflect my understanding of the material. The tool supported my work, but I actively shaped the final output.	I used AI to assist with technical writing but relied heavily on the tool's output without much personal input or editing. My involvement in guiding the writing was minimal.	I used ChatGPT to assist with technical writing, but I'm not yet able to fully explain or defend the ideas it generated. While the writing may look complete, I don't fully grasp the underlying logic or content.	No submission.

Criterion	Expert	Master	Competent	Novel	ChatGPT Passenger	No Submission
18. Use of Generative AI for Presentation Creation (Slides, Story Narrative, Discourse)	I expertly used AI to support the creation of a professional, engaging presentation, maintaining full control over the narrative, structure, and story flow. The final presentation was polished, with AI merely facilitating the process.	I actively guided the AI in generating slides or structuring the presentation, making substantial edits to ensure alignment with the project's objectives. My voice and presentation style were clearly maintained throughout.	I used AI to assist in preparing slides or structuring the presentation. I revised and reorganized the content to better fit the project goals, ensuring my understanding was clear in the final presentation.	I used AI to generate the slides or presentation narrative but mostly relied on the tool's suggestions without significant personal input or restructuring.	I used ChatGPT to assist with presentation creation, but I'm not yet able to fully explain or defend the ideas it generated. While the presentation may look complete, I don't fully grasp the structure or narrative.	No submission.
19. Use of Generative AI for Code Writing	I demonstrated expert use of AI for coding, using the tool to speed up or optimize parts of the process while maintaining full authorship and control over the final code. I guided the AI effectively and ensured the code was clean, functional, and aligned with project goals.	I used AI to support the coding process, actively guiding its prompts and making significant changes to align the code with the project's objectives. I demonstrated a strong understanding of the code and applied it effectively.	I used AI to generate or optimize code, making relevant modifications based on my understanding of the problem. I took care to understand the code produced and how it fits into the overall project.	I used AI to generate code but did not fully understand or modify the output. My interaction with the AI was minimal, and I relied heavily on its output without deep understanding.	I used ChatGPT to assist with coding, but I'm not yet able to fully explain or defend the code it generated. While the code may look complete, I don't fully understand its structure or logic.	No submission.
20. Use of Generative AI for Analysis and Research	I demonstrated expert use of AI for research and analysis, using it as a tool to generate or validate ideas while ensuring that my own critical thinking and evaluation drove the final conclusions. The AI supported but did not overshadow my research skills.	I actively guided the AI in analyzing ideas or conducting research, using the tool to enhance but not replace my own insights. I critically evaluated the AI's output and integrated it meaningfully into the project.	I used AI to assist in analyzing data or conducting research. I reviewed the AI's output and applied my own critical thinking to refine the results, ensuring relevance to the project.	I used AI to help with analysis or research but relied heavily on the tool's suggestions without adding my own critical evaluation or insights.	I used ChatGPT to assist with analysis and research, but I'm not yet able to fully explain or defend the results it generated. While the analysis may look complete, I don't fully grasp the underlying logic or content.	No submission.