Seneca | SCHOOL OF SOFTWARE DESIGN & DATA SCIENCE

Individual Writing Assignment2

Contents

Individual Writing Assignment2

Learning Outcomes and Objectives

This assignment is designed to encourage you to apply core software fundamentals to tackle complex engineering problems, particularly those related to scalability and sustainability. This directly contributes to their ability to devise solutions that meet diverse design requirements, encompassing technical, business, and environmental constraints. Moreover, the assignment fosters investigative practices, promoting lifelong learning. By researching **database sharding** and **sustainable development practices**, you become attuned to your work's environmental impacts and ethical considerations, aligning with current industry trends toward eco-friendly technology. The task of researching and reflecting on these topics also meets the outcome of engaging with the current research literature, enhancing your ability to stay abreast of emerging trends and technologies in the software engineering field.

In essence, this assignment deepens technical understanding and cultivates an awareness of the broader implications of software engineering practices. It prepares you to be thoughtful, innovative, and environmentally conscious professionals in an ever-evolving industry.

Learning Outcomes

- **CLO1**: Apply software fundamentals to solve software engineering problems, including environmental and sustainability issues.
- **CLO2**: Devise engineering solutions that satisfy design requirements and constraints, such as technical, business, health and safety, sustainability, environmental, ethical, security, etc.
- **CLO4**: Research selected software engineering and sustainability topics to become aware of their benefits, challenges, and environmental implications.
- **CLO6**: *Discuss current peer-reviewed research literature papers to predict future software engineering and sustainable technology trends*

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Assignment Learning Objective

The learning objectives that can be achieved by completing this assignment are as follows:

- **Comprehend Database Sharding**: Understand the fundamentals, types, and impact of database sharding in software design.
- **Principles of Sustainable Development**: Learn the principles and practices of sustainable software development and their importance.
- **Research Skills Enhancement**: Improve research skills by studying various resources on database sharding and sustainable software development.
- **Critical Evaluation**: Assess software solutions' technical, environmental, and ethical implications in these domains.
- **Effective Communication**: Develop the ability to summarize and reflect on complex technical information clearly and effectively.

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Instructions:

- It is essential to read the **ReadMe: Individual Writing Assignments Instructions** document that is posted on Blackboard.

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Part One: Database Sharding

Task 1. Research and Read: Explore articles, academic papers, or reliable online sources on database sharding. Make sure to understand the concept and its applications.

Task 2. Summarize the Concept:

a. What is database sharding, and how does it work?
b. Discuss the types of sharding, such as hash-based, range-based, etc.
c. Mention real-world applications or examples, if any.

Task 3. Reflect on Database Sharding:

a. Share your opinion about database sharding's effectiveness and complexities.
b. Discuss how database sharding impacts software design and scalability.

Part Two: Sustainable Software Development

Task 4. Research and Read: Investigate the principles and practices of sustainable software development. Look for sources that discuss its importance and implementation.

Task 5. Summarize the Concept:

a. Outline the fundamental principles of sustainable software development.
b. Discuss practices that contribute to sustainability in software development.
c. Mention real-world applications or examples, if any.

Task 6. Reflect on Sustainable Development:

a. Share your thoughts on the importance of sustainability in software development.
b. Reflect on how sustainable practices can be integrated into current software development methodologies.

Questions to keep in mind about assignment

Question 1. How does database sharding contribute to solving scalability challenges in large-scale systems?

Question 2. What are the potential challenges and complexities involved in implementing database sharding?

Question 3. What are the essential principles of sustainable software development, and why are they important?

Question 4. How can sustainable practices be integrated into existing software development processes?

Question 5. How do the principles of sustainable software development align or conflict with the practices and outcomes of database sharding?

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Deliverables and Individual Work

Create assignment report with the following name format

Student_<number>_IWA_<Assignment number>_report.pdf

For example, if **Student16** created a report for **Assignment20,** then the report name should be

Student_16_assign_20_report.pdf

The assignment report should include:

(a) Complete this declaration by adding your names:

I, ---------- (mention your name), declare that the attached assignment is my own work in accordance with the Seneca Academic Policy. We have not copied any part of this assignment, manually or electronically, from any other source, including websites, unless specified as references. We have not distributed our work to other students.

(b) Submit file (s)

a. **Student_<number>_IWA_<assignment number>_report.pdf**