Tutorial Week 02

Outline

- Tutorial Week 2
- Step-by-Step Instructions for the Group Assessment
- Step-by-Step Instructions for the Individual Assessment

Open-Ended Question

How do different software development methodologies impact the efficiency and success of IT projects in a real-world context?

Different software development methodologies, such as the Systems Development Life Cycle (SDLC), Agile Development, and Object-Oriented Analysis and Design, play a crucial role in determining the efficiency and success of IT projects. For instance, in a dynamic city like Sydney, where tech startups thrive, Agile methodologies may provide the flexibility and rapid iteration required to meet fast-changing market demands. Conversely, in more structured environments like government projects in Canberra, the thorough documentation and phased approach of the SDLC might be more suitable to ensure compliance and risk management. Understanding the strengths and limitations of each methodology allows IT professionals to tailor their approach to the specific needs of their projects, ultimately leading to better outcomes.

Open-Ended Question

What are the key phases of the Systems Development Life Cycle (SDLC) and how do they contribute to the overall success of a project?

The key phases of the SDLC include planning, analysis, design, implementation, testing, deployment, and maintenance. Each phase plays a vital role in ensuring that the project meets its objectives, stays within budget, and is delivered on time. For example, the analysis phase helps identify system requirements in detail, which reduces the risk of project failure due to unmet user needs.

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Example

Consider the implementation of a new public transportation ticketing system in Sydney. The planning phase involved assessing the needs of daily commuters, the analysis phase included gathering detailed user requirements, and the design phase developed user-friendly interfaces. The implementation and testing phases ensured the system was robust before full deployment.

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Please answers the below tutorial questions. Please note all questions are compulsory.

Discussion Questions:

1. **List and briefly define the seven phases of the systems development life cycle (SDLC). (Overview of the Seven Phases of the Systems Development Life Cycle (SDLC))**
2. **What are CASE tools used for? (Understanding the Uses of CASE Tools)**
3. **What are the stages in agile development? (Stages of Agile Development)**
4. **Define term object-oriented analysis and design. (Introduction to Object-Oriented Analysis and Design)**
5. **What is UML? (Understanding Unified Modeling Language (UML))**
6. **What is open-source software? (Exploring Open-Source Software)**
7. **What is the role of a systems analyst in the development of open-source software? (The Role of Systems Analysts in Open-Source Software Development)**

The following case studies will continue throughout this teaching period. Therefore, please be familiarize with this scenarios.

Running Case Study:

Central Pacific University:

On a warm, sunny day in late October, Chip Puller parks his car and walks into his office at Central Pacific University. It feels good to be starting as a systems analyst, and he is looking forward to meeting the other staff. In the office, Anna Liszt introduces herself. "We've been assigned to work as a team on a new project. Why don't I fill you in with the details, and then we can take a tour of the facilities?"

"That sounds good to me," Chip replies. "How long have you been working here?" "About five years," answers Anna. "I started as a programmer analyst, but the last few years have been dedicated to analysis and design. I'm hoping we'll find some ways to increase our productivity," Anna continues. "Tell me about the new project," Chip says. "Well," Anna replies, "like so many other organizations, we have a large number of microcomputers with different software packages installed on them. From what I understand, in the 1980s there were few personal computers and a scattered collection of software. This expanded rapidly in the 1990s, and now everyone uses computers. Some faculty members use more than one computer. The current system that is used to maintain software and hardware, which was originally quite useful, is now very outdated and quite overwhelmed."

"What about the users? Who should I know? Who do you think will be important in helping us with the new system?" Chip asks. "You'll meet everyone, but there are key people I've recently met, and I'll tell you what I've learned so you'll remember them when you meet them. "Dot Matricks is manager of all microcomputer systems at Central Pacific. We seem to be able to work together well. She's very competent. She'd really like to be able to improve communication among users and analysts."
"It will be a pleasure to meet her," Chip speculates. "Then there's Mike Crowe, computer maintenance expert. He really seems to be the nicest guy, but way too busy. We need to help lighten his load. The software counterpart to Mike is Cher Ware. She's a free spirit, but don't get me wrong, she knows her job," Anna says. "She could be fun to work with," Chip muses. "Could be," Anna agrees. "You'll meet the financial analyst, Paige Prynter, too. I haven't figured her out yet." "Maybe I can help," Chip says. "Last, you should—I mean, you will—meet Hy Perteks, who does a great job running the Information Center. He'd like to see us be able to integrate our life cycle activities." "It sounds promising," Chip says. "I think I'm going to like it here."

Exercise:

1. From the introductory conversation Chip and Anna shared, which elements mentioned might suggest the use of CASE tools?

Projects:

1. Contact four people at your school who use information systems. List their positions, the systems they use, and the business functions they perform. (Information Systems Usage in Academic Settings)

2. Research newspaper, business magazine articles, or the Web to find IT companies whose stock is traded publicly. Choose a company and pretend to buy $5,000 of its stock. Why did you choose that company? What is the current price per share? Report each week to your class. (Analyzing Publicly Traded IT Companies)

3. Visit at least three Web sites to learn more about agile system development and spiral models. Prepare a list of the sites you visited and a summary of the results. (Exploring Agile Development and Spiral Models)

4. Explore the Critical Thinking Community Web site at criticalthinking.org. Identify three important topics currently being discussed, and describe your findings. (Current Topics in Critical Thinking)

5. Read about the corporate culture of three leading IT companies, such as that from Google shown in Figure 1-27. Compare each statement of values and describe the type of employee you think each company is looking for. (Comparative Analysis of Corporate Cultures in Leading IT Companies)

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Open-Ended Question

How do CASE tools enhance the efficiency of software development projects?

CASE tools, or Computer-Aided Software Engineering tools, provide automated support for software development processes, improving accuracy and productivity. They help in documentation, design, coding, and testing, reducing manual errors and accelerating project timelines.

Example

In Melbourne, a software development company used CASE tools to streamline the development of an e-commerce platform. The tools enabled the team to create detailed models and generate code automatically, significantly reducing the time needed for manual coding and testing.

Open-Ended Question

What are the main stages of Agile Development, and how does this methodology benefit software projects?

The main stages of Agile Development include project initiation, sprint planning, iterative development, testing, and review. Agile's iterative nature allows for continuous feedback and improvement, leading to higher quality products and faster delivery times.

Example

A tech startup in Brisbane adopted Agile Development to create a mobile app. Through regular sprints and continuous user feedback, the team was able to adapt quickly to user needs and release new features every two weeks, ensuring the app remained competitive in the market.

Open-Ended Question

How does Object-Oriented Analysis and Design (OOAD) differ from traditional analysis and design methods?

OOAD focuses on identifying and organizing software components based on real-world objects, promoting reusability and scalability. Unlike traditional methods that may follow a linear approach, OOAD allows for more flexible and modular design.

Example

In Canberra, a government agency used OOAD to develop a modular data management system. By modeling the system based on real-world entities like citizens, services, and transactions, they created a scalable system that could easily be expanded to accommodate new functionalities.

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Carson, who is a member of *the human resources department at the Elrod Manufacturing Company plant is constantly being asked by employees how much is taken out of their paychecks for insurance, taxes, medical, mandatory retirement, and voluntary retirement. "It takes up to a few hours every day," says Carson.*

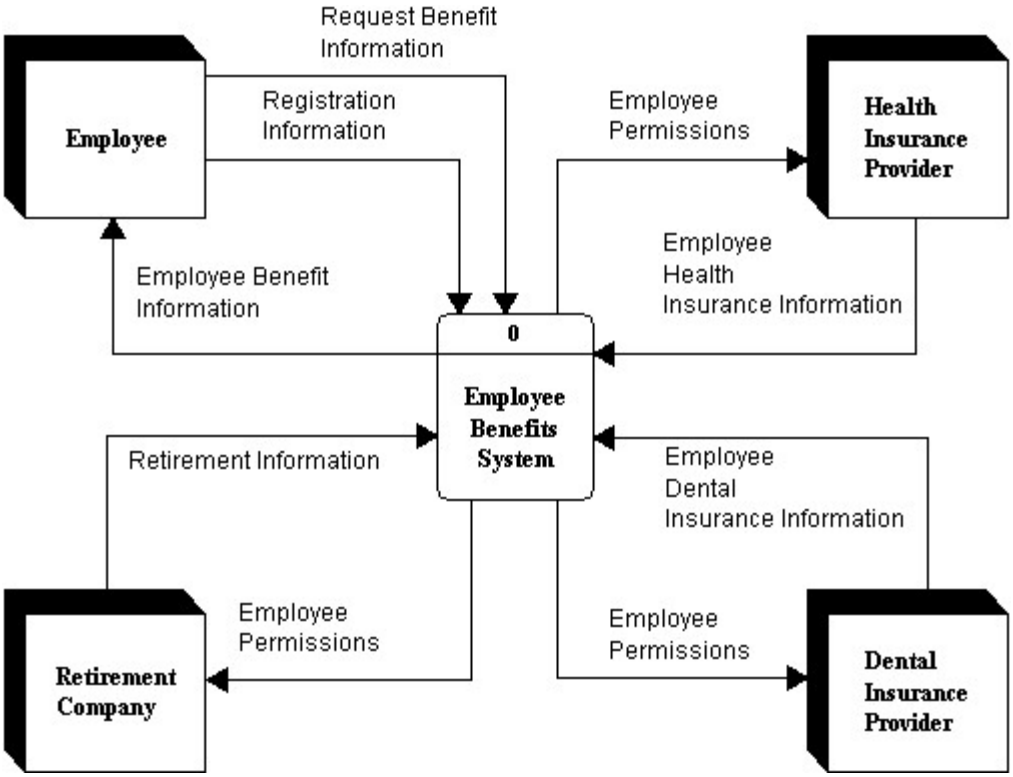
He would like a Web system that would allow employees to use a secure logon to view the information. Carson wants the system to interface with health and dental insurance companies to obtain the amount remaining in the employee's account for the year. He would also like to obtain retirement amounts saved along with investment results. Carson has a high regard for privacy and wants the system to have employees register and give permission to obtain financial amounts from the dental insurance and retirement companies. Draw a use case diagram representing the activities of the employee benefit system.

Create a context-level data flow diagram for the Employee Benefit system in Problem 7. Make any assumptions about the data to and from the central process.

a. *Do you find this to be better or not as good as explaining the system to Carson than the use case and use case scenarios?*

b. *Write a brief tutorial or create a short Microsoft PowerPoint presentation for Carson on how to draw context level diagrams. Be sure to define any technical terms, as well as the reasons for drawing a context level diagram early in your visits to Elrod Manufacturing.*

The solution follows.



The answers will vary from student to student. Both diagrams present a useful view of the system. The context-level data flow diagram provides more information as a diagram, but may be too complex for Carson. The use case diagram is a simpler view, but the use case scenario will provide the details of the transactions. The tutorials and Microsoft PowerPoint presentations will vary from student to student, but make sure technical terms, as well as the reasons for drawing a context level diagram are covered.

Case Study:

CASE tools would be used to help Chip and Anna communicate with each other and share portions of the design that they have completed.

Because there are many users for the Computer System, CASE tools will help to facilitate communication among the users and analyst and document the information that they have received as a result of interviews, document analysis, and questionnaires.

Projects

1. Contact four people at your school who use information systems. List their positions, the systems they use, and the business functions they perform.

Students can perform this task as individuals or work in teams. It might be interesting to compare and discuss the various ways in which the departments manage information.

2. Research newspaper, business magazine articles, or the Web to find IT companies whose stock is traded publicly. Choose a company and pretend to buy $5,000 of its stock. Why did you choose that company? What is the current price per share? Report each week to your class.

To perform the task, students will need a basic understanding of the stock market. Sites such as Yahoo! offer financial information and analysis links and resources. If students need fundamental information about investing in stocks, you might direct them to the material at www.free-financial-advice.net/stock-market.html. Industry leader Vanguard also offers free online information about investing at www.vanguard.com. Also, many school and community libraries can assist students in learning about financial terms and concepts, including stock market investments.

3. Visit at least three Web sites to learn more about agile system development and spiral models. Prepare a list of the sites you visited and a summary of the results.

Many sites describe and discuss agile methods. Students should have no trouble finding material on agile methods and spiral models and preparing a summary of the results. Several sites are shown in the text, and a simple search will produce a list of many more.

4. Explore the Critical Thinking Community Web site at criticalthinking.org. Identify three important topics currently being discussed, and describe your findings.

You might encourage students to explore beyond the suggested link, and challenge them to identify additional resources and issues. Also consider asking them to examine their own approach to learning, and whether they would consider themselves to be critical thinkers.

5. Read about the corporate culture of three leading IT companies, such as that from Google shown in Figure 1-27. Compare each statement of values and describe the type of employee you think each company is looking for.

It would be insightful for examine a traditional company, such as IBM, which has an established but dynamic corporate culture that has withstood the test of time. Newer companies such as Facebook are also quite large, but their culture originates in a different space than that of IBM. The culture of a Silicon Valley startup is different yet again, and the type of employee they seek may have different professional goals – particularly if they are at the start of their career.

Questions

Which phase of the SDLC involves gathering detailed user requirements?

a) Design

b) Planning

c) Analysis

d) Testing

Questions

Which of the following is a benefit of using CASE tools?

a) Increased manual coding

b) Reduced documentation

c) Improved accuracy

d) Longer development time

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Questions

What is a key characteristic of Agile Development?

a) Linear progression

b) Iterative development

c) Fixed requirements

d) Single release

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Questions

What is a primary advantage of using Object-Oriented Analysis and Design?

a) Less modular design

b) Limited scalability

c) Promotes reusability

d) Linear development

Step-by-Step Instructions for the Group Assessment

Step 1: Join a Group

1. Access the Group Page: Navigate to the group enrolment section on your course's Blackboard site.

2. Find a Group: Discuss with your classmates and identify students you want to collaborate with. Ensure they are from the same campus.

3. Join Together: Coordinate with your chosen group members to join the group simultaneously to avoid unwanted members.

4. Confirm Membership: Once all members have joined, verify the group composition.

Example: Alice, Bob, Charlie, and Dana decide to form a group. They coordinate via a chat application and join the group at the same time to ensure all desired members are included.

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Step 2: Download Assignment Documents

1. Locate Documents: Find the documents attached in the group assignment section of Blackboard.

2. Download: Save the files to your computer for easy access.

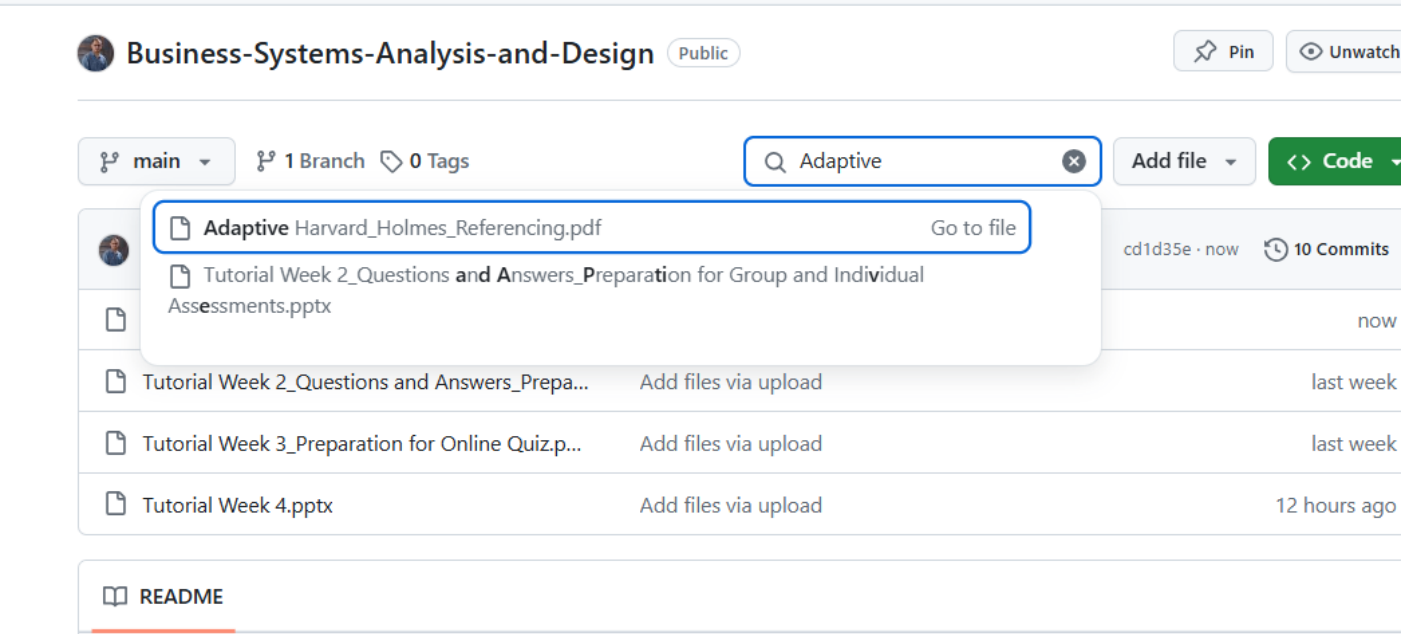
Example: Alice downloads the "Group Assignment Cover Sheet 2024.docx" and the detailed group assignment specifications.

Step 3: Read Assignment Requirements

1. Cover Sheet: Ensure your assignment includes a completed cover sheet with all contributing members listed.

2. Format: Prepare your assignment in Microsoft Word format. No other formats will be accepted.

3. References: Properly reference all sources used in your assignment.



4. Submission Attempts: Remember, you have three submission attempts, but only the final submission will be marked.

5. Submission Device: Use a desktop or laptop to submit your assignment. Avoid using smartphones or tablets.

Example: Bob checks that the cover sheet includes everyone's names and IDs, and the document is saved as a .docx file.

Step 4: Complete Your Group Assignment

1. Collaborate: Work together with your group members to complete the assignment.

2. Divide Tasks: Assign specific sections or tasks to each group member based on their strengths.

Example: Charlie is good at research, so he gathers sources. Dana excels at writing, so she compiles the final document.

Step 5: Submit the Completed Assignment

1. Include Cover Sheet: Ensure the cover sheet is completed and included in your submission.

2. Final Check: Review the entire document to ensure it meets all requirements.

3. Submission Link: Navigate to the submission link on Blackboard and upload your assignment.

Example: Before submitting, Alice checks that the cover sheet is filled out, and all group members are listed. Bob submits the assignment using his laptop.

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Important Notes

• **Joining Groups**: You must join a group by 23 September. After this date, you can only submit assignments solo with a 20% penalty.

• **Changing Groups**: If you need to switch groups, contact Blackboard Helpdesk immediately with the unit code, group number, and campus information.

• **Submission Issues**: Ensure all submissions are made in the correct format and from a desktop or laptop to avoid penalties.

Example of Group Case Study

Note: Below is a hypothetical example to illustrate each step without providing exact answers.

Case Study Topic: The Impact of Social Media on Mental Health

1. Introduction: Define the scope and purpose of the study.

2. Literature Review: Summarize key studies on social media and mental health.

3. Methodology: Explain how you collected and analyzed data.

4. Findings: Present the main findings of your research.

5. Discussion: Interpret the results and discuss implications.

6. Conclusion: Summarize the study and suggest areas for future research.

Example Section:

•**Literature Review**: "Several studies have indicated a strong correlation between excessive social media use and increased levels of anxiety and depression among teenagers (Smith et al., 2020; Johnson, 2021)."

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Group Assignment Cover Sheet

Ensure to include the following details on your cover sheet (template provided):

- **Unit Details**: Unit Name, Code, Year, Trimester number.
- **Assessment Details**: Assessment Name, Due Date, Group Number.
- **Group Details**: Student ID, First Name, Family Name, Contribution %.
- **Integrity Declaration**: All group members must sign the integrity declaration.

Example Cover Sheet (Partial):

Following these steps ensures a smooth and organized approach to completing your group assessment.

Student ID	First Name	Family Name	Contribution %
123456	Alice	Smith	25%
789012	Bob	Brown	25%
345678	Charlie	Davis	25%
901234	Dana	Johnson	25%

Step-by-Step Instructions for the Individual Assessment

Step 1: Understand the Requirements

1. Assignment Topic: Review the instructions provided in the document. The topic involves writing a literature review on one of the Agile Software Development Methods (ASDM).

2. Choose ASDM: Select one method from the list provided (eXtreme Programming, Scrum, Crystal, Adaptive Software Development, Lean software development, Dynamic Systems Development Method, or Feature Driven Development).

3. Research Papers: Find at least ten academic research papers related to your chosen ASDM.

Example: You choose to write about Scrum.

Step 2: Collect Resources

1. Search for Papers: Use ProQuest or Google Scholar to find relevant academic papers.

2. Download Papers: Ensure you have full-text access to all papers you intend to reference.

Example: You search for "Scrum methodology in software development" and find ten relevant papers.

Step 3: Draft the Review

1. Cover Page: Include a cover page with your details (unit name, code, year, trimester, assessment name, due date, student number, first name, family name, and integrity declaration).

2. Abstract: Write a brief summary of your research paper (150-250 words).

Example: Your abstract briefly explains Scrum and its significance in software development.

Step 4: Write the Main Sections

1. Introduction: Introduce the ASDM and provide background information.

2. Literature Review:

- **Overview**: Describe the selected ASDM.
- **Characteristics and Implementation**: Explain the key features and how it is implemented.
- **System Analysis and Design Approach**: Detail the methodology.
- **Strengths and Weaknesses**: Discuss the pros and cons.

Example: In the introduction, you outline the history of Scrum and its evolution.

Step 5: Discussion and Conclusion

- **Discussion**: Discuss trends and future adaptations of the ASDM. Offer your views on how it can be enhanced.
- **Conclusion**: Summarize your findings, highlighting the main points.

Example: In the discussion, you mention the rise of hybrid models combining Scrum with other methodologies.

Step 6: Reference List

1. References: List all the sources cited in your paper using the Holmes Adapted Harvard referencing style. Ensure each reference includes a hyperlink to the full text.

Example: Your reference list includes ten academic papers, properly cited and formatted.

Step 7: Review and Submit

1. Check Formatting: Ensure your document follows the format instructions (11-pt Calibri font, 2cm margins, section headings, page numbers).

2. Proofread: Check for spelling and grammatical errors.

3. Submission: Submit your assignment via Blackboard by the due date.

Example: You save your document as "HI5030-12345678.docx" and submit it before the deadline.

Example of Individual Research Paper Sections

Note: Below is a hypothetical example to illustrate each step without providing exact answers.

Abstract

"This paper explores the Scrum methodology, its key characteristics, and its application in modern software development. Through a review of current literature, the paper identifies the strengths and weaknesses of Scrum and suggests potential future adaptations."

Introduction

"Scrum is an Agile methodology that focuses on iterative progress through collaboration and flexibility. This introduction provides an overview of Scrum's development and its role in the software industry."

Literature Review

Overview of Scrum: "Scrum is defined by its emphasis on teamwork, accountability, and iterative progress towards a well-defined goal. Originating in the early 1990s, Scrum has become one of the most popular Agile methodologies."

Characteristics and Implementation: "Scrum is characterized by its use of sprints, daily stand-up meetings, and roles such as Scrum Master and Product Owner. Implementation varies across organizations but follows a common framework aimed at delivering incremental value."

System Analysis and Design Approach: "Scrum's approach to system analysis and design involves continuous feedback and adaptation, making it suitable for dynamic and complex projects."

Strengths and Weaknesses: "Strengths of Scrum include increased flexibility, improved team communication, and faster delivery times. However, its weaknesses include challenges in large-scale implementation and dependency on team maturity."

Discussion

"Future trends in Scrum involve its integration with other methodologies such as DevOps to enhance continuous delivery and integration. Additionally, adapting Scrum to fit various industries beyond software development is a growing area of interest."

Conclusion

"Scrum remains a vital methodology in the software development landscape. This paper has highlighted its key features, benefits, and areas for future improvement, demonstrating its continued relevance and adaptability.“

References

1. Smith, J., 2020. *The Impact of Scrum on Project Management*. Journal of Software Engineering, 15(3), pp.327-345. [Link to full text]

2. Doe, A., 2021. *Scrum in Practice: Case Studies and Analysis*. International Journal of Information Systems, 22(4), pp.213-230. [Link to full text]

Following these steps ensures you produce a well-organized and comprehensive individual research paper.