Workgroup C1.067

PREVIOUS KNOWLEDGE ON WIS’ ARCHITECTURE REPORT

GROUP C1.067

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Executive Summary:

This report outlines the collective academic experience and knowledge gained through a series of courses in software engineering and information systems. The courses provided foundational insights into database design, software development, and system testing. In **IISSI 1**, we focused on creating and managing databases using MariaDB, along with mastering SQL for data retrieval. **IISSI 2** built on these skills by introducing the development of mobile applications using Node.js for the backend and React Native for the frontend, alongside the creation of a desktop web version using React. In **Design and Testing I**, we honed our skills in backend development with Spring Boot, frontend design with React, and database management using JPQL with H2 for testing purposes. Finally, in **Requirements Engineering**, we applied our skills to develop a comprehensive Web Information System for a driving school, integrating the knowledge acquired from previous courses. The report highlights the technical competencies developed across these areas, positioning us for future growth in software system development.

Revision Table

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| --- | --- | --- |
| Revision Number | Date | Description |
| 1 | 18/02/2025 | First description of our previous knowledge on the WIS architecture |
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# INTRODUCTION

This report aims to provide an overview of our collective academic knowledge and prior experience regarding the development of Web Information Systems (WISs). As a group, we have gained a solid understanding of the theoretical foundations, key technologies, and development methodologies essential for the creation and implementation of WISs. Throughout our academic studies, we have explored various aspects of these systems, including system architecture, data management, and user interface design. Our shared experience encompasses the study of relevant frameworks, programming languages, and tools commonly used in the development of web-based information systems. This report reflects our group’s collective expertise and identifies areas where further academic exploration and growth are required to enhance our capabilities in the field of Web Information Systems.

# CONTENTS

* **IISSI 1: Introduction to Software Engineering and Information Systems I**

In this course, we covered the foundational concepts necessary for designing and creating databases, using MariaDB as the database management system. We were introduced to essential operations in SQL for creating, retrieving, updating, and deleting data. The course focused on both simple and more complex queries, allowing us to retrieve information efficiently from databases. We learned to design queries to meet specific data retrieval requirements while understanding the underlying principles of database structuring and manipulation. This course provided a solid foundation in database management and optimization, forming a crucial base for further exploration into more advanced topics.

* **IISSI 2: Introduction to Software Engineering and Information Systems II**

Building upon the knowledge from IISSI 1, this course focused on mobile application development, covering both the backend and frontend. For the backend, we used Node.js, a JavaScript runtime that enables the creation of fast and scalable applications. For the frontend, we utilized React Native, a popular framework that allows the development of native mobile applications for both iOS and Android platforms. In addition to the mobile application, we also developed a desktop web version of the application using React, enabling users to interact with the system via a traditional web browser. We continued working with MariaDB as our database system, learning to design and implement database queries to interact with both the mobile and web versions of the application effectively. This course expanded our capabilities in full-stack development, incorporating mobile interface design, desktop web development, and the implementation of robust backend services.

* **DP 1: Design and Testing I**

In this course, we focused on the fundamental principles of system design and software testing practices. For backend development, we used Spring Boot, a Java framework that streamlines the creation of high-performance enterprise applications, offering a comprehensive structure for building web services. On the frontend, we worked with React, a JavaScript library for building dynamic and responsive user interfaces. The database system used was H2, a lightweight, embedded database that facilitated rapid and efficient testing. We also employed JPQL (Java Persistence Query Language), an object-oriented query language that allowed us to interact flexibly and efficiently with the database while maintaining the integrity of object-relational mapping. This course solidified our understanding of the complete software development lifecycle, from design to thorough testing.

* **IR: Requirements Engineering**

In this course, we had the opportunity to develop a complete Web Information System from scratch for a driving school. This project encompassed all stages of the software development lifecycle, from requirements gathering to final implementation. For the backend, we used Spring Boot to build scalable and reliable web services. On the frontend, we applied React to create interactive and dynamic user interfaces for managing various system functionalities. The database was implemented using H2, and queries were executed with JPQL, allowing for efficient management of database relationships. Through this project, we not only enhanced our technical skills but also gained hands-on experience in applying agile methodologies and meeting client requirements, making it a key experience in the development of full-fledged, functional information systems

# CONCLUSIONS

In conclusion, the courses we have undertaken in the field of software engineering and information systems have provided us with a solid foundation in both theoretical knowledge and practical skills. Through **IISSI 1** and **IISSI 2**, we gained proficiency in database management and the development of both mobile and desktop web applications, utilizing technologies such as MariaDB, Node.js, React Native, and React. Our experience in **Design and Testing I** further strengthened our understanding of backend development with Spring Boot, frontend design with React, and database interaction using JPQL and H2. Finally, the **Requirements Engineering** course allowed us to apply our knowledge in a comprehensive project, where we developed a fully functional Web Information System for a driving school, integrating all the learned concepts into a cohesive solution. These courses have significantly enhanced our technical expertise, preparing us for further academic pursuits and professional endeavors in the development of complex software systems.

# BIBLIOGRAPHY

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