

Individual Reflective Evaluation – Berke Sinar

Introduction

For our Systems Development Group Project (UFCF7S-30-2), we have created a Feeding Dashboard particularly for a Critical Care Unit (CCU) of a hospital. The dashboard prioritizes the patients for referral to a dietitian based on physiological information that is assessed using an integrated machine learning (ML) algorithm. My primary roles were designing and developing the database, and reporting, though I worked very closely with Rehan and Adeeb. This reflection looks at what I contributed, how the group worked together, our project management methods, and considers ethical, legal, and sustainability issues. It also focuses on my professional development, using Gibbs' Reflective Cycle (Gibbs, 1988).

Group Work & Project Management

To begin with, our team allocated roles based on individual strengths, clearly assigning responsibilities. My database and report-writing roles matched my technical skills. Regular Agile meetings (weekly stand-ups and sprints) allowed continuous re-assessment, enhancing flexibility (Beck et al., 2001).

We effectively utilised Trello for task management, Microsoft Teams for communication, and GitHub for code integration and versioning. This significantly increased workflow transparency, quickly highlighting and resolving issues, thus boosting productivity. Our regular retrospectives also encouraged open discussion, enabling continuous improvement in our communication strategies and overall group effectiveness.

A key challenge involved coordinating interdependent tasks, notably integrating the database schema, ML algorithm, and front-end visualisations. Reflecting critically, initial coordination between these tasks was insufficient, causing delays. Recognising this, I proactively introduced more frequent cross-team meetings and clearer communication. This adjustment notably improved workflow and highlighted our team's effective problem-solving.

Further reflection indicated that explicitly planning integration strategies earlier could have maximised efficiency. Despite initial challenges, our agile approach and adaptability ensured successful project delivery.

My Individual Contribution

My Main part on the project was where I co-lead database design and development with Rehan, significantly impacting the reliability and functionality of our CCU dashboard. Initially, I translated functional requirements—including patient data, ML-generated referrals, and visualisation needs—into a comprehensive Entity-Relationship (ER) diagram, prioritising data integrity due to the sensitive healthcare context.

I developed and rigorously tested SQL scripts for table creation, data insertion, and integrity checks. Proactively communicating schema updates with ML and front-end colleagues prevented integration bottlenecks, streamlining the linkage between the database, predictive ML model, and dashboard interface. Additionally, I ensured our database could robustly handle future data expansions, enhancing long-term maintainability and sustainability of the dashboard.

I also contributed substantially to the group report, leading sections on Requirements, Database Design, and co-authoring the Literature Review. Also, I synthesised inputs clearly, consistently applied formatting standards, and strictly followed UWE Harvard referencing guidelines. This strengthened my technical writing and documentation skills, applying knowledge gained from modules such as Advanced Software Development and Systems Development.

These contributions significantly boosted my confidence in database design, proactive communication, and professional documentation—essential skills for future software projects.

Risk Management, Ethics & Legal Issues

Risk management was vital due to the sensitive healthcare domain. I actively participated in identifying and mitigating critical risks, including potential data loss, project timeline overruns, and security vulnerabilities.

Ethically and legally, GDPR compliance was paramount (ICO, 2018). I ensured sensitive patient data in the database was encrypted and anonymised, rigorously aligning our schema with best practices for ethical data management. Moreover, Sustainability was explicitly considered through database efficiency, reducing computational overhead and energy consumption (Lago et al., 2015). Accessibility and inclusivity were promoted by advocating for inclusive dashboard features such as high-contrast visualisation and compatibility with assistive technologies.

Addressing these ethical, legal, and sustainability considerations significantly enhanced my professional awareness and responsibility.

Conclusion

This project provided amazing learning opportunities, improving my technical skills in database design, SQL script development, and report generation. I also got the opportunity to acquire valuable soft skills such as effective communication, collaboration, and problem-solving. This experience provided a practical foundation, particularly in ethical decision-making and managing complex interactions across multidisciplinary software development teams.

In retrospect, more advance planning on how to merge various aspects would have been simpler. This experience will teach me better planning and execution of future projects. The project emphasized the need to utilize Agile methods, actively manage risks, and address ethical and sustainability concerns while dealing with complex systems.

In summary, the CCU Feeding Dashboard project allowed me to gain hands-on experience and a profound insight into the practice of applying ethical, sustainable, and cooperative principles to the creation of health care software

References

- Beck, K., et al. (2001). Manifesto for Agile Software Development. Available at: <https://agilemanifesto.org>
- Gibbs, G. (1988). Learning by Doing: A Guide to Teaching and Learning Methods. Oxford: Further Education Unit.
- Information Commissioner’s Office (ICO). (2018). Guide to the General Data Protection Regulation (GDPR). Available at: <https://ico.org.uk>
- Lago, P., et al. (2015). Framing Sustainability as a Property of Software Quality. Communications of the ACM, 58(10), pp. 70–78.

Appendix

CV

Berke Sinar

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Personal Profile

Berke Sinar is a driven and curious computer science student with a strong foundation in software engineering and programming languages like Python, C, and C++. With hands-on experience in data analysis, database management, and systems design, he applies his skills to solve complex problems. Eager to drive business transformation through technology, Berke is ready to deliver innovative solutions in a fast-paced, global environment.

Education

University of the West of England, Bristol, United Kingdom (Sept 2023 – 2027)
Modules included: Principles of Programming (74%); Foundations of Computing (83%); Web Development and Databases (88%); Artificial Intelligence (82%); Computer Systems Architecture (84%)
19 Mayıs TMK High School, Kyrenia, Cyprus (September 2016 - June 2023)
Graduation with 9.26/10 GPA (including A-levels and IGCSEs)

Relevant Employment and Activities

- CompSci PAL Leader, UWE Bristol (September 2024 – Present)**
- Utilising effective communication and teaching techniques to deliver peer-to-peer learning sessions, improving student understanding and engagement including helping overcome challenges in programming and data structures.
 - Under personal imitative, continuously expanding own knowledge in technology and programming to stay updated with the latest developments, ensuring effectively supporting students and addressing their needs.
- Elected Student Representative, UWE Bristol (October 2024 – Present)**
- Actively participating in meetings to discuss student experiences and feedback and applying this to improve academic support, engagement across various modules and enhance curriculums.
 - Collaborating with university stakeholders to enhance the learning environment, such as advocating for additional coding workshops and improving access to online resources for students which helped better experience.
- Data Manager and IT Team, Medicalport Tunççevik Hospital (June 2023)**
- Diagnosed and resolved staff computer issues promptly in a high-pressure hospital environment, ensuring minimal disruption to medical operations.

- Designed and implemented database schemas for storing patient information and medical records, normalised databases to improve data accuracy, and enhanced data accessibility for healthcare professionals.
- Optimised patient appointment scheduling systems by installing and configuring essential software and collaborated with the IT team to implement technological solutions that improved system performance.

Computer Specialist, Boravin Computer Shop (June 2022)

- Assisted in diagnosing and resolving complex hardware and software issues, improving customer satisfaction and reducing repair turnaround times.
- Leveraged advanced knowledge of the latest technologies to provide expert guidance as a sales representative for business software, mobile phones, and laptops which in term met customer needs and drove satisfaction and sales.

Projects

Website Development Project: Developed a hotel booking website as part of a coursework assignment using HTML, CSS, and JavaScript. The site allowed users to search for available rooms, view amenities, and make reservations. This project enhanced skills in web development, user interface design, and creating interactive, user-friendly web experiences.

Arduino Programming Project: Programmed an Arduino for a class project, utilizing sensors and actuators to create a basic automation system. This project showcased skills in electronics, programming logic, and problem-solving.

Artificial Intelligence Module: Explored core AI concepts, including search algorithms (e.g., A*), decision trees, and basic machine learning models. For a coursework project, developed an intelligent agent that navigated a grid-based environment using pathfinding techniques such as A* and breadth-first search (BFS), enhancing problem-solving and algorithm implementation skills.

Other Skills

Technical skills	Programming in C, C++, Python; HTML, CSS, SQL, JavaScript, Arduino
Soft skills	Leadership, Problem-solving, Time Management, Communication
Languages	Turkish (Proficient), English (Proficient), German (Beginner)
Interests	Passionate about playing chess due to strategic thinking and problem-solving. Enthusiastic about the latest advancements in AI , machine learning , and healthcare technology . Enjoy going to the gym and strong advocate for a healthy and active lifestyle.