

Criterion A - Planning

Defining the problem¹

Sanita Šabotić is a recently graduated dentist currently working and living in Podgorica, the capital of Montenegro. Having finished her internship, she decided to open up a dental clinic with two of her colleagues. However, this has created issues within the working schedule, as there are three doctors but only two available dental chairs. The previous method of storage and processing of patient data was done on paper. The issue presented itself once the clinic started to scale, amassing a large number of new patients. Organizational management became difficult since the clinic was still in the development phase and additional workers were not financially viable yet. This arose from the fact that the doctors could not manage the abundance of patient information along with scheduling appointments. The dental appointments have varying time frames and parameters (Doctor, Chair, Time and Date), meaning the lack of a centralized system created appointments with many clashes and unsatisfied customers. The combination of poor patient data management and inefficient scheduling system has affected the business side of the dental clinic.

The client also mentioned the issue of the billing system, as again it was decentralized and done on paper. This created issues with the financial management of the clinic since information was lost frequently.

The presented issues seem to halt back the growth of the clinic. Solving them would greatly improve the productivity of the clinic.

¹ Appendix 1 - Interview transcript

Word count: 231

Rationale for the proposed solution:

The problem given by the client demonstrated egregious issues with the previous system of management. Lack of a reliable centralized system created many deficiencies in the work dynamic of the office. As the user already attempted some free online organizing tools, which were found to be inefficient and of limited use, this system was disregarded. Furthermore, a paper-back management system was also found to be inefficient and unsustainable, and was consequently rejected.

Analyzing all the different aspects of the issue faced, I have decided that a digitized platform would be most appropriate. I have decided to create a platform where the client and her colleagues could create appointments on any chair available within a certain time frame, raising the efficiency of the office by avoiding any possible clashes. Moreover, a database of patients could also be created where patients' portfolios of visits could be stored, aiding the client in patient management. A billing system would also be created where the doctor could create a bill in an automated method. Along with the aforementioned functionalities, the software would also allow for a dynamic appointment scheduling.

A programming language suitable for this project is **Java**, as it has JFrame and Swing libraries, aiding in creating an user-friendly GUI. Moreover, the object-oriented nature of the language would aid in lessening the workload needed in developing the app, as it would help make the designing and coding process efficient.

The database used for client database and individual portfolios would be MySQL as it has many advantages, such as:

- Cross-platform interdependencies (runs in a variety of OS)
- Open-source volatility
- Secure
- Free (paid versions available)
- Scalable (50 million rows of data or more)
- Manages memory well

Word count: 281

Success criteria:

1. A user-friendly and client-catered GUI
2. A secure login page for user authentication and modification of the login credentials
3. Patient management: Insert, Update and Delete of user profiles
4. The user is able to access individual patient profiles along with supporting material
(Dental Scan, upcoming appointments and past invoices)
5. The user is able to print user profiles along with the option of saving as a PDF

6. The user is able to search through the appropriate database using identification numbers.
7. The user is able to create invoices and add any specific cases automatically which are then saved in the database.
8. The user is able to print invoices directly or from within the database.
9. The user is able to schedule appointments with specific parameters (Doctor, Date, Chair, Time Slot)
10. The user is able to schedule non-clashing appointments and cancel them.
11. The user is able to print a date specific table from the appointment table.
12. The user is able to send reminder emails about the scheduled appointments.