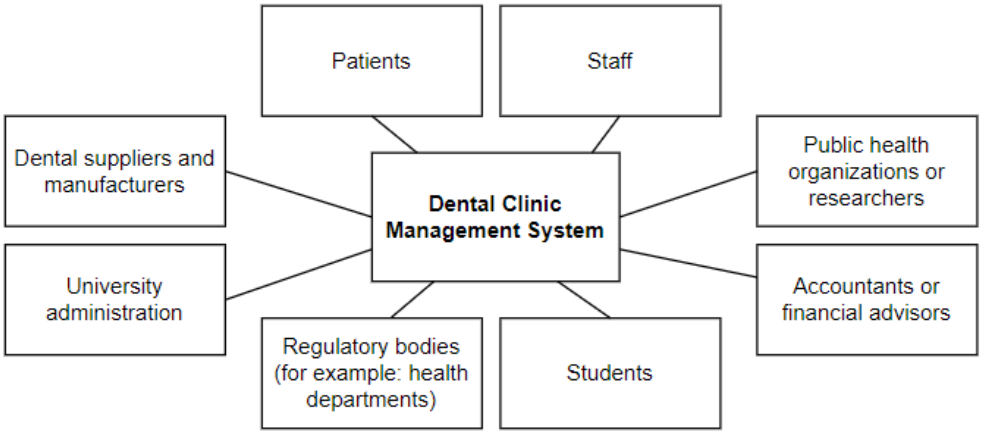
Software Engineering Project – Phase III: Software design and modeling.

The purpose of this document is to present an abstract development of some models of the system, each one representing some different views and perspectives of the system. These system models are used to understand the functionality of the system as well as to communicate with customers. We will be working with models for a new system as there is not an existing one, and these models will be used to help explain the proposed requirements to other system stakeholders.

In this document, some graphical models are displayed with the purpose of facilitating more discussion about a proposed system, documenting some existing ideas about the system and generating a more detailed description that can be used to generate a system implementation.

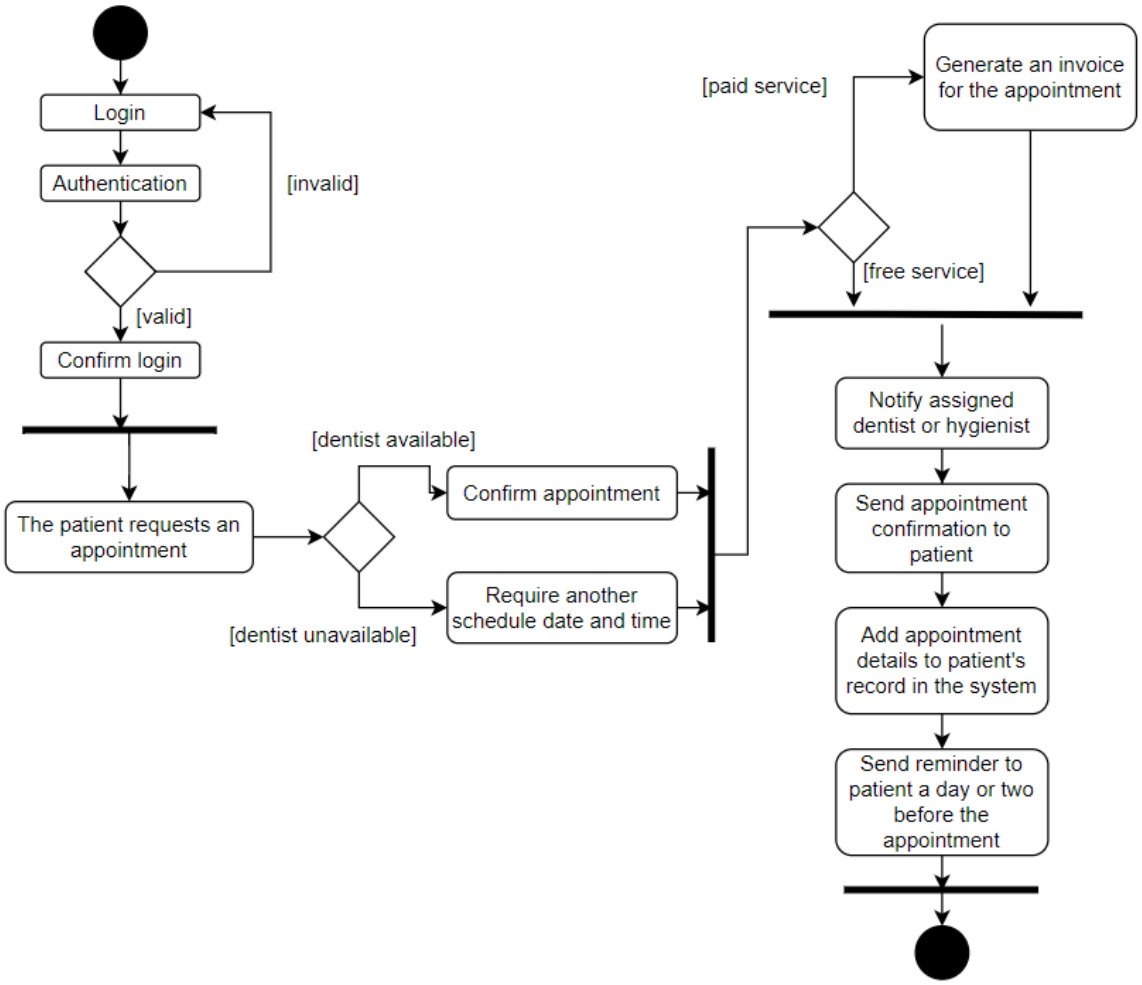
Context Model

A context diagram is a high-level view of a system. It's a basic sketch meant to define an entity based on its scope, boundaries, and relation to external components like stakeholders. As we have also specified in the previous parts of the project, in this system we will not be relying on other systems to process or gather data, therefore outside the system boundaries, we can see the stakeholders.



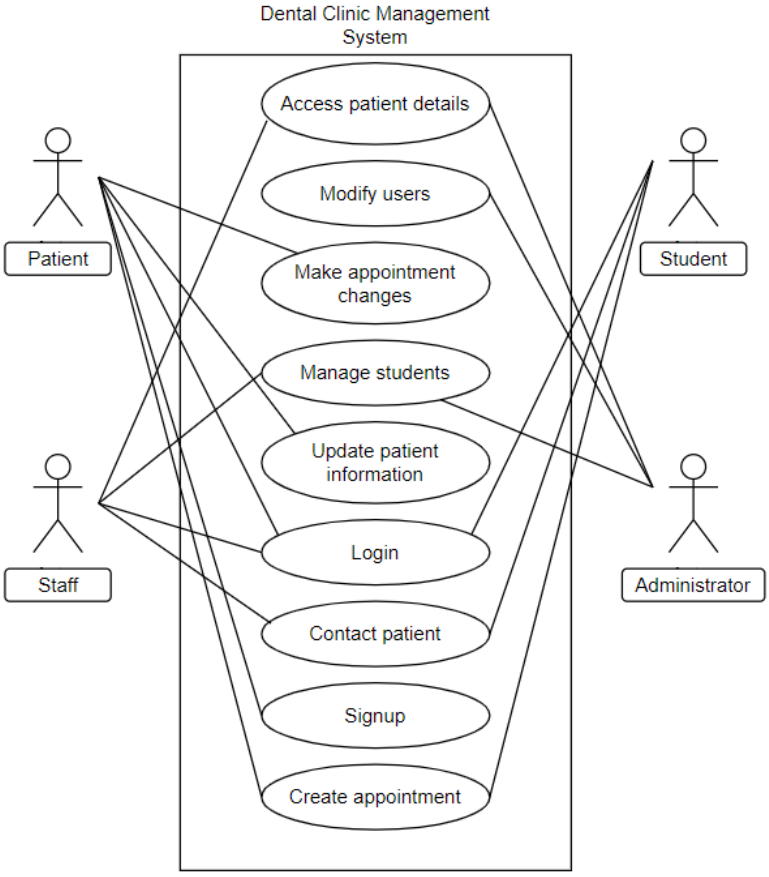
Activity Diagram

The activity diagram depicts the process flow of a patient visiting a dental clinic, from logging in to the system, scheduling an appointment with a dentist, and being notified of upcoming dental treatment. The diagram shows the different activities and decision points involved in the process, such as checking dentist availability, selecting the time dentist, and confirming the appointment. It also illustrates the flow of information between the patient, the clinic, and the dentist, as well as the roles and responsibilities of the different stakeholders in the process. Overall, the activity diagram provides a clear and visual representation of the steps involved in the clinic's appointment scheduling and treatment process.



Use Case Diagram

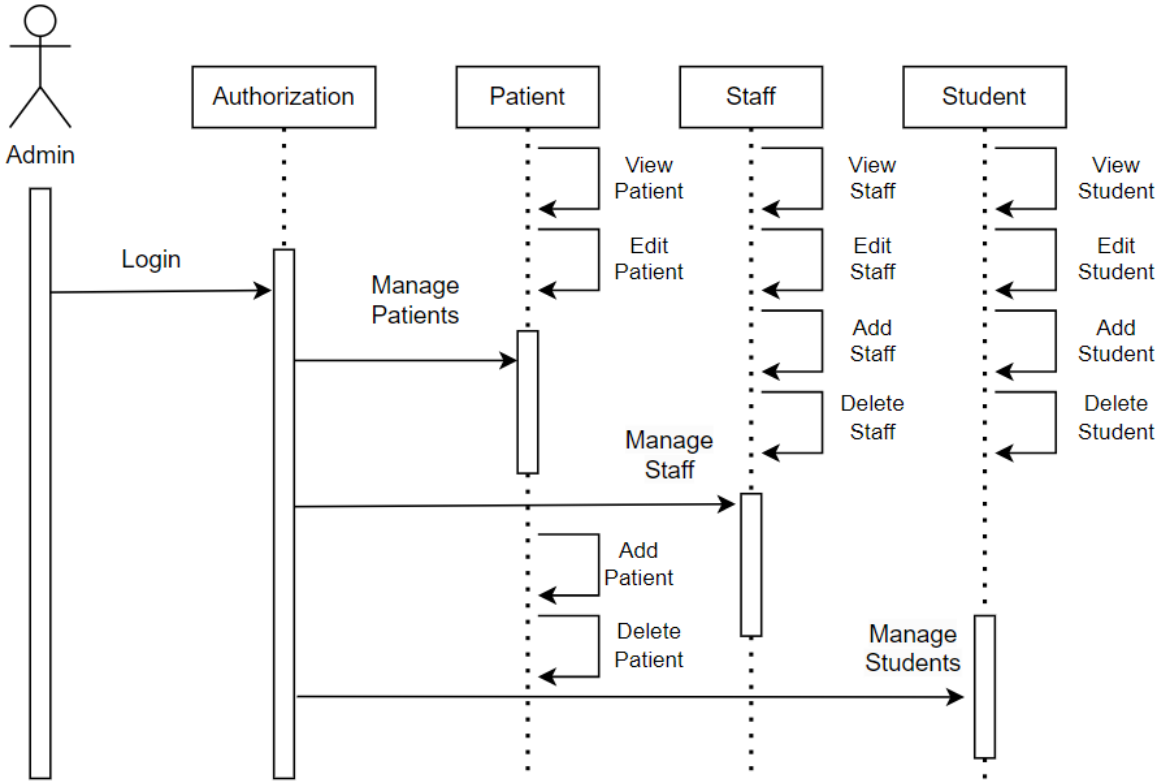
The use case diagram represents the various actions that can be performed by different actors in the dental clinic management system. The actors include the patient, the staff, the student, and the administrator. Each of these use cases has different functionalities and is associated with different actors. The use case diagram provides an overview of the functionalities of the system and the interactions between the actors and the system.



Sequence Diagram

Sequence diagrams are the most commonly used interaction diagrams, which show the interactive behavior of a system. When we use sequence diagrams, we depict the interaction between objects in the order in which these interactions take place, therefore sequentially. We use these diagrams to explain and describe in what order and how the objects in a system function.

These diagrams contain notations such as actors, lifelines, messages and guards. Actors represent types of roles where they interact with the system and the objects of the system, yet these actors are always located outside of the scope of the system being modeled. A lifeline is a named element which depicts an individual participant in a sequence diagram, meaning that each instance in a sequence diagram is represented by a lifeline. Messages are used to depict communication between objects and they appear sequentially along the lifeline.



In this sequence diagram we have one actor which is the admin of the system. As we can also see from the diagram the admin has the right to manage patients, staff and students which are all users of the system. For each of these users the admin can view, edit, add another user or delete an entity.

Class Diagrams

A class diagram in Unified Modeling Language (UML) is a visual representation of the structure and relationships of classes within a system. It provides an overview of the classes, their attributes, methods, and associations. An example of a class can be the patient class, which has the name of the class, attributes and some sample operations or methods.