

University Dental Clinic System

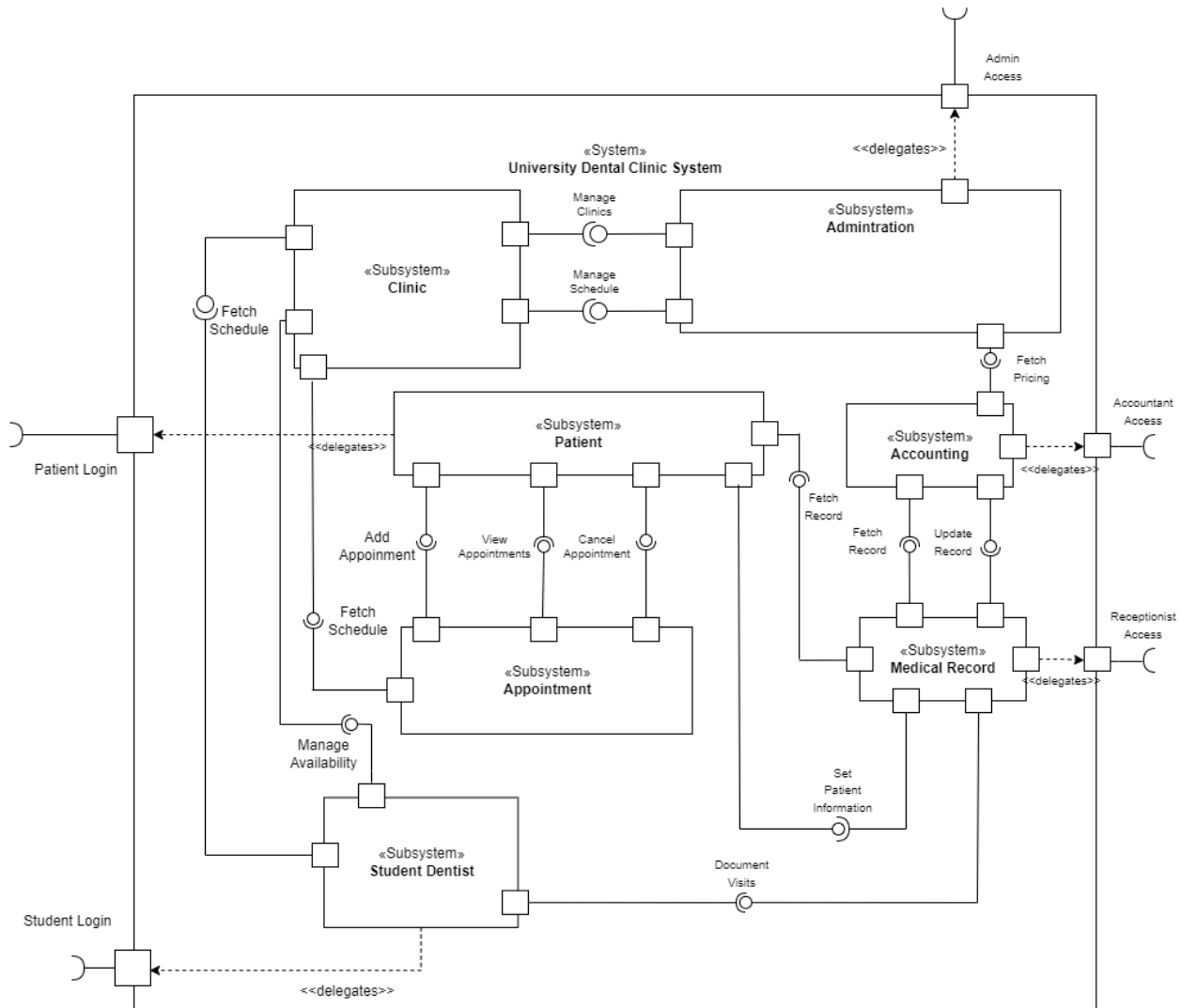
Software Architecture View

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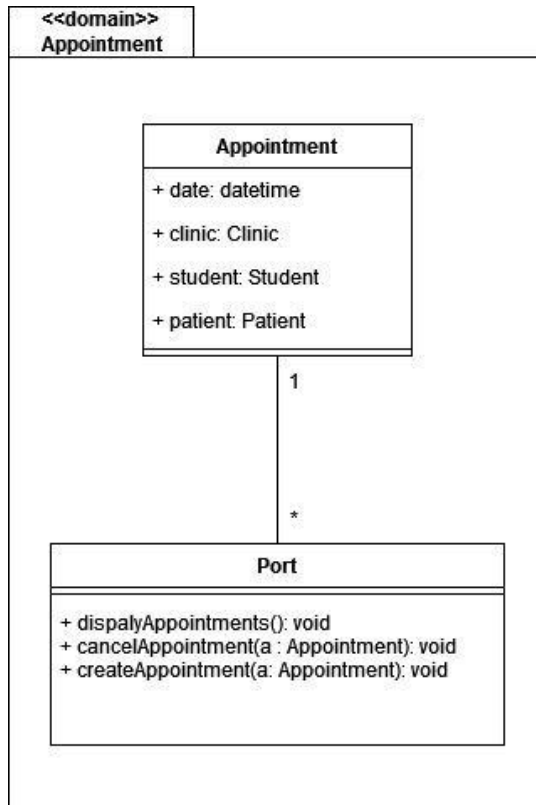
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This subsystem is used for editing, creating, and viewing patient appointments. Therefore, this subsystem must store and manage information about individual appointments and provide interfaces through which patients can manage their own

appointments by viewing, scheduling, or canceling them. In order to schedule appointments, the appointment subsystem will also need to fetch information about student dentists' schedules through an interface provided by the clinic subsystem. When a patient schedules an appointment, that space will be taken up in the dentist's schedule, and no other patient will be able to schedule an appointment for the same time. Similarly, canceling an appointment will allow another patient to schedule an appointment for that same time.



1.2. Admin Subsystem

The admin subsystem allows the clinic administration to specify and change the prices of dental materials and services. The subsystem also contains an interface to manage the expansion of the University's clinic network into other specialties and clinics by adding and managing new clinics.

1.2.1. Add/Manage Clinics

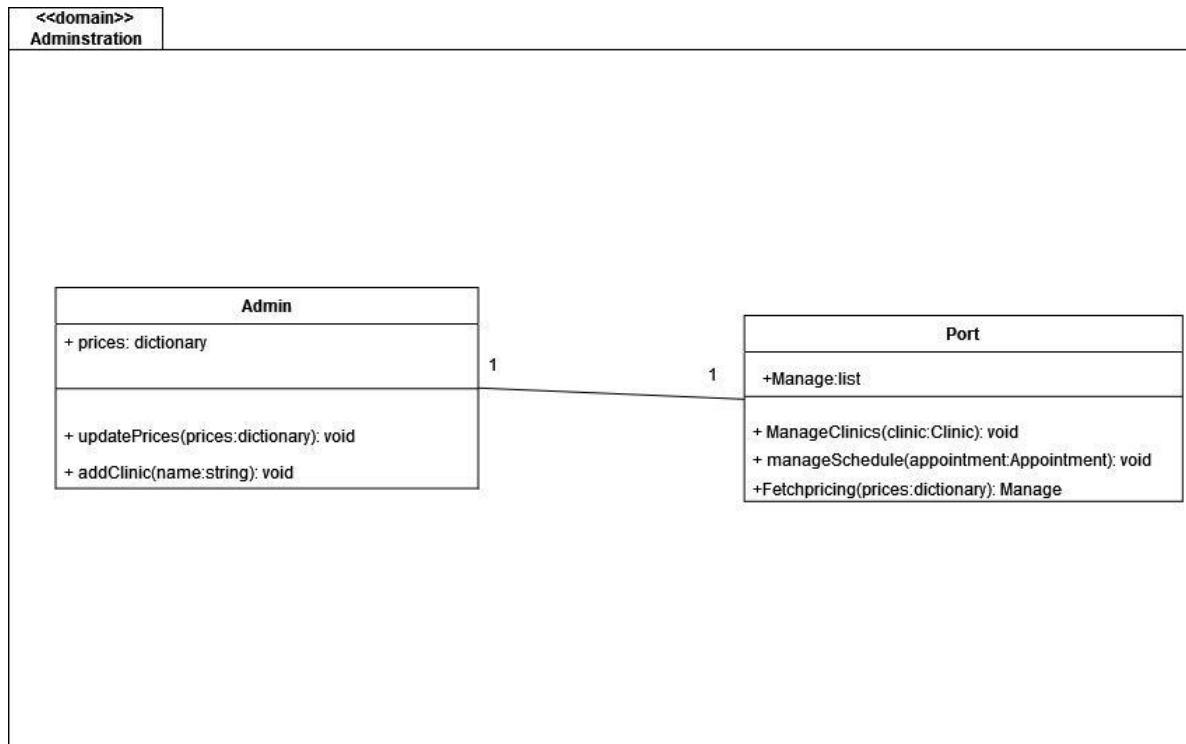
This interface allows the administration to add and manage clinics as the clinic system expands into new locations and specialties. The details of this expansion are not yet known, but a subsystem will be provided in the UDCS in order to help administrators manage the overall structure of the clinic system. New features can be added to this subsystem for the administration in the software maintenance process as the university's needs become more clear and expansion plans are solidified.

1.2.2. Manage Schedule

The admin may control the clinic schedule using this interface. This interface allows the administration to determine when the clinic will operate, and during which times student dentists can indicate their availability. This is an important type of information to capture in order to complete scheduling tasks on the student's end, and this structure will provide an agile and adaptable way to modify the clinic's overall schedule.

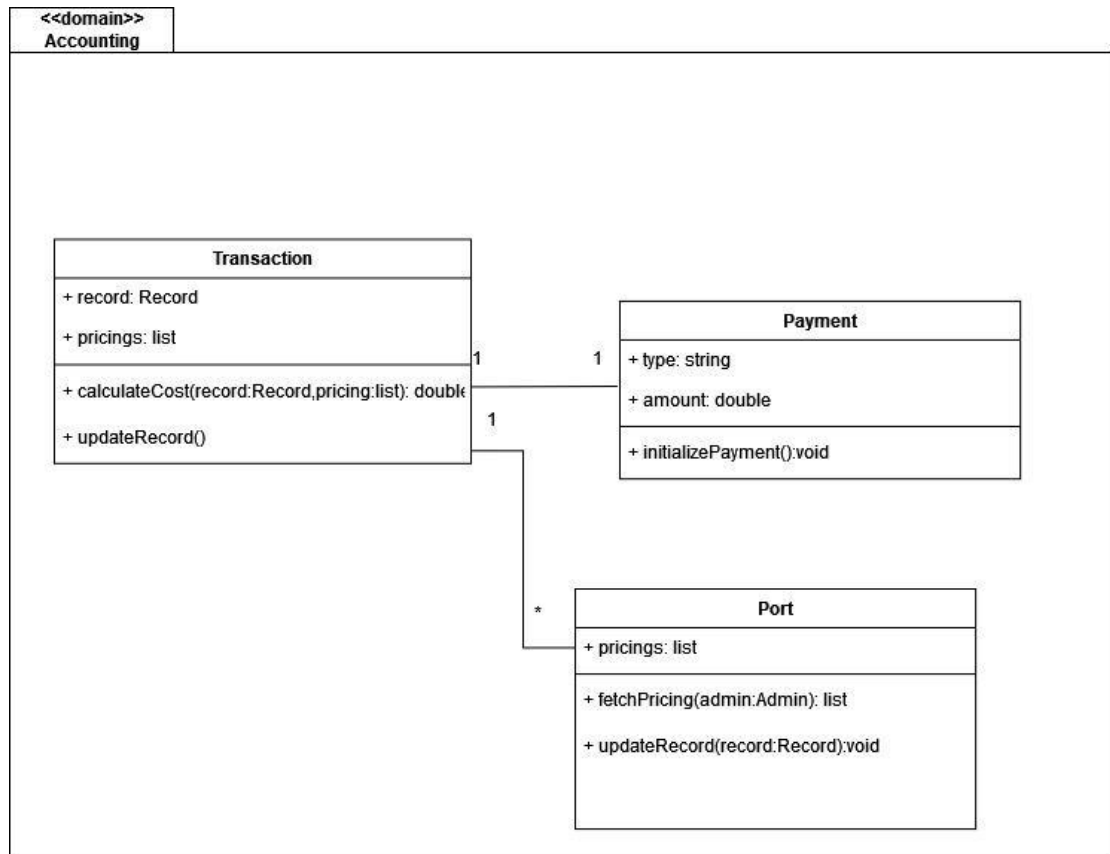
1.2.3. Set Prices

Through the "Fetch Pricing" interface, administrators specify the prices of dental materials and services to the accounting subsystem. This is a critical step when generating the patient's bill in the accounting subsystem. Allowing the administration to access and manage these prices will allow the clinic system to adjust the costs of the services that it provides based on the availability of required resources.



1.3. Accounting Subsystem

The Accounting subsystem helps manage the calculation of the total cost of each visit including the dental materials that were used. The clinic administration will, as described above, specify the price of different materials and procedures offered by the clinic to patients. The student dentist will record the materials and procedures that the patient received during the visit in the patient's medical record. The Medical Record subsystem offers a "Fetch Record" interface that allows the accounting subsystem to retrieve information for the patient's bill. The accounting department will then be able to calculate the patient's bill for the visit and deduct the proper amount covered by insurance through this subsystem.



1.4. Medical Records Subsystem

The Medical Records subsystem is designed for recording the patient's medical details and document visits. This system is highly important because it handles the storage of sensitive patient information, and employees (such as the dentists, receptionists, and accountants) need access to the record or information contained within it in order to perform their duties. This subsystem provides the functionality of being able to manage patients in the appointment subsystem, allowing for 1) the creation of new records for first-time visitors, and 2) editing the details in the medical records.

1.4.1. Document Visits

Every time a patient enters a clinic, this interface keeps track of it. It is a vital interface of the medical records subsystem since the accountant needs a record of any given visit in order to determine the final payment for the visit.

1.4.2. Services Rendered

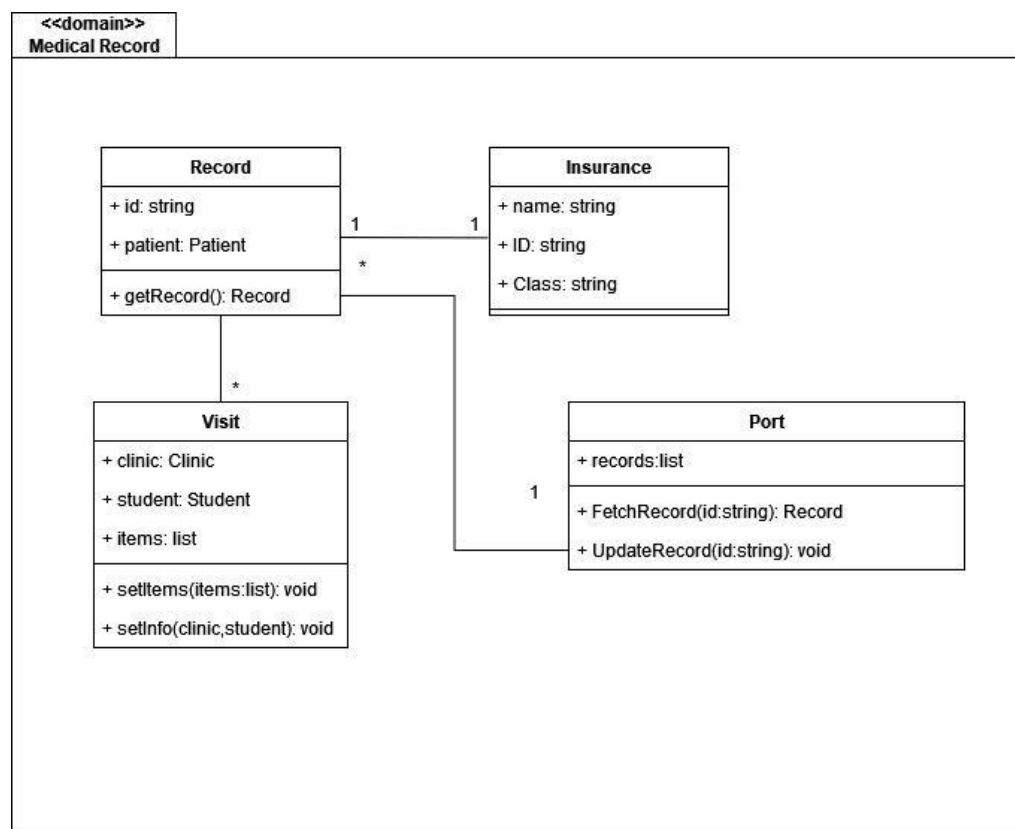
Once the accountant has calculated the total cost of the patient's visit, it is added to the patient's record, which the front desk staff member can view. The patient can then review their final bill and choose to pay at the reception.

1.4.3. Set Patient Information

This interface sends the patient's personal details such as first and last name, birth date, etc. in order to record it in the medical record.

1.4.4. Fetch Record

This interface fetches the patient's personal information. If this is the patient's first time, the receptionist will create a medical record for that patient.



1.5. Student Subsystem

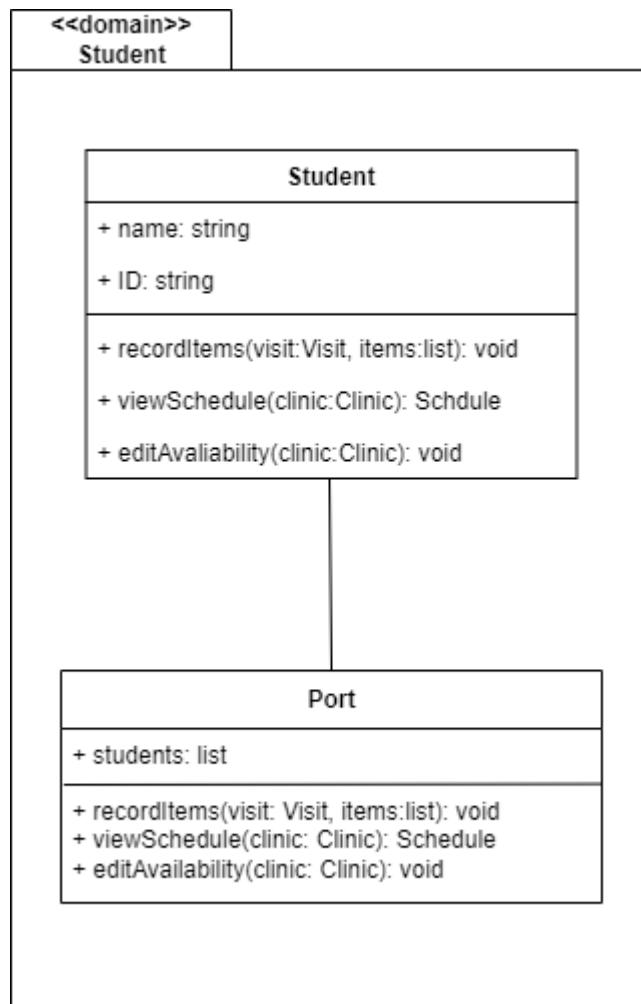
The Student Dentist subsystem allows student dentists to manage their availability and document patient visits. The functionality of this system is important for two main reasons. First, a student dentist's availability for appointments is a critical piece of information to schedule a patient for a visit. Additionally, the patient's medical information must be stored in the patient's medical record. The student dentist will also record the materials and procedures for which the patient owes money in the patient's medical record. This information will be passed to the accounting subsystem through the "Manage Costs" interface. This is important because it is impractical for an actor at the clinic other than the student dentist (who is in the room for the appointment) to keep the record of services rendered to the patient.

1.5.1. Manage availability

This interface allows the student to work on their schedule based on their availability. Since the patient needs to be able to choose the time of their visits, this feature is linked to the appointment subsystem.

1.5.2. Document Visits

The student dentist subsystem must be able to document the patient visits. This is done through a provided interface from the Medical Record subsystem. The information recorded through this interface is important for medical purposes, and also for the accounting subsystem in order to determine how much the patient owes based on services rendered.

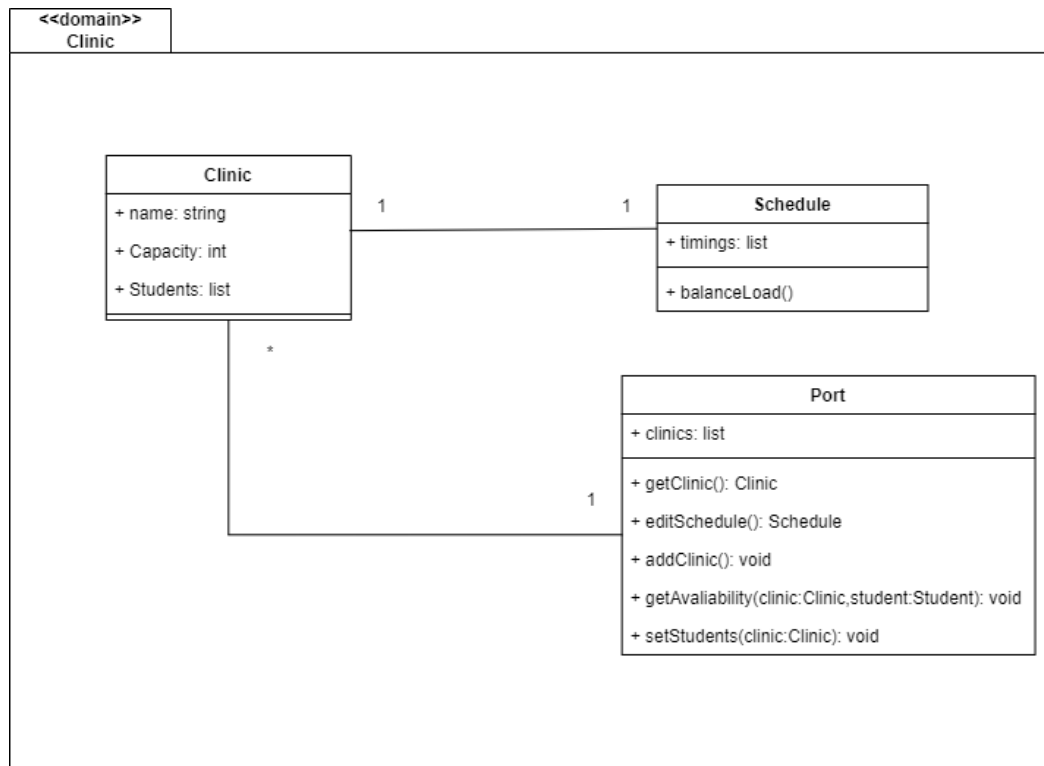


1.6. Clinic Subsystem

The Clinic Subsystem allows for managing the clinics' and dentists' schedules and the subsystem can only be accessed by an admin. The functionality of this subsystem is the main part of the entire system since the other subsystems depend on it. Moreover, the subsystem fetches the student dentist's schedule and records it in the system in order to maintain and organize the students' training in the clinics. This is an important function of the system, because in addition to providing care to patients, one of the clinic's main goals is to facilitate the training of the student dentists.

1.6.1. Fetch Schedule

To manage clinics and appointments, this interface may access the student dentist's schedule. This interface is important because it is necessary for managing the clinics depending on the appointments and student's availability.



1.7. Patient Subsystem

The Patient subsystem is responsible for providing the required features to the patient. This includes being able to add/view/remove appointments through interaction with the appointment subsystem. Additionally, the patient must be able to retrieve their medical records from the Records subsystem.

1.7.1. Add Appointment

The patient has the ability to add a new appointment. This allows the patient to enter the required appointment details, which are then stored in the appointment subsystem.

1.7.2. View Appointment

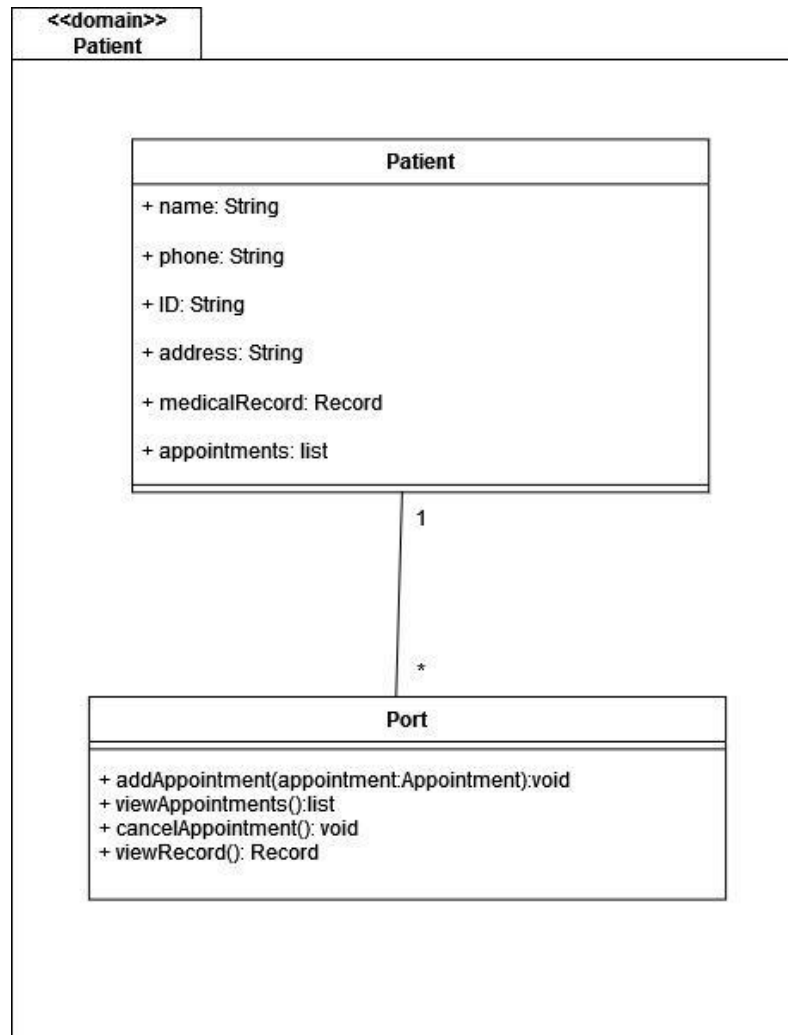
The patient may also view the details of an appointment. Upon selecting the appointment, the major details are displayed.

1.7.3. Cancel Appointment

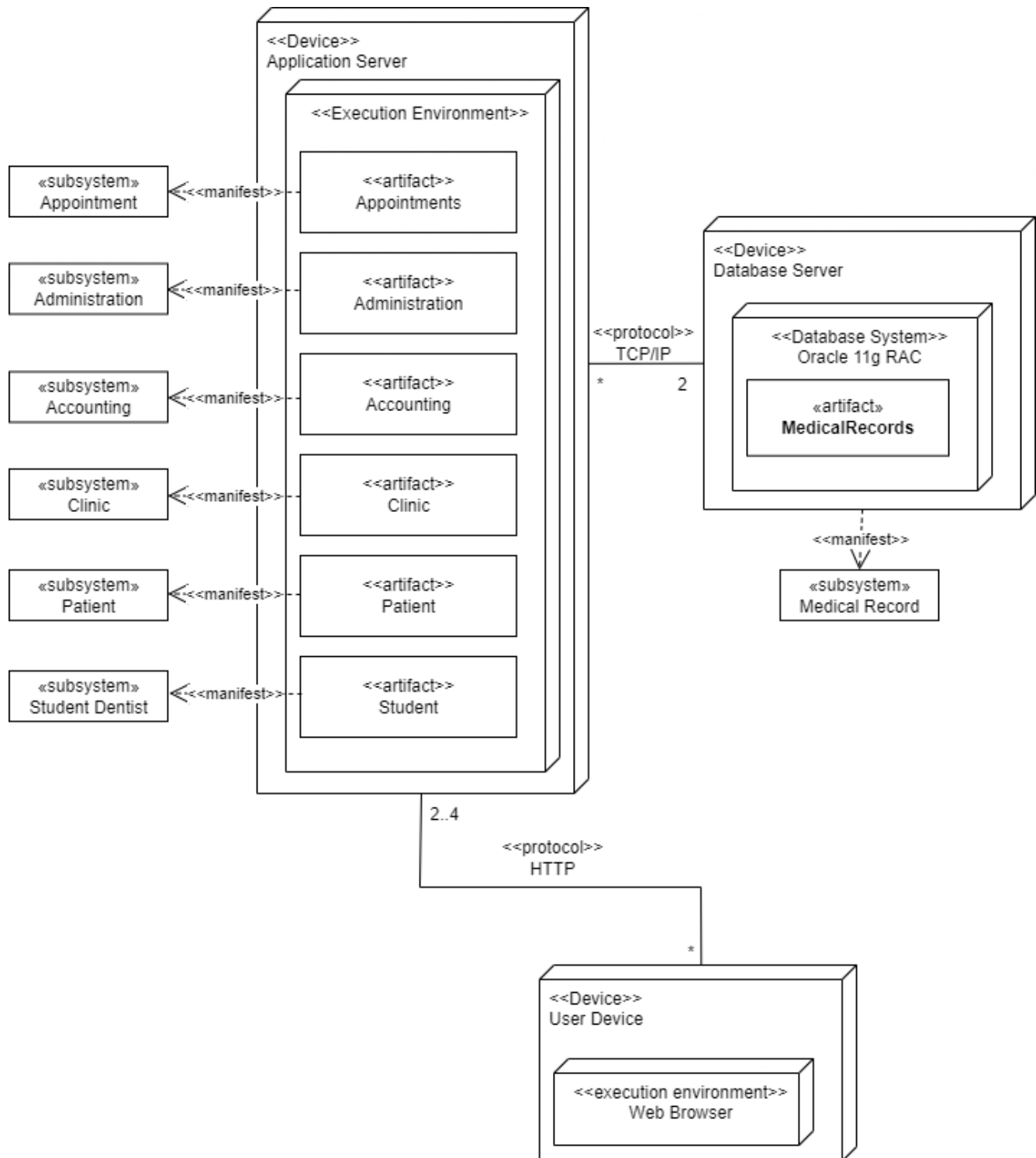
Finally, the patient has the ability to cancel an appointment from the appointment subsystem. The user is prompted with the rudimentary details from the appointment which they are hoping to cancel, and upon confirmation, the appointment is removed from the respective subsystem.

1.7.4. Fetch Record

In order to provide the patient with a detailed view of his or her dental health situation and to allow for a smooth transition in the case of transitions to different dental care providers, the patient subsystem will allow patients viewing access to their own medical records. The Medical Records subsystem will allow the patient subsystem to perform queries to view relevant records through the "Fetch Record" interface.



2. Deployment Diagram



2.1. Application Server

The deployment of this system will include two to four application servers hosting artifacts that manage almost all of the subsystems and components of this system. These subsystems manifested in artifacts on the application server will include the subsystems for Appointments, Administration, Accounting, Clinic, Patient, and Student Dentist.

2.2. Database Server

TCP/IP protocol is used to communicate between the database server and application server. The Oracle 11g RAC database system is also included. There will be two database servers used in this system in order to provide greater fault tolerance. The database system manages all the data of the clinic patients. These are contained within the Medical Records artifact.

2.3. User Device

Users of the system will log in and interact with the system through web browsers on personal machines. The goal of the user interface is to provide easy access to the UDC system, and shift the focus of the users away from managing their information and towards providing high-quality care.