Part 1: Requirements modeling

1. User stories

In order to check the correctness and completeness of the derivation process and the conceptual models, I have included the set of requirements displayed in user story format below. I have not changed the user stories from assignment 1.

Electronic Medical Record Database

As a patient, I want to access my own medical record, so that I can view my medical history

As a UHOPE employee, I want to enter patient information only once in the Electronic Medical Record Database, so that I do not have to enter it multiple times in different databases

As a UHOPE employee, I want to view patient information that I am allowed to access that a UHOPE employee from another department has entered into the Electronic Medical Record Database, so that information does not need to be manually exchanged between different databases

As a receptionist, I want to search for a patient's file in the Electronic Medical Record Database, so I do not have to ask his or her information every time a patient calls for an appointment and enter it manually

As a receptionist, I want to edit information in a patient's file in the Electronic Medical Record Database only once, so that I don't have to edit it multiple times in different databases

As a doctor, I want to enter the appointment information into the system, so that I can check what I did the next time the same patient comes in

As a doctor, I want to only access medical files from my own patients, so that no other doctor can access the medical files of my patients

As a receptionist, I want to view the patient's medical file, so that I can confirm that someone is the right person for the appointment

As a patient, I want to see the results of a test that was performed on me, so that I can look at it whenever I want

As a patient, I want to see what I have been treated for, so that I can get a better understanding of how the doctor helped me

As a doctor, I want to edit a patient's medical file, so that I can make sure they get the right vaccine

As UHOPE, I want to have an Electronic Medical Record Database that has access to the National Database for Medical Records, so that we can gather the medical files of new patients

Self-service Data Analysis Center

As UHOPE, I want to have a self-service center that holds the same data as the Electronic Medical Record Database, so that I can enable my employees to perform data analysis

As a UHOPE employee, I want to see all of the data in the self-service center, so that I can decide on which data to perform data analysis

As a UHOPE employee, I want to search for specific data in the self-service center by keyword, so that I can perform data analysis

As a UHOPE employee, I want to select which variables I want to use in the self-service center, so that I can perform data analysis

Mobile devices

As a nurse, I want to view a patient's medical record on my mobile phone, so that I can check his blood type quicker than using a computer

As a receptionist, I want to view a doctor's schedule on a tablet, so that I can check his availability while walking somewhere

As a nurse, I want to have mobile hospital devices that automatically transfer the information it gathered to the patient's medical file, so that I do not have to insert the information manually

As a nurse, I want to have mobile hospital devices that automatically transfer the data it measured to the patient's medical file, so that I do not have to insert the data manually

Appointment scheduling system

As a receptionist, I want to manually change the start time of an appointment, so that I can provide the system with the correct information in case an appointment starts later than expected

As a receptionist, I want to manually change the end time of an appointment, so that I can provide the system with the correct information in case the appointment takes longer than expected

As a patient, I want to see my doctor's available time slots, so that I can schedule an appointment myself

As UHOPE, I want to have the scheduling system to automatically approve a patient's appointment, so that the receptionist does not need to approve of this manually

As a receptionist, I want to manually disapprove of appointments, so that I can cancel an appointment in case doctor is ill

As a patient, I want to choose the reason for scheduling an appointment, so that I can enable my doctor to prepare for my appointment

As a receptionist, I want to have the scheduling system to automatically send out an email to the patient when I cancel the appointment, so that the patient is notified

As a receptionist, I want to have a scheduling system that shows me the room schedule, so that I can assign appointments to certain rooms

As a receptionist, I want to have a scheduling system that shows me the schedule of all nurses, so that I can assign a nurse to an appointment

As a receptionist, I want to have a scheduling system that shows me the schedule of all doctors, so that I can reschedule appointments if needed

As a receptionist, I want to manually choose a timeslot to schedule an appointment for a patient, so that I can help a patient when he or she calls for an appointment

As a patient, I want to cancel my appointment, so that I can notify the hospital in case I cannot make it

As UHOPE, I want to enable patients to cancel their appointments up until 12 hours before their appointment through the scheduling system, so that the receptionist has enough time to reschedule the doctor

As a doctor, I want to view my schedule, so that I can see who my next patient is and I can prepare for the appointment

As a doctor, I want to see the reason for a patient coming in, so that I can prepare for the appointment

Billing system

As UHOPE, I want to enable the billing system to automatically create a bill based on the start and end time of an appointment, so that a billing department employee does not have to create it manually

As UHOPE, I want to enable the billing system to automatically create a bill based the appointment information, so that a billing department employee does not have to create it manually

As UHOPE, I want to enable the billing system to have a database of prices that are linked to specific treatments, so that the billing system can automatically create bills

As a billing department employee, I want to see the start and end time of an appointment, so that I can check if bill is correct

As a billing department employee, I want to see the date of an appointment, so that I can check if the bill is correct

As UHOPE, I want to send a bill to the patient within 30 days after the appointment, so that the patient can come in for multiple appointments but only has to pay one bill

As UHOPE, I want to bill the patient for the month they come in even though the bill is send out a month later, so that the bill corresponds to when the patient came in

As a billing department employee, I want to view the appointment information that the doctor entered into the system, so that I can check if the bill is correct

General

As UHOPE, I want to have a hospital management system that is compliant with the GDPR regulations, so that we don't get in trouble

As a patient, I want to change my address in my personal account, so that my information matches my real address

As a user, I want to have a unique identification number, so that I can identify myself to the system

As a user, I want to fill in my unique identification number and my password to log in, so that I can access the system

As a UHOPE employee, I want to log in with two-factor authentication using my phone only the first time I want to log into the system each day, so that the time to log in during the day is minimized

As a patient, I want to always log in with two-factor authentication using my phone, so that nobody else than me can access my personal information

As a system administrator, I want to change access rights for users, so that I can control what users can and can't do

As a system administrator, I want to change access rights for user groups, so that I can control what user can and can't do

As UHOPE, I want to have a hospital management system that is online 24 hours per day and 7 days per week, so that UHOPE employees can always do their job

As UHOPE, I want to have data in the Electronic Medical Record Database that is accessible 24 hours per day and 7 days per week, so that UHOPE employees can always do their job

As UHOPE, I want to create access to the Hospital Management System for at least all 7600 employees at the same time, so that every employee can do their job

As UHOPE, I want to have at least one back-up at all times of every piece of information in the entire system, so that the data is always available even if something happens to the system

As a patient, I want to view my underage children's medical files, so that I can check their information

As UHOPE, I want to duplicate the medical file of every patient, so that I can transfer it to the National Database for Medical Records
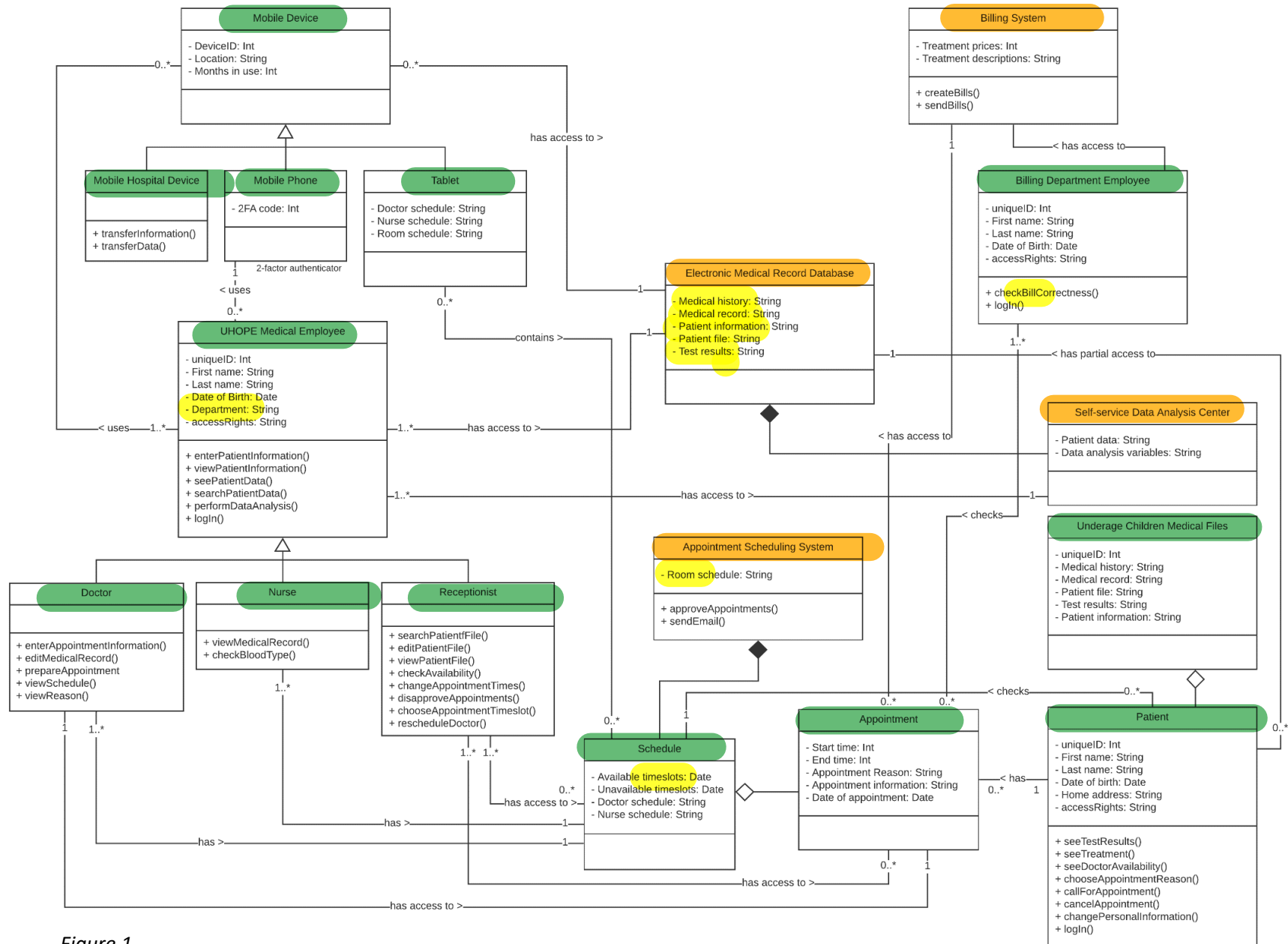
2. UML class diagram

Figure 1