České vysoké učení technické v Praze
FAKULTA INFORMAČNÍCH TECHNOLOGIÍ

"My Doctor" - Information System

Analytical documentation

Ist iteration

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Project specification

Project Specification

The main goal of the project is to create a system (website) for patients to book appointments to the nearest hospital and required doctor, that will make easier to find information about working hours online. In addition, it will help to increase the patients` efficiency.

The web site will keep record of all hospitals and doctors. Information about location of the hospitals will be stored in the web site. Besides, the information about doctors' name, type of specialization, education, available times, qualifications will be included. The web site will also keep data about availability of the doctor.

When patient want to make an appointment, they should go to the homepage and choose the hospital and the type of doctor he would like to see. To select the right doctor for particular needs, the patients have to look through professional statement, education, background. After selection of appropriate doctor the information about doctor availability will be saved in the system. It is also possible to change patients` scheduled appointments, they can cancel or reschedule it. It is necessary to choose the type of payment. The insurance gives an opportunity not to pay for yourself.

To add more, the web site will contain the main information about a client: name, insurance details (if they provide them), date of birth, sex, and chosen appointment time with his doctor.

Business process model

Business Process Model

The business process model describes the most important processes which take place in the doctor web application. The goal of this model is to capture the business processes of the domain and understand them correctly.

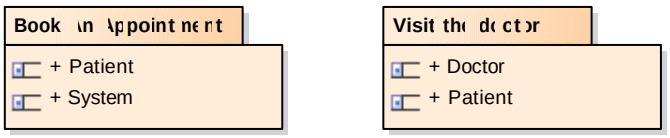

Figure *1* - Business Process Model

Visit the doctor

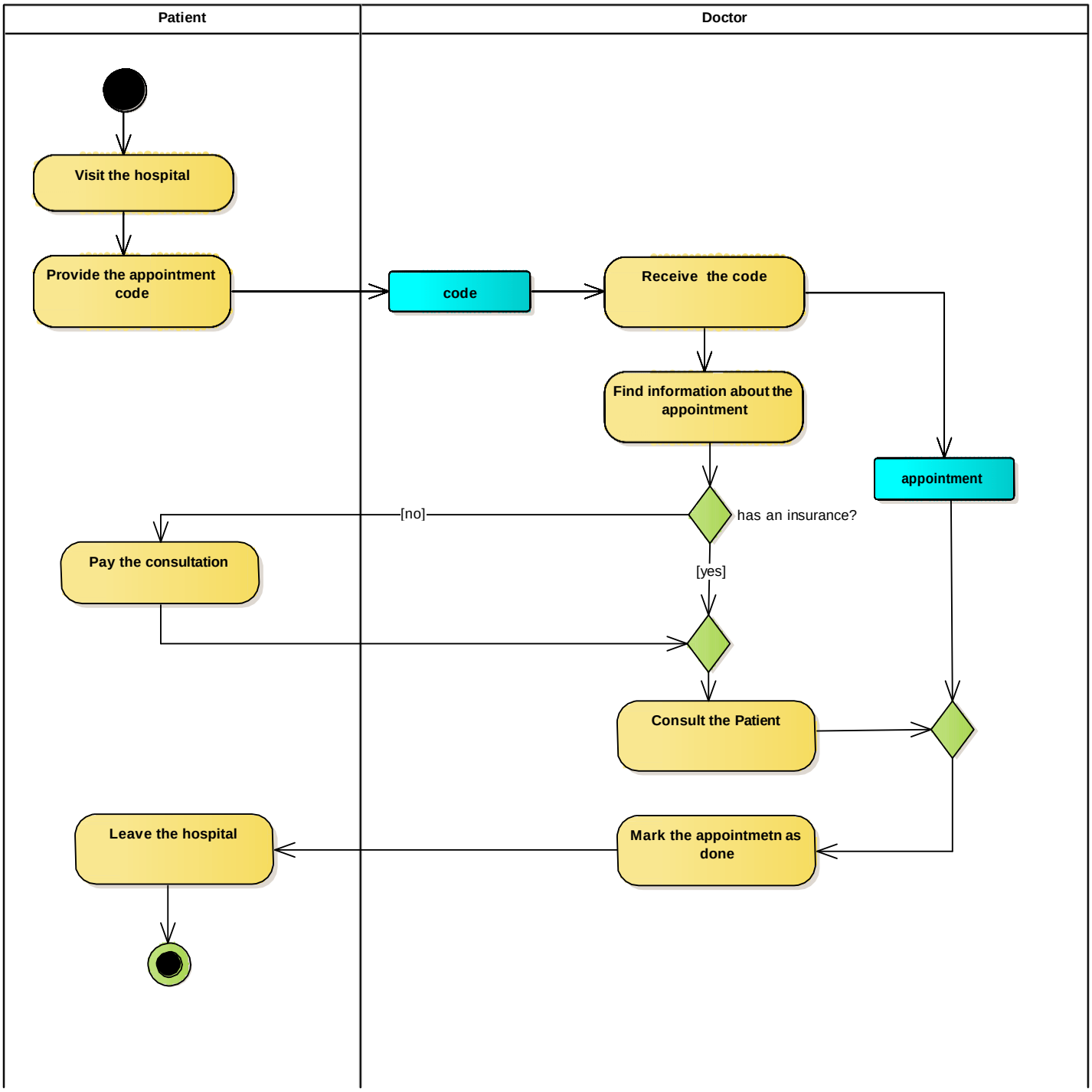

Figure *2* - Visit the doctor

The process starts when the patient comes to the doctor at the date and time specified in his/her appointment.

After that he/she needs to provide the appointment code to the doctor.

The doctor receive the code from the patient and find information about the appointment according to the code.

Then the doctor check if the patient has an insurance or not. If he does not - is needed to pay the consultation.

After consulting the patient the doctor marks the appointment as done.

The processes end when the patient leaves the hospital.

Book An Appointment

This process describes the situation when a patient wants to book a an appointment to the doctor, based on its searching preferences.

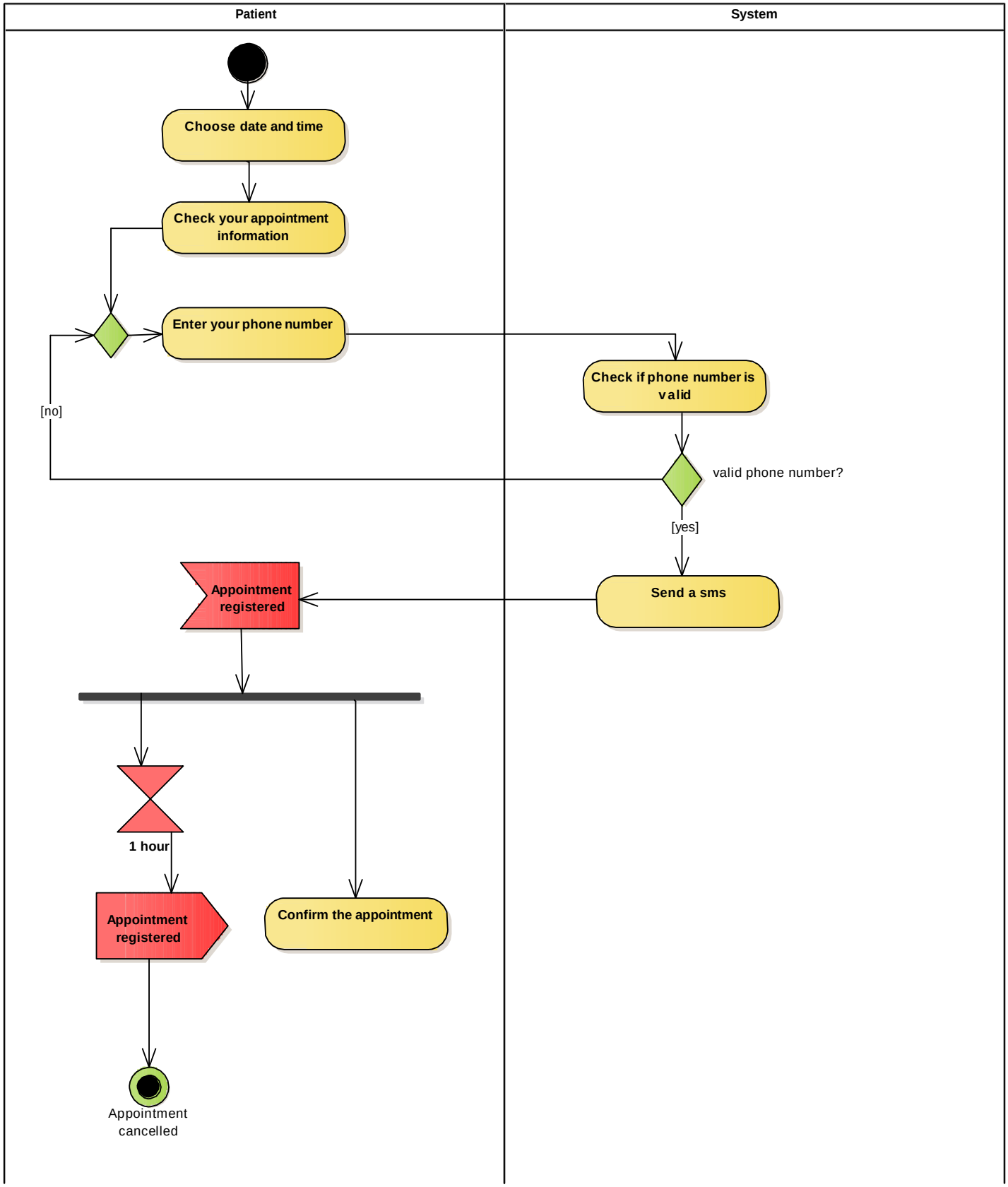

Figure *3* - BookAnAppointment

The process starts when the patient start to book an appointment for a specific doctor from the list.

After that it is needed to choose the specific time of the appointment from the scheduled provided by the administrator. Second step is to check the appointment information. Third step is to enter the phone number to which the notification will be sent. The administrator checks if the entered number is valid.

Then the patient needs to get the notification that a his/her appointment is available. After such notification, he/she may confirm the appointment and go to the doctor.

There is a limit of 1 hour when the notified patient has to confirm the appointment. If he/she does not make the confirmation in time, their reservation
is canceled by the administrator.

Use Case Model

Use Case Model

Use case model describes the functions of the system used by its users. It consists of definition of actors - types of users using the system - and use cases - situations how the users can use the system to achieve a meaningful results.

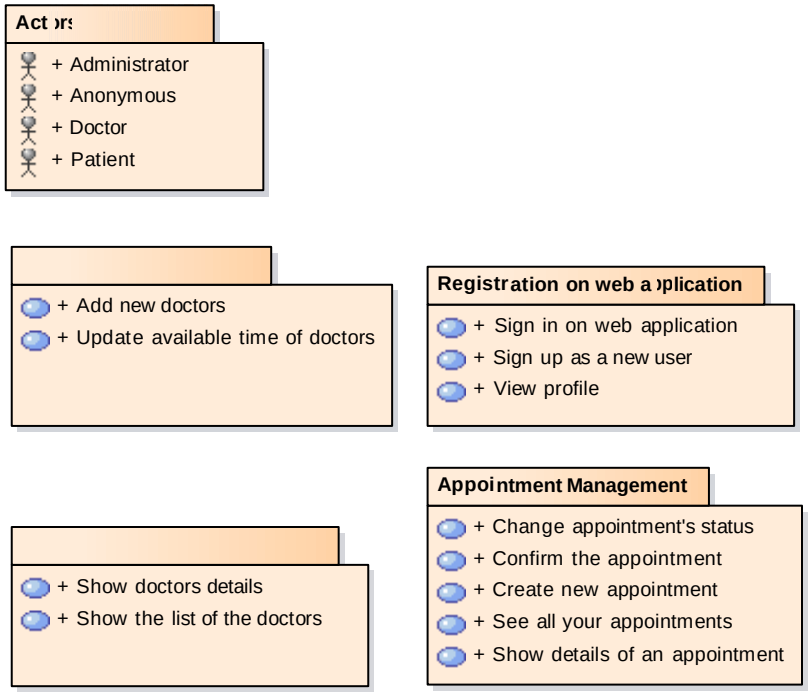

Figure 4 - UseCaseModel

Actors

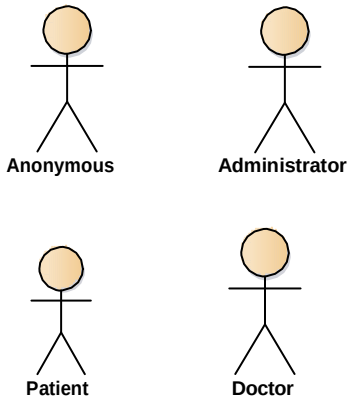

Figure 5 - Actors

Administrator

The person responsible for updating the data base of doctors and available hours of them.

Anonymous

User that is not yet registered or logged in on web application.

Doctor

The Doctor is the registered user who is able to see all the appointments made by Patient to him.

Patient

A person willing to make an appointment at desired doctor and desired time. He can find public information about the doctors using the web platform. The authentication is required.

Appointment Management

This package defines use cases regarding the management of appointments.

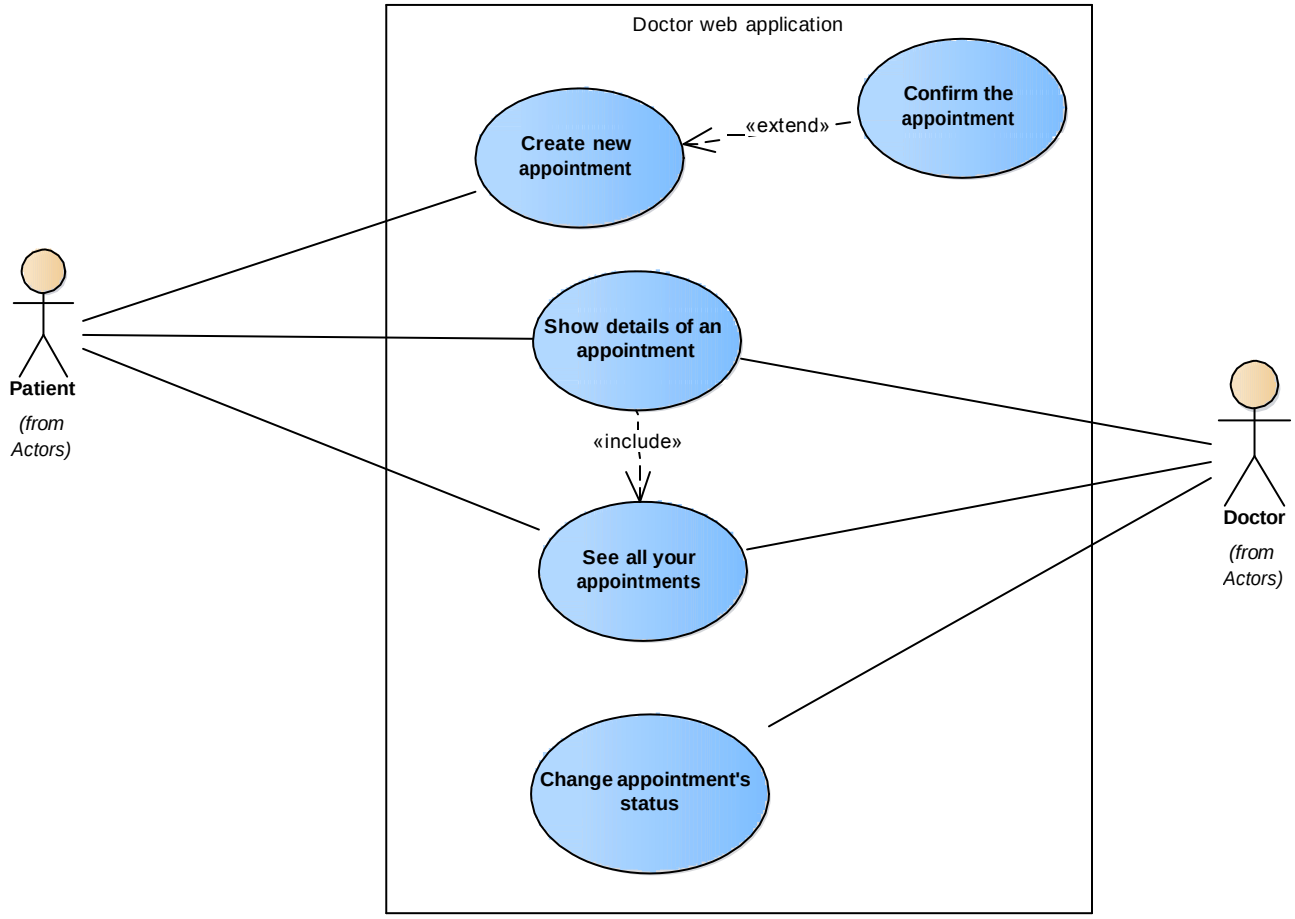

Figure 6 - Appointment Management

Change appointment's status

The doctor mark appointments as done, if the patient came to him and as canceled if not.

Basic Path: mark as done

1. System shows the appointment
2. Doctor check if the code of the patient's appointment coincides with his one
3. Doctor mark the appointment as done
4. System refresh the data

Alternate: mark as canceled

1. System shows the appointment
2. Doctor waits for patient
3. The patient did not come to the doctor
4. Doctor mark the appointment as canceled
5. System refresh the data

Confirm the appointment

The patient has 1 hour to confirm the appointment.

Create new appointment

The user can create a record about a new appointment at the desired doctor.

Basic Path: Basic Path
The scenario starts when the patient wants to create a new appointment to a doctor.

1. System shows a form to fill in for a new appointment
2. Patient chooses date and time of an new appointment
3. System shows the filled form
4. Patient checks his/her appointment information
5. Patient enters his/her phone number
6. System checks if phone number is valid or not, if no, user should reenter his phone number, if it's ok the system sends a sms with basic information regarding the appointment
7. System sends a notification to patient (user) that appointment is registered successfully
8. User confirms the appointment creation
9. System creates the appointment

See all your appointments

The Patient can see all his/her appointments.

Basic Path: Basic Path
Use case starts when the user wants to record all appointments.

1. User selects the option see appointments
2. System shows all appointments

Show details of an appointment

A user can view the details of a specific appointment.

Basic Path: Basic Path
Use case starts when a patient wants to find his current appointment

1. Patient selects a specific appointment
2. System shows details of the selected appointment

Data Base Management

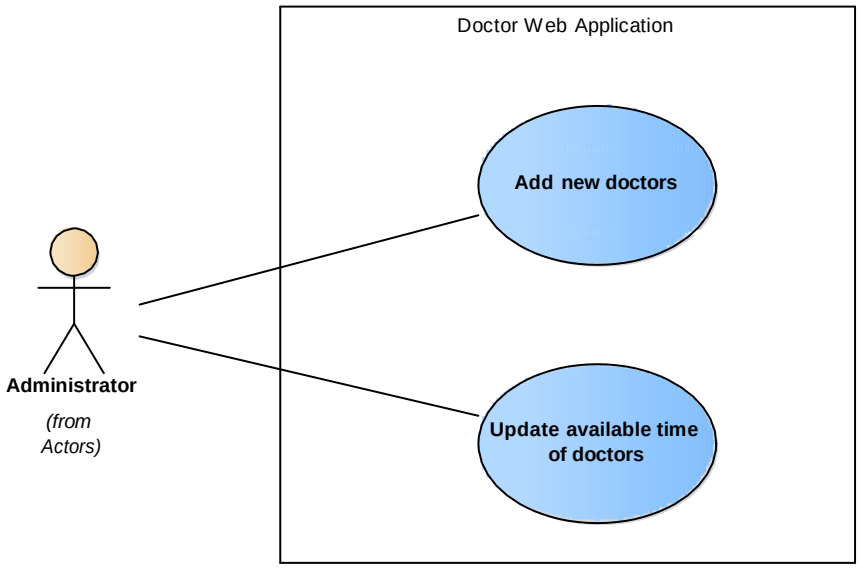

Figure 7 - Data Base Management

Add new doctors

The administrator will add new doctors to the data base.

Basic Path: Basic Path
The administrator adds new doctors in the data base. There is specified the doctor's speciality, the hospital where he/she works, working hours. Also there is a short description about its background.

Update available time of doctors

The Administrator is responsible to update the schedule of the doctors, which hours are already booked and which are still free.

Information about every doctor

This package defines use cases regarding the displaying of registration on the web application.

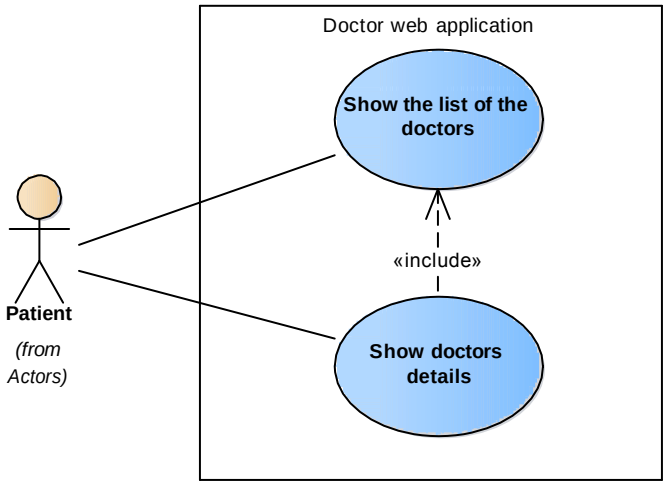

Figure 8 - Information about every doctor

Show doctors details

The system can display the detail of a doctor including information about the type of specialization, education, available times, qualifications, his/her rating and at which hospital he/she can be found.

Show the list of the doctors

The System can display the list of all known doctors. The list of doctors can be filtered using search function. This list contains names and details of all registered doctors in the system.

Basic Path: Show all
The basic path displays the list of all available doctors in the system including a search box with search criteria.

1. The system shows a form to fill in for searching doctors
2. The user inserts the doctor's specialty, the ZIP code and type of insurance
3. The system displays the list of all doctors and their availability.

Alternate: Search
The search filter offers the option to fill in search criteria to restrict the displayed doctors.

1. The patient choose filters (Visit Reason, Day of booking, doctor's gender, booking time, language) and confirms the search.

2. The system searches for the doctors corresponding to the search criteria and displays them in the list.

Registration on web application

This package defines use cases regarding the management of registered users

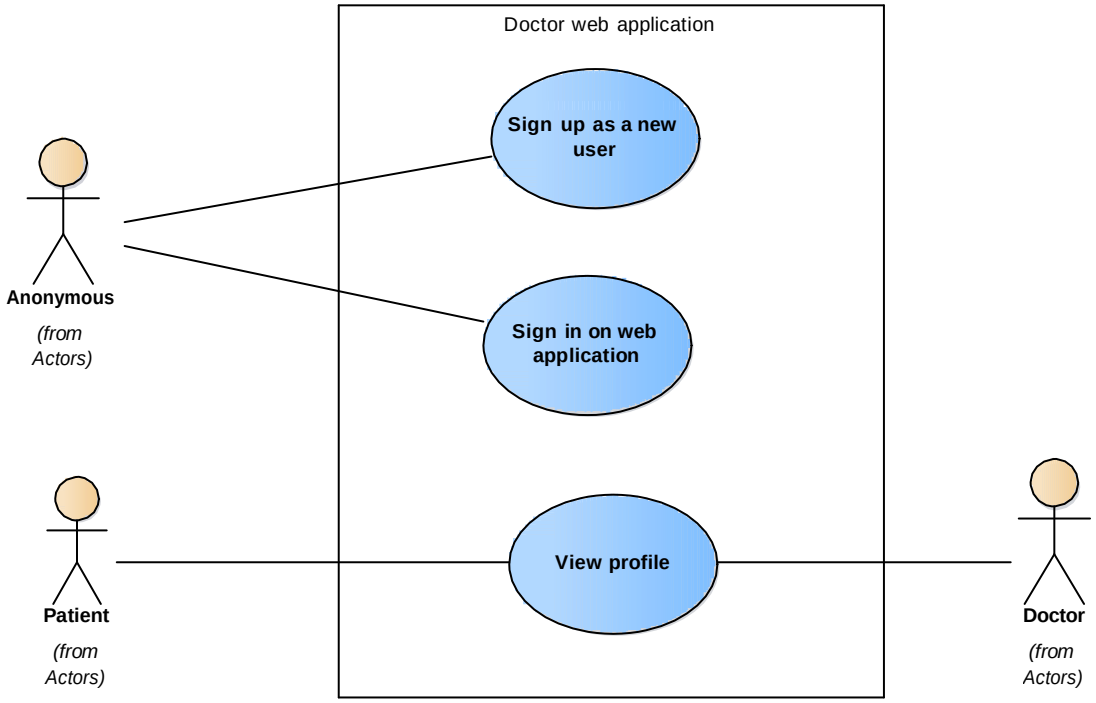

Figure 9 - Registration on web application

Sign in on web application

The user can sign in on a web application filling up all required information.

Basic Path: Basic Path
Use case starts when a user wants to sign in on the web application

1. System shows some fields to populate them
2. User inserts his/her email which he/she used during registration
3. User inserts a valid password which he/she used during registration
4. System checks if all required information is valid, if no then shows an error message and ask the user to fill valid information
5. Systems redirect the user to his profile page

Sign up as a new user

The user can register on a web application filling up all required information.

Basic Path: Basic Path
Use case starts when a user wants to sign up on the web application

1. System shows a form to fill up with all required information about this user
2. User inserts his/her email
3. System checks if the entered email is valid, if no then shows an error message and ask the user to fill valid information
4. User inserts a valid password
5. System checks if the entered password is valid, if no then shows an error message and ask the user to fill valid information
6. User inserts his/her name
7. User inserts his/her date of birth
8. User reads and accepts terms of use
9. System processes all information
10. Systems creates the account and adds it to the data base
11. System shows the user's profile page

View profile

The registered user can see all the information on his profile page and change it if it's needed.

Requirements Model

Requirements

The requirements summarizes the expected functions and limitations for the system in question. The requirements are divided into functional requirements and non-functional requirements.

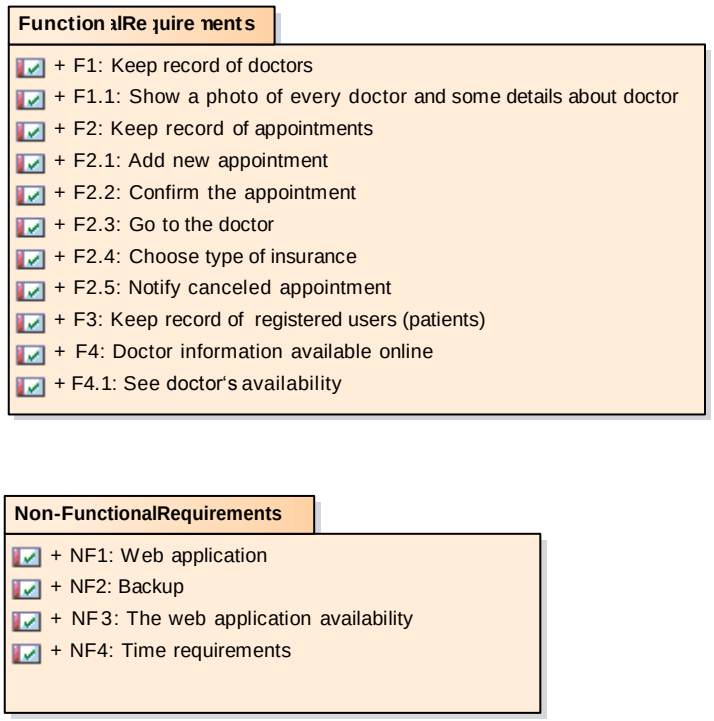

Figure 10 - Requirements

FunctionalRequirements

Functional requirements define the required functions of the system. It includes the data that need to be recorded, the required roles and behavior of the system

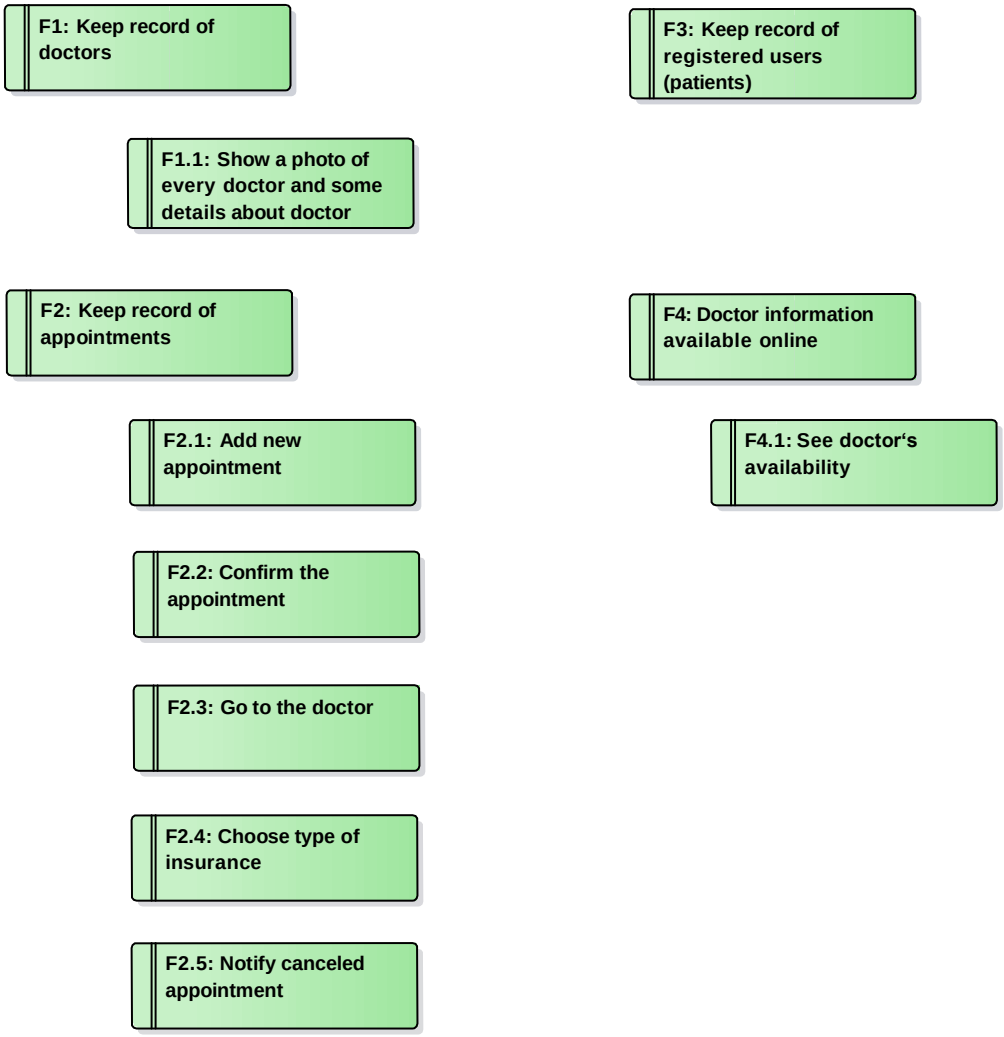

Figure 11 - FunctionalRequirements

F1.1: Show a photo of every doctor and some details about doctor

Administrator can add a photos and some additional information about doctors. Users can see all this information when looking at the details of every doctor.

F1: Keep record of doctors

The system will keep record of doctors.
For each doctor, the following information needs to be stored: name, type of specialization, education, available time, qualifications.
The doctors in the system will be managed by an administrator.

F2.1: Add new appointment

A patient can make an appointment on web application. The administrator will create this appointment and set the patient, the doctor to whom the patient made an appointment, the deadline of confirmation the appointment.

F2.2: Confirm the appointment

The patient can confirm his/her appointment to the doctor by sending required sms to the system. The sms should be send within one hour.

F2.3: Go to the doctor

After confirmation of the arrival to the doctor, patient can go to the doctor.

F2.4: Choose type of insurance

The patient can choose the type of insurance, it can be: "pay by yourself" or "Insurance".

F2.5: Notify canceled appointment

The patient can send a notification to administrator in order to cancel the appointment. The patient will administrator profile for sending notifications.

F2: Keep record of appointments

The system will keep record of appointments to a doctors. Important information: patient, form for appointment, date and time of appointment, confirmation of appointment.

F3: Keep record of registered users (patients)

The system keeps record of registered users (patients). Each reader has first name and surname and email address. The administrator and the patient can manage information about patient. The patient has his own profile page.

F4.1: See doctor‘s availability

The information about availability of the doctor. Users can see the available hours of the doctor and at which hours the doctor is busy.

F4: Doctor information available online

The information about doctors is available online.
Users can find information about doctors. Users can see the list of doctors, where they can search by the name.
Users can also see details of each doctor showing all available information about the doctor including the available time, rating, etc.

Non-FunctionalRequirements

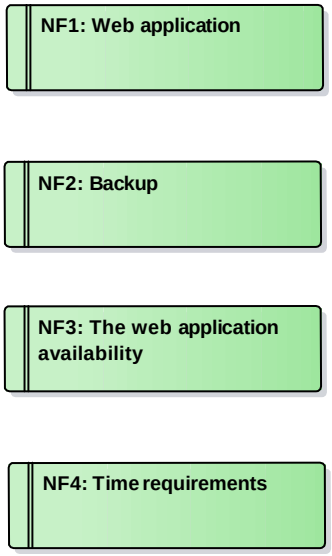

Figure 12 - Non-FunctionalRequirements

NF1: Web application

The public information about doctors and their availability should be available online.
The application must be running in IE 6+, FF 12+ and Chrome.

NF2: Backup

The data about patients, appointment and doctors must be backed up every day in a separate database.

NF3: The web application availability

The web application for doctor information must be available at least 90% of the time.

NF4: Time requirements

Every request shouldn’t take more that 5 seconds.

Domain Model

DomainModel

Domain model describes the objects of the domain that the application needs to use. It defines the classes of the objects, their attributes, relations and states.

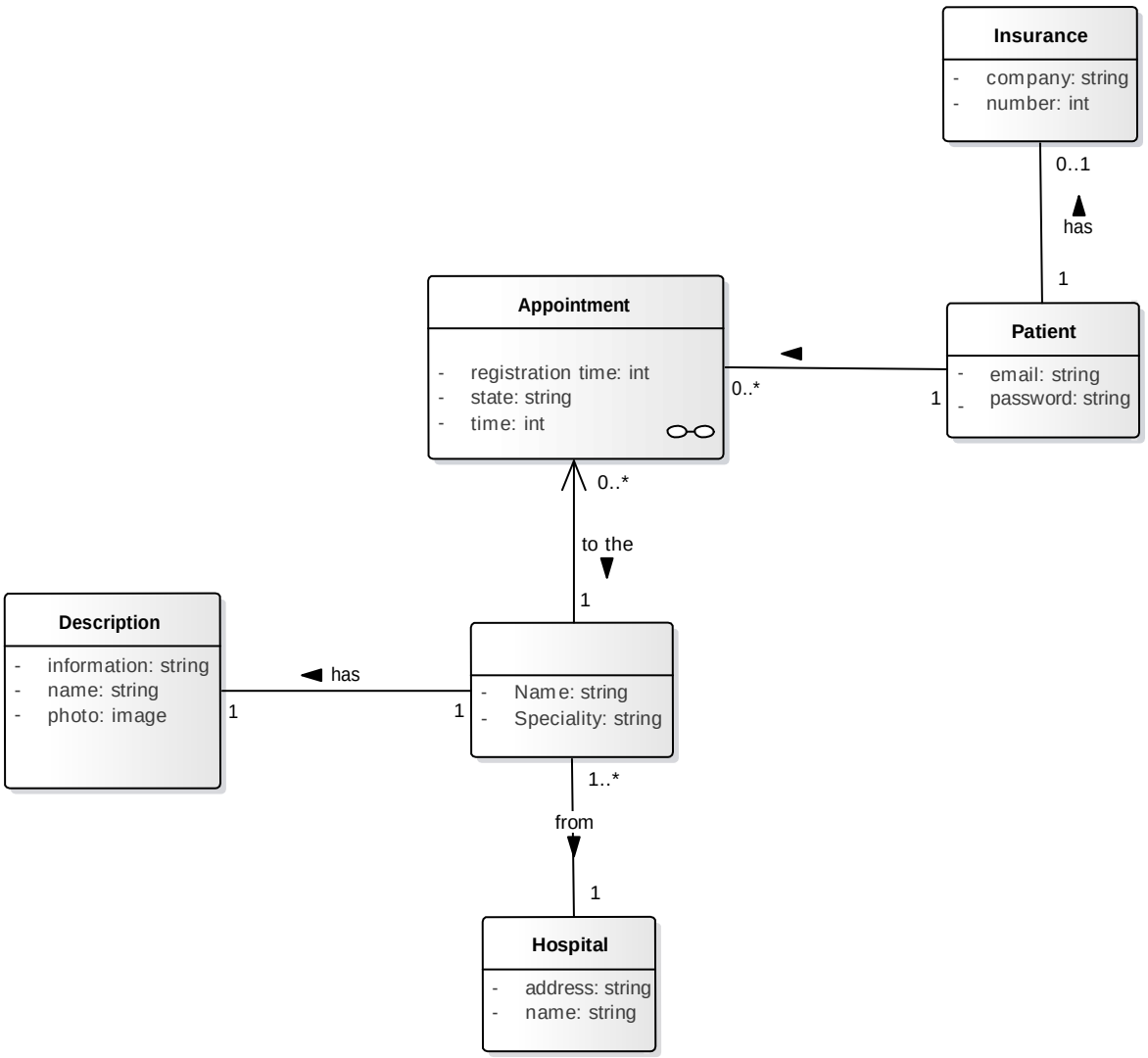

Figure 13 DomainModel-

Administrator

The person who add doctors to the data base

Appointment

Appointments represents an arrangement to meet a doctor at a certain time and hospital.

The appointment is booked by the patient and needs to be approved by the administrator.

Atributy

Attribute	Notes
date	the date when the patient should come to the doctor
registration time	registration time + 1 hour = the deadline for confirming the appointment by patient
state	the state of the appointment (approved, canceled, done)
time	the time at which the patient should come to the doctor

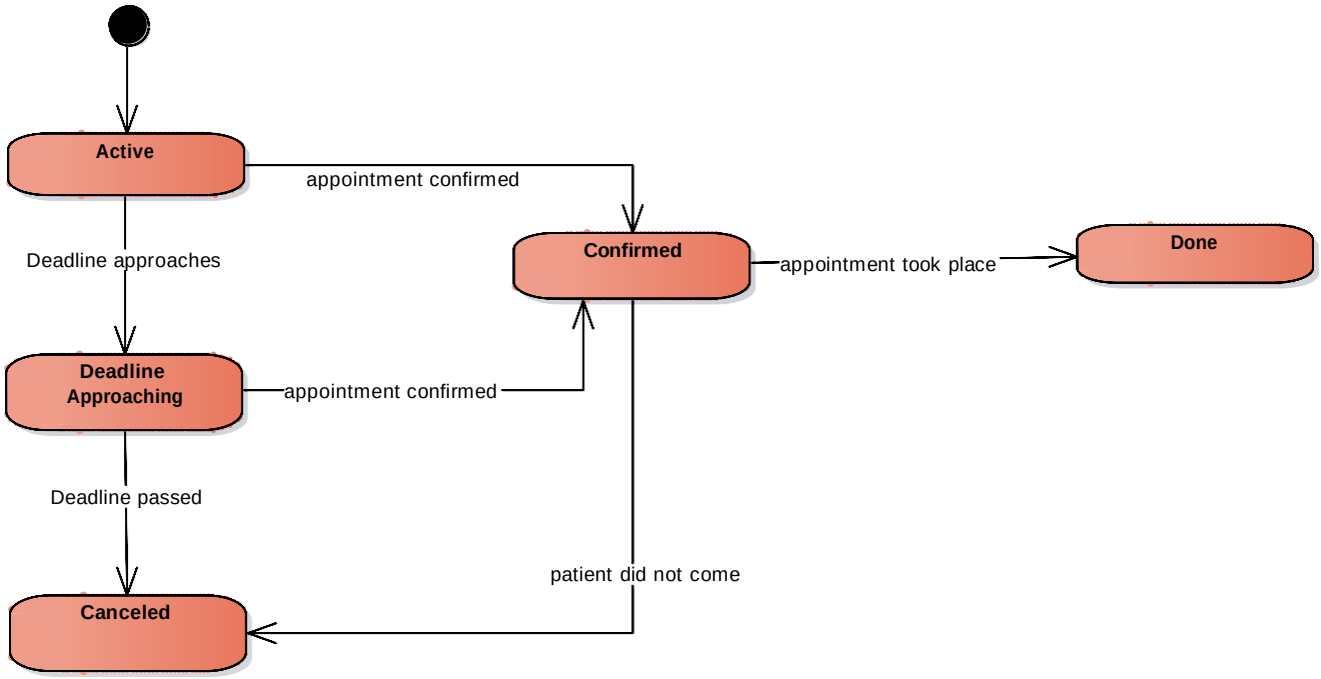

Figure 14 - Appointment State Model

Active

The appointment is active, the system sends already the sms with information about the booked appointment and waits for patient confirmation.

Canceled

The appointment is canceled by administrator due to time being over.

Confirmed

The patient confirmed the appointment.

Deadline Approaching

The time to confirm the appointment by patient is close to running out.

Deadline passed

The time (1 hour) of confirming the booked appointment by patient is over.

Done

The Patient came to the Doctor at the booked date and time.

Description

Description of the doctor which contains more detailed information about the doctor. His/Her photo, full name, reviews from other patients. Also it contains the rating based on other patients marks (from 1 to 5 stars).

Atributy

Attribute	Notes
information	information about the background of the doctor
name	teh name of the doctor
photo	the photo of the doctor

Hospital

The hospital in which a specific doctor works, based on ZIP code entered by patients.

Atributy

Attribute	Notes
address	the address of the hospital (including the ZIP code)
name	name of the hospital

Insurance

The medical insurance which covers all the fees. It contains identification number and company name. A patient can pay by itself, if he/she dose not have insurance.

Atributy

Attribute	Notes
company	company which provides the insurance
number	unique number of the insurance

Patient

Patient is a person that can book an appointment to the doctor, confirm it or cancel.
A single patient can book multiple appointments or no one.
A single patient can have 1 insurance or no one (in this case he/she pays by him/herself.

Atributy

Attribute	Notes
email	email used by patient to log in on the web application
password	the password used by patient to sign in on the web application