Hospital Information System Project

The subject of the project :

Development of the hospital information system

The purpose of the project:

The patients can make an appointment for a specific doctor from a specific polyclinic. The doctors can see every appointment for a medical examination. The doctors can save the information to the system about their patient like their disease or their symptoms and necessary medicine. The doctors can analyse the results coming from the lab.

Q&A

+What information is requested from the patient to make an appointment?
- The identity number, the name of the polyclinic, the name of the doctor.

+ When the prescription is given to the patient?
- After the results came from the lab.

+How can the doctor write out a prescription to the patient?
- According to the results that they want from the lab .

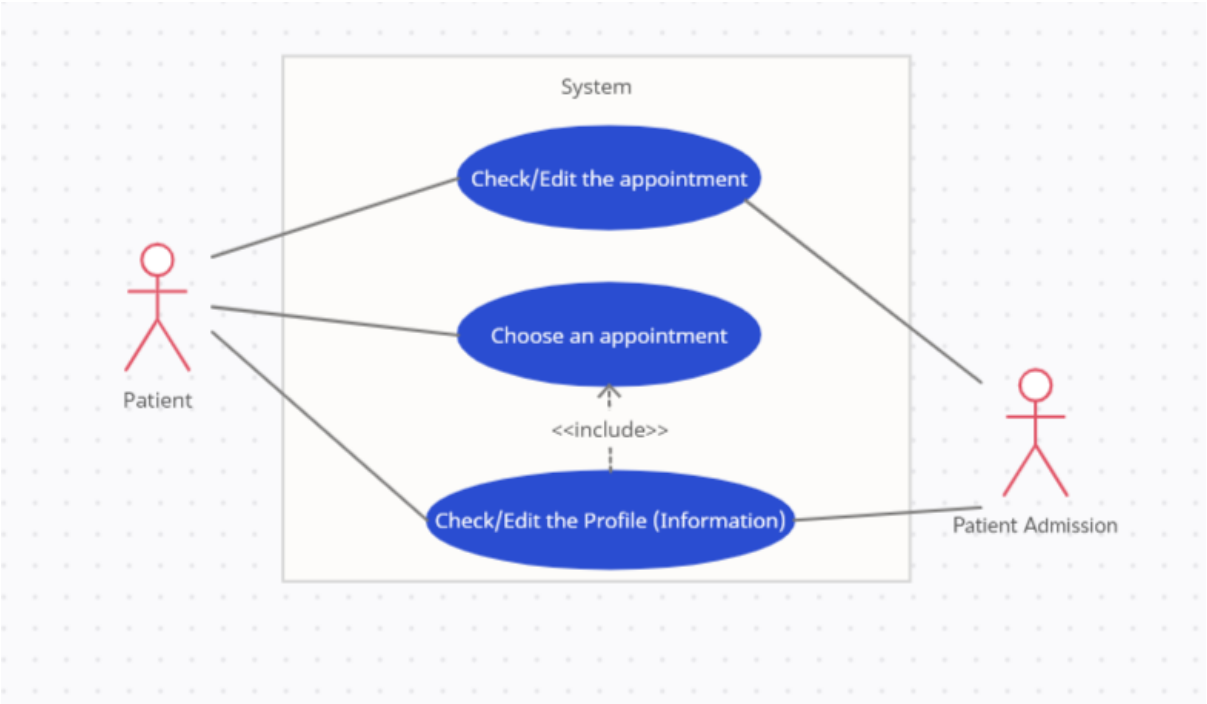
+What is the job of the laboratory?
-To analyse the data of the patient and send the results to the doctor.

+What is the job of the patient admission?
-To make an available appointment using ‘the identity number, the name of the polyclinic, the name of the doctor’ given by the patient and hand in the prescription to the patient.

Glossary

Patient Admission: The processing unit ruling the services of the patient registration
Laboratory: The unit reporting the feedback about the analysis and to analyse the sample of the patient
Doctor: Someone who wants a test about the patient and can diagnose the patient.
Sample: The data that sending to analyse to the lab
Prescription: The report that writing on the medicine and how to use them it
Patient: Someone who register to the unit of the hospital to be treated

Use Case Diagrams

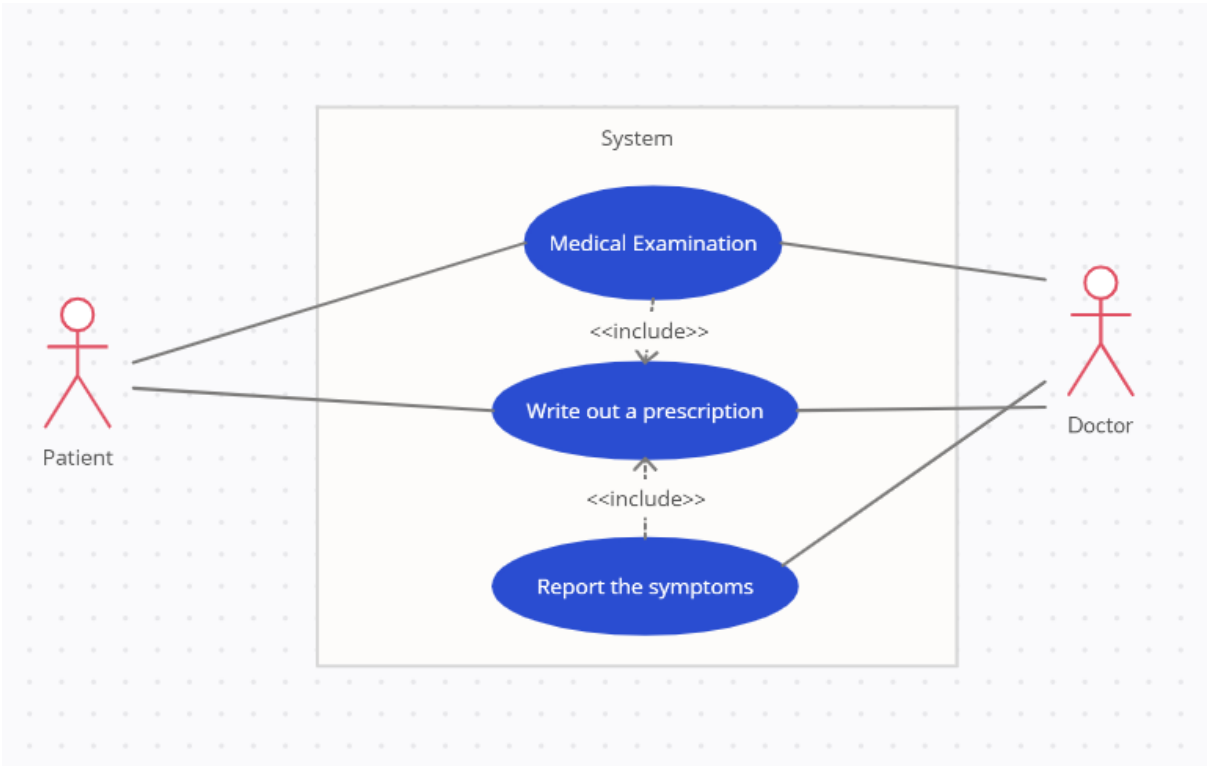


Brief Description

Check/Edit the Profile needs for the data from the patient. According to this data, the system defines the patient. The patient chooses a polyclinic and a doctor through the system, so the appointment is defined like that, the system can check if this appointment is available.

Step-by-step Description

1. The patient gives their information to the system.
2. The system checks if the information is appropriate.
3. After that, the patient creates an appointment according to their needs.
4. The system checks if the appointment is available.
5. The patient can see and edit all their data
6. The patient admission can see and edit all the stuff.

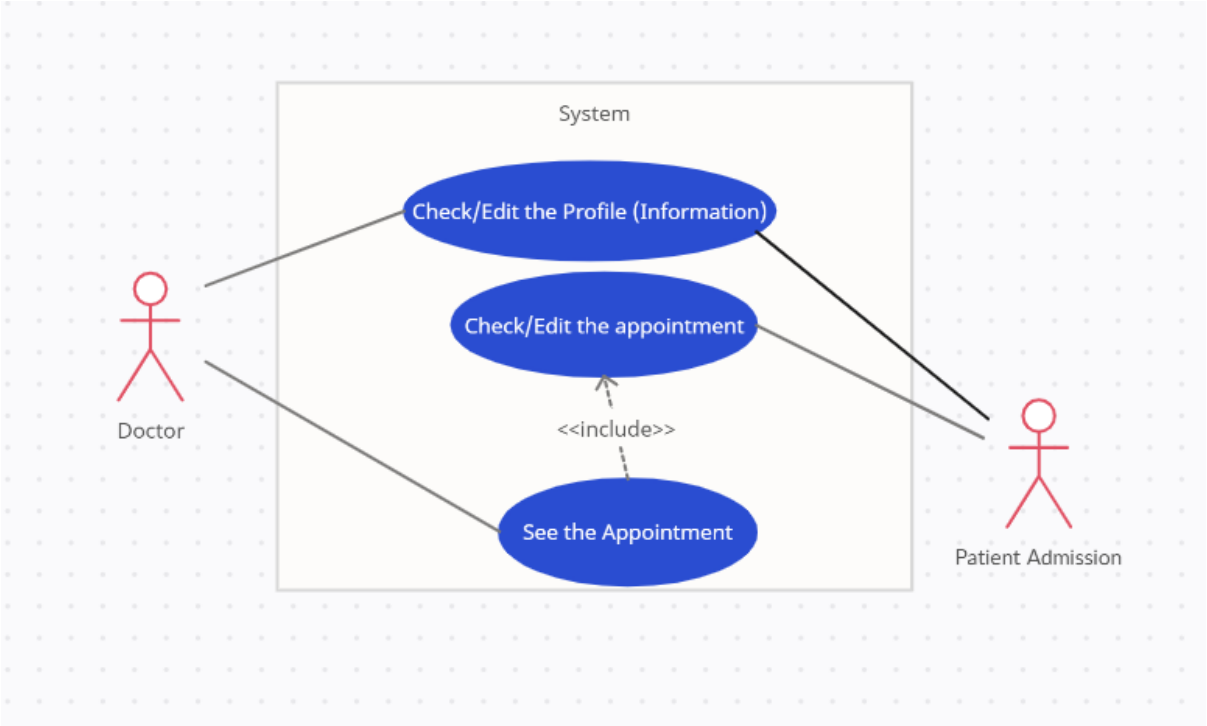


Brief Description

The doctor writes out a prescription according to a report about the patient after the medical examination.

Step-by-step description

1. Medical examination
2. The doctor wants a report from the lab.
3. Doctor writes out a prescription according to all symptoms observed in the patient.

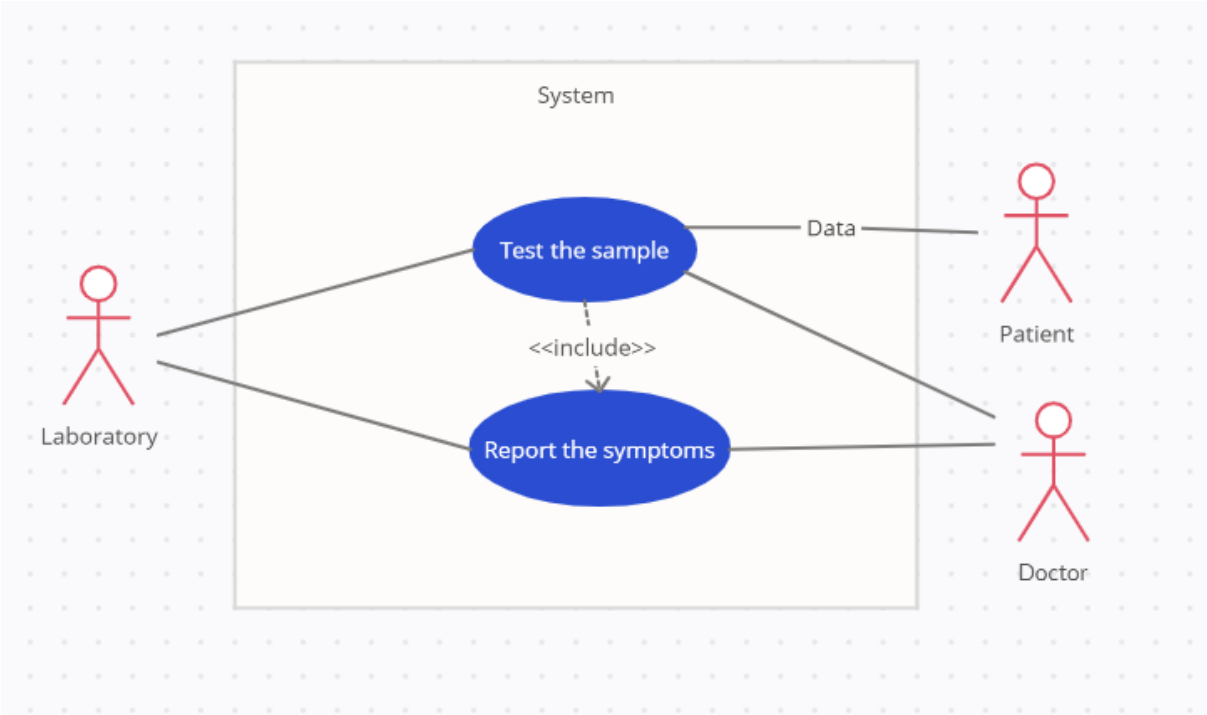


Brief Description

The doctor can save the information about their patient like diagnose their disease

Step-by-step description

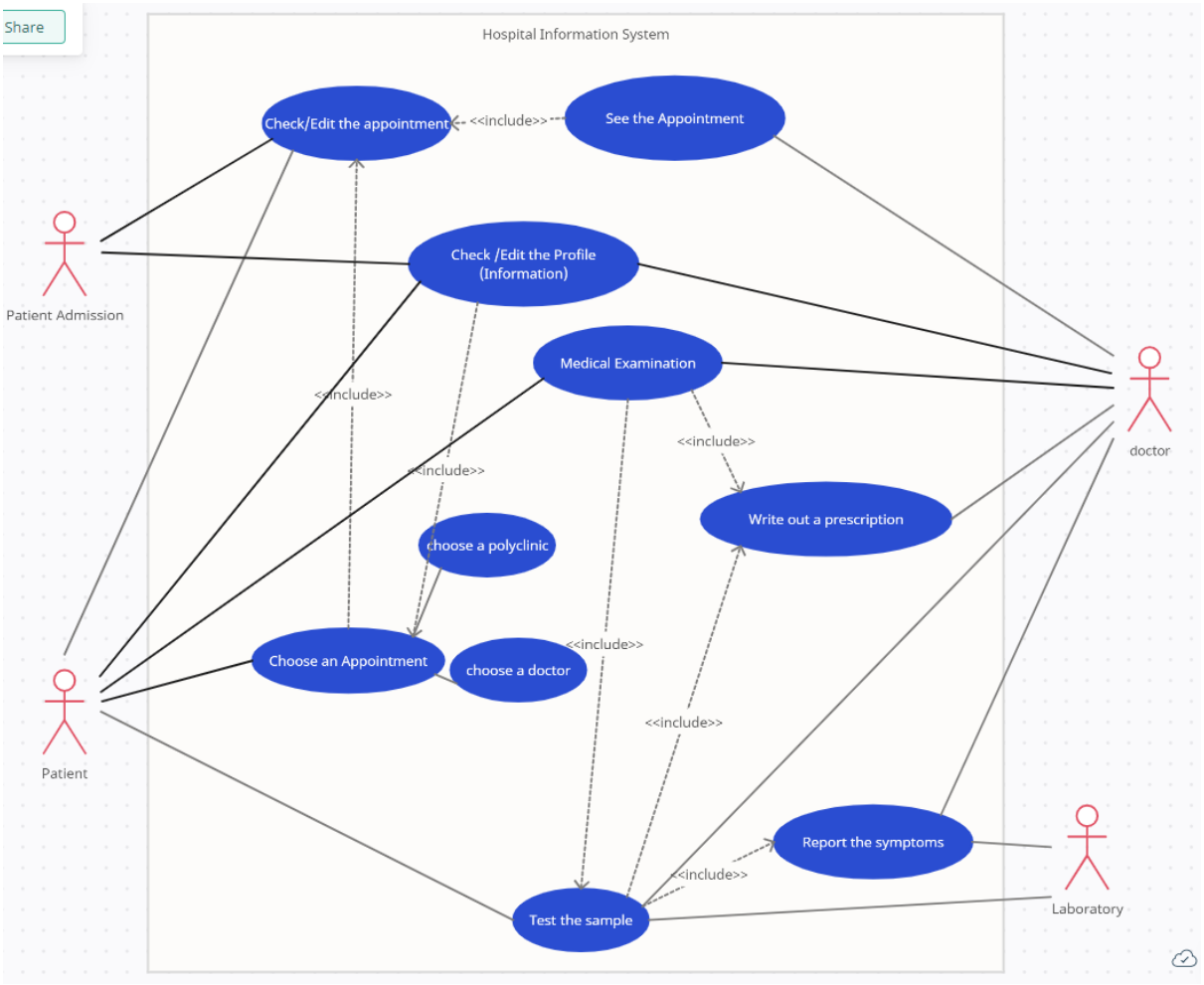
1. If there is an appointment, the doctor can see it.
2. The doctor can edit the profile about the current situation of their patient and save their information.



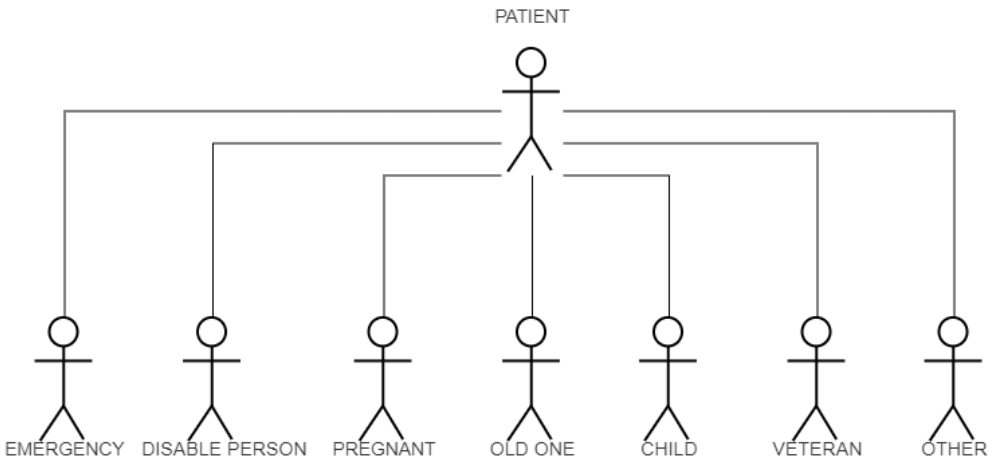
Brief Description
The laboratory analyses the symptoms that the doctor wants.

Step-by-step description

1. The patient gives the sample that the doctor wants to the laboratory.
2. The laboratory analyses the sample and reports all symptoms to the doctor.



ACTOR PATIENT WITH SEVEN CHARACTERISTIC



THE LIST OF FUNCTIONAL REQUIREMENTS

-Patients should be able to choose doctors, polyclinics.

-Patients should be able to find the available appointment they are looking for easily and quickly.

-Correctly check whether an appointment is available in the system.

-It should be known whether the appointment was taken by someone else and take an action according to it.

-Patient admission should be able to check the appointment .

-Doctor can see the information about the patient.

-Doctor can save/edit the information about the patient.

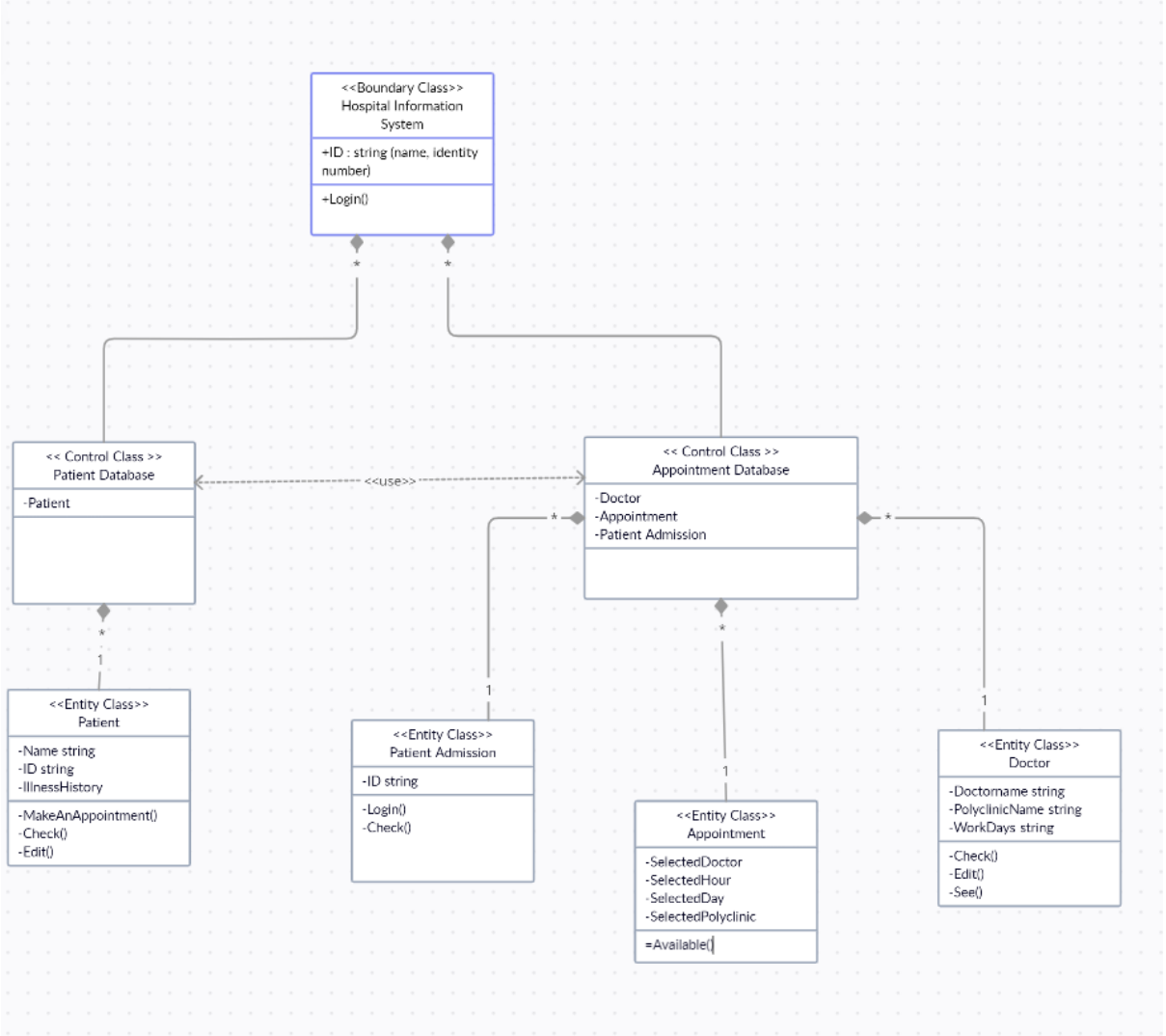
-Laboratory can send the results through the system

THE LIST OF NONFUNCTIONAL REQUIREMENTS

-The screen used should be attractive and easy to understand.

-The device used must be durable.

Class Diagram



Entity class
-Patient
-Doctor
-Patient Admission
-Appointment

Boundary class
-Hospital System

Control Class
-Appointment Database
-Patient Database

CRC CARDS

PATIENT DATABASE	
KNOW ID KNOW NAME KNOW POLYCLINIC KNOW DOCTOR	HOSPITAL INFORMATION SYSTEM APPOINTMENT DATABASE PATIENT

PATIENT	
KNOW ID KNOW NAME MAKE AN APPOINTMENT CAN CHANGE INFO CAN CHECK APPOINTMENT	PATIENT DATABASE

DOCTOR	
KNOW ID KNOW POLYCLINIC CAN CHANGE INFO CAN CHECK APPOINTMENT WANT A TEST KNOW PATIENT WRITE OUT A PRESCRIPTION AVAILABLE	APPOINTMENT DATABASE

APPOINTMENT	
KNOW ID KNOW NAME KNOW DOCTOR KNOW POLYCLINIC AVAILABLE SELECTED DAY SELECTED HOUR	APPOINTMENT DATABASE

HOSPITAL INFORMATION SYSTEM	
KNOW ID KNOW NAME KNOW DOCTOR KNOW POLYCLINIC CAN CHECK	PATIENT DATABASE APPOINTMENT DATABASE

APPOINTMENT DATABASE	
KNOW ID KNOW NAME KNOW DOCTOR KNOW POLYCLINIC	HOSPITAL INFORMATION SYSTEM PATIENT DATABASE APPOINTMENT DOCTOR

PATIENT ADMISSION	
KNOW ID KNOW NAME KNOW DOCTOR KNOW POLYCLINIC CAN CHECK APPOINTMENT CAN CHANGE INFO	APPOINTMENT DATABASE

2022-2023 Eğitim Öğretim Yılı Nesne Yönelimli Programlama Dersi
2. Vize Projesi

Duygu Gözde KAYABAŞI

10305010338

SOFTWARE PROJECT MANAGEMENT PLAN

1. Introduction

1.1 Project Overview

Hospital Information System Project;

It aims to save time for patients to make an appointment quickly and accurately and can protect all data about patients securely, maintaining order between every member in the community within the hospital by the way of communication through the system.

1.2 Project Deliverables

The following will be produced by Hospital Information System Software Manufacturers:

- A Software Project Management Plan that defines the technical and managerial processes required for the development and delivery of the Hospital Information System (This document)
- The contract between the client and the developers represents a contract between the client and the developers of the deliverables.
- A Requirements Analysis Document explaining the functional and general requirements of the system and use case diagrams, CRC card and class diagrams, dynamic modelling, sequence diagrams.
- A System Design Document that describes the design objectives, concurrency definition, hardware/software platforms, data management, software control implementation, and boundary conditions. This document forms the basis of object design. This document is read by the analyst as well as the object designer.
- Test outputs
- Source code.

These documents describe how and in what form we will make the software.

1.3 Evolution of the Software Project Management Plan

1.4 Reference Materials

- Examples of SPMP from James
- [IEEE 1058] IEEE Standard for Software Project Management ANSI/IEEEStd.1058.1-1987.
- https://sequencediagram.org
- cloud.smartdraw.com
- tutorialspoint.com
- app.creately.com

1.5 Definitions and Acronyms

Patient Admission: The processing unit ruling the services of the patient registration
Laboratory: The unit reporting the feedback about the analysis and to analyse the sample of the patient
Doctor: Someone who wants a test about the patient and can diagnose the patient.
Sample: The data that sending to analyse to the lab
Prescription: The report that writing on the medicine and how to use them it
Patient: Someone who register to the unit of the hospital to be treated

2.1 Process Model

The project uses an object-oriented design methodology based on the Objective lifecycle process and uses UML for software development. The development process is organised in various events. At the end of each event up to and including testing, submits documents describing the success of the event. Certified documents that are produced are considered work products and are part of software documentation. The activities are described in the following sections.

2.1.1 Project Planning

Project planning includes description of project tasks, activities and functions, dependencies, resource requirements.

2.1.2 Requirements Analysis

The requirements analysis activity takes the problem statement and reviews it in terms of consistency, completeness and feasibility. During this activity, a set of models of the proposed system is determined by interacting with the clients resulting in the requirements model. The main parts of the requirements model are four models: the use case model describing the complete functionality of the system, the object model, the functional model and the dynamic model.

2.1.3 System Design

The purpose of the system design activity is to devise a system architecture that maps the analysis model to the chosen target environment. The major part of the system design phase is the design of subsystems, that is, the decomposition of the system with respect to the chosen target platform. The system design activity also refines the use cases from the analysis model and describes in terms of interaction diagrams how the objects interact in each specific use case.

2.1.4 Analysis Review

Review of the software project management plan, requirements analysis and design.

2.1.5 Client Project Review

Review of project plan, requirements analysis and design decisions. The client liaison will be present at the meeting

2.1.6 Functional Prototype Demonstration

2.1.7 Object Design Phase

The object design phase specifies the fully typed API for each subsystem. New classes are added to the analysis object model if necessitated by the system architecture. Attributes and methods for each object are fully typed.

2.1.8. System Integration Prototype Demonstration

This activity involves the demonstration of a fully functional system prototype based on the subsystem decomposition.

2.1.9 Implementation

The focus of this activity is on coding the individual objects described in the object design document.

2.1.10 Unit Testing

During unit testing, test suites are designed and executed for objects or collections of objects in each subsystem. Unit testing enables the individual subsystems to be tested independent from the status of the other subsystems. The result of this activity is part of the test manual that describes how to operate the test suite and how to interpret the test results.

2.1.11 System Integration

2.1.12 System Testing

Structured Testing: This activity tests the main data paths throughout the system.

Functional Testing: Tests the entire system for major functionality (use cases). The basis of the functional testing activity is the test guide, which is revised according to the results of the system testing phase.

Alpha testing (Client Acceptance Test): The system has been tested to ensure that it passes the client acceptance criteria as defined in the project contract.

2.1.13 Manual Integration

During this activity, project delivery outputs are revised. As a result, a complete document consisting of a software project management plan, requirements analysis document, software design document, and source code is presented to the customer.

2.1.14 Client Presentation

2.2 Organisational Structure

2.2.1 Teams and Tasks

2.3.2 Meeting Times

2.4 Project Responsibilities Tables

3.2.1 Assumptions

- The system is used by a patient, patient admission and doctor.
- We will keep the data in the appointment system in an organised manner so that it will not be lost.
- Every modification can see and report through the system by patient admission.
- It will be prevented in front of the duplicate appointment.
- The system will be supported.

3.2.2 Dependencies

3.2.3 Constraints

- To have enough useful space.

3.3 Risk Management

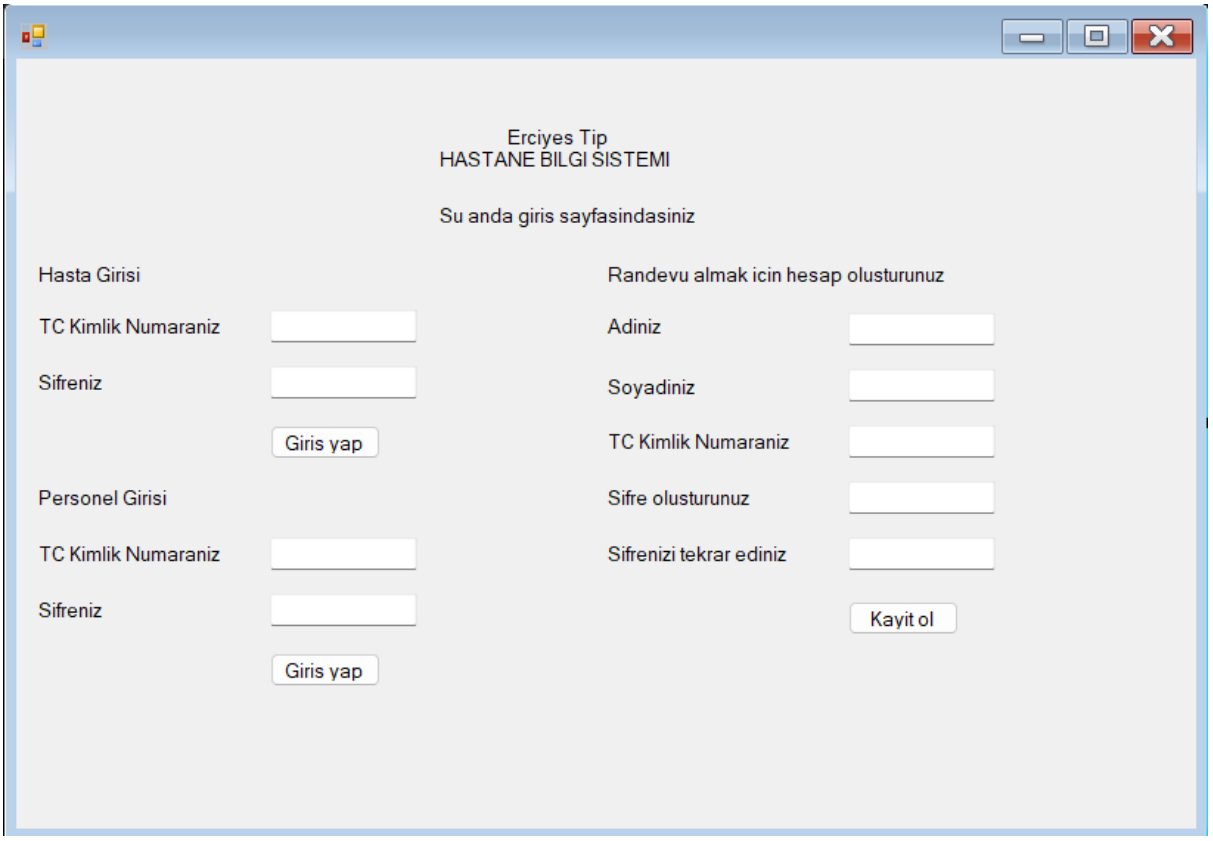
THE PLAN OF TESTING

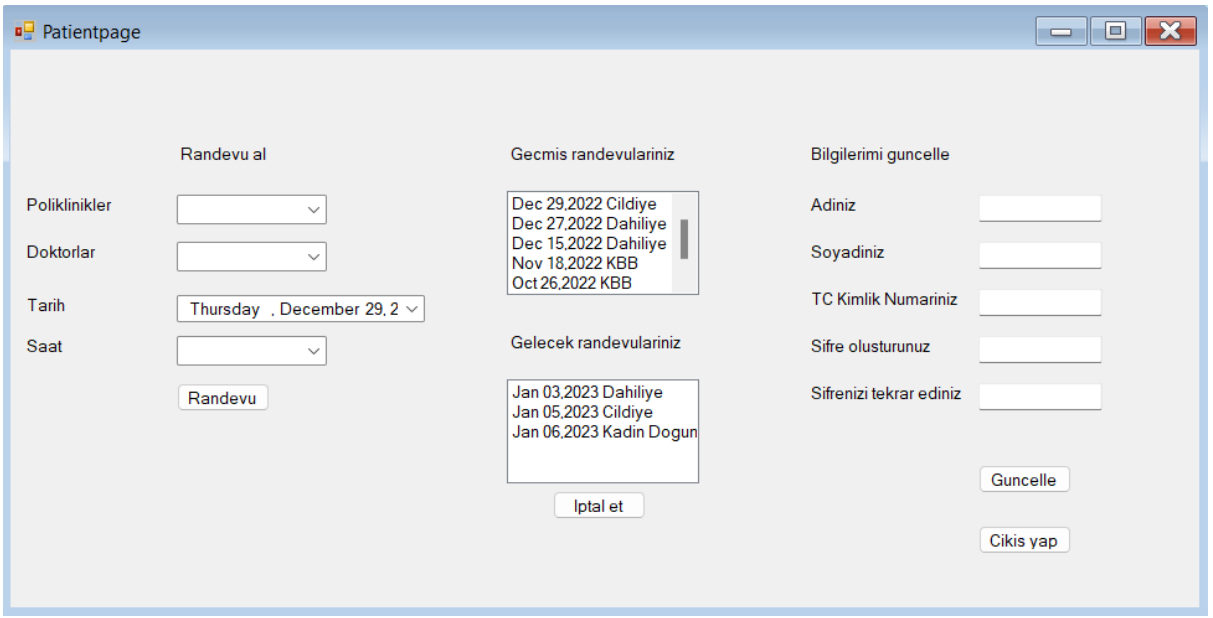
1- To make an interview with a qualified person about the subject and add a glossary in the end of this interview about the subject
2- To make an use-case diagram for every situation
3- To determine functional sides and non functional sides of the system for the client
4- To make up class diagrams by define classes and CRC cards
5- To draw statechart
6- To make a sequence diagram for every situation
7- To make up Software Project Management Plan according to IEEE
8- To define their privacy level and methods of all classes
9- To write pseudocode for every class and every method
10- To design suitable interfaces according to the project

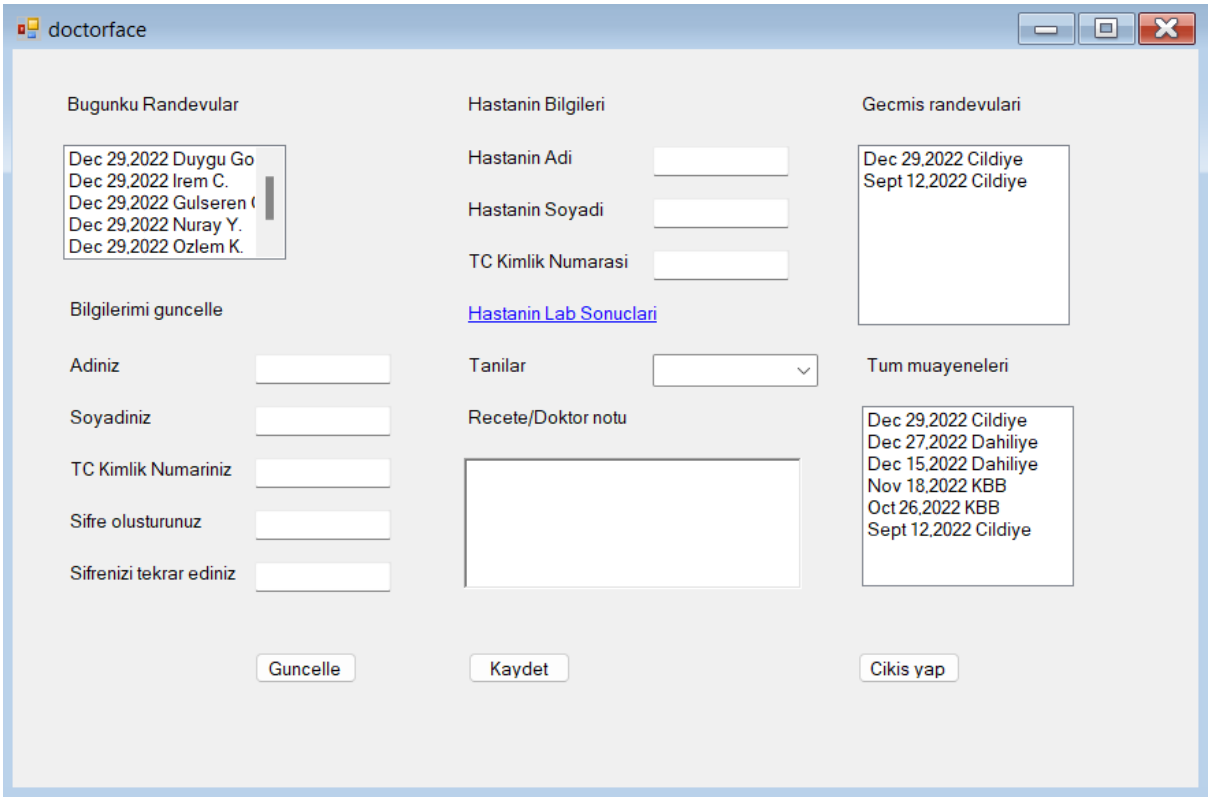
Risks

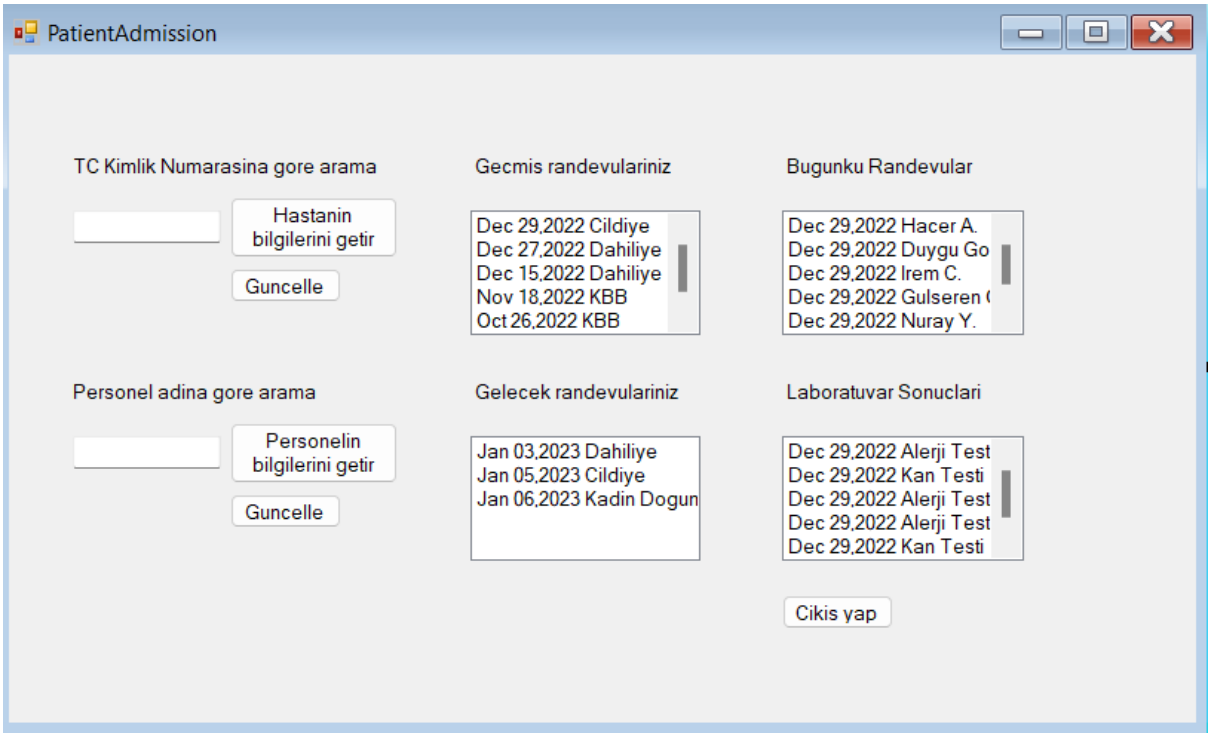
- Can lose the data case of not accessing the system.
- Can change the statue of some users with the change of the data in the database of the system

INTERFACES

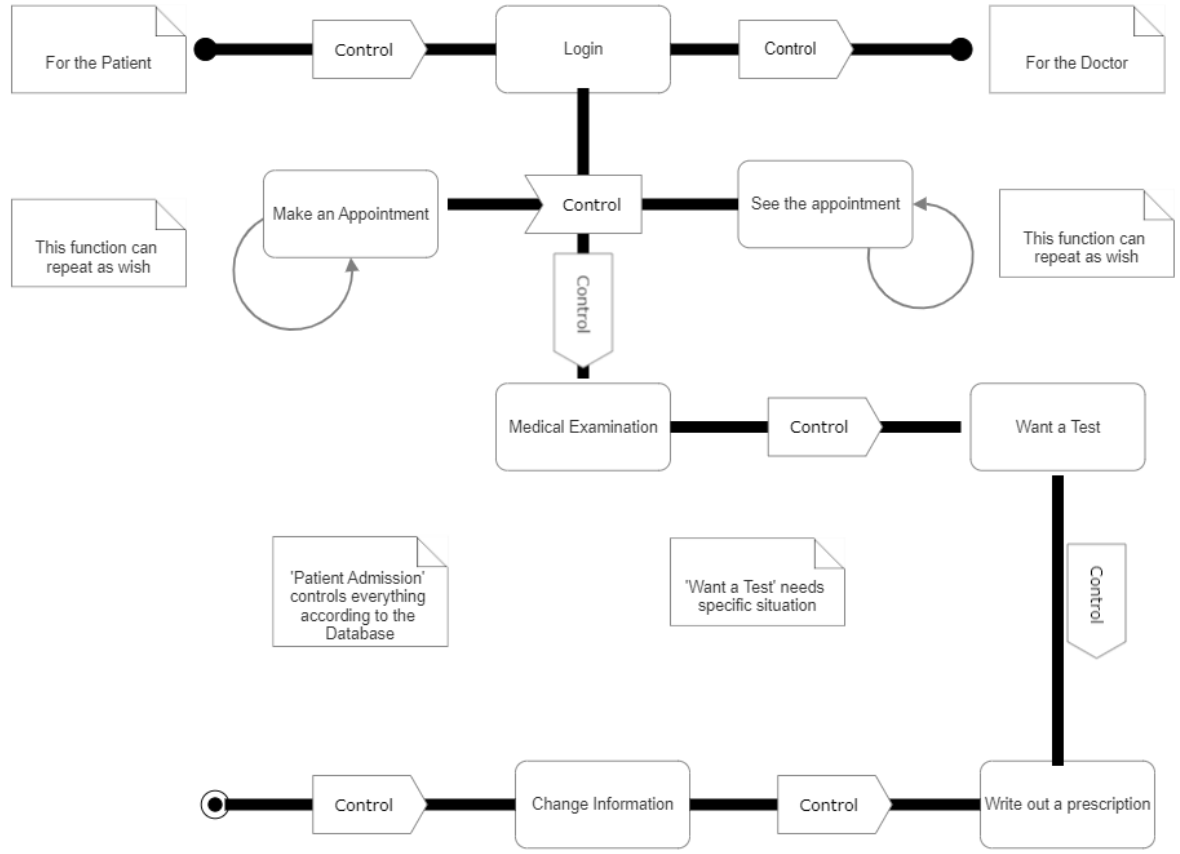

Erciyes Tip
HASTANE BILGI SISTEMI
Su anda giris sayfasindasiniz
Hasta Girisi
TC Kimlik Numaraniz
Sifreniz
Giris yap
Personel Girisi
TC Kimlik Numaraniz
Sifreniz
Giris yap
Randevu almak icin hesap olusturunuz
Adiniz
Soyadiniz
TC Kimlik Numaraniz
Sifre olusturunuz
Sifrenizi tekrar ediniz
Kayit ol


Patientpage
Randevu al
Poliklinikler
Doktorlar
Tarih
Thursday , December 29, 2
Saat
Randevu
Gecmis randevulariniz
Dec 29,2022 Cildiye
Dec 27,2022 Dahiliye
Dec 15,2022 Dahiliye
Nov 18,2022 KBB
Oct 26,2022 KBB
Gelecek randevulariniz
Jan 03,2023 Dahiliye
Jan 05,2023 Cildiye
Jan 06,2023 Kadin Dogun
Iptal et
Bilgilerimi guncelle
Adiniz
Soyadiniz
TC Kimlik Numariniz
Sifre olusturunuz
Sifrenizi tekrar ediniz
Guncelle
Cikis yap


doctorface
Bugunku Randevular
Dec 29,2022 Duygu Go
Dec 29,2022 Irem C.
Dec 29,2022 Gulseren (
Dec 29,2022 Nuray Y.
Dec 29,2022 Ozlem K.
Hastanin Bilgileri
Hastanin Adi
Hastanin Soyadi
TC Kimlik Numarasi
Hastanin Lab Sonuclari
Gecmis randevulari
Dec 29,2022 Cildiye
Sept 12,2022 Cildiye
Bilgilerimi guncelle
Adiniz
Soyadiniz
TC Kimlik Numariniz
Sifre olusturunuz
Sifrenizi tekrar ediniz
Tanilar
Recete/Doktor notu
Tum muayeneleri
Dec 29,2022 Cildiye
Dec 27,2022 Dahiliye
Dec 15,2022 Dahiliye
Nov 18,2022 KBB
Oct 26,2022 KBB
Sept 12,2022 Cildiye
Guncelle
Kaydet
Cikis yap

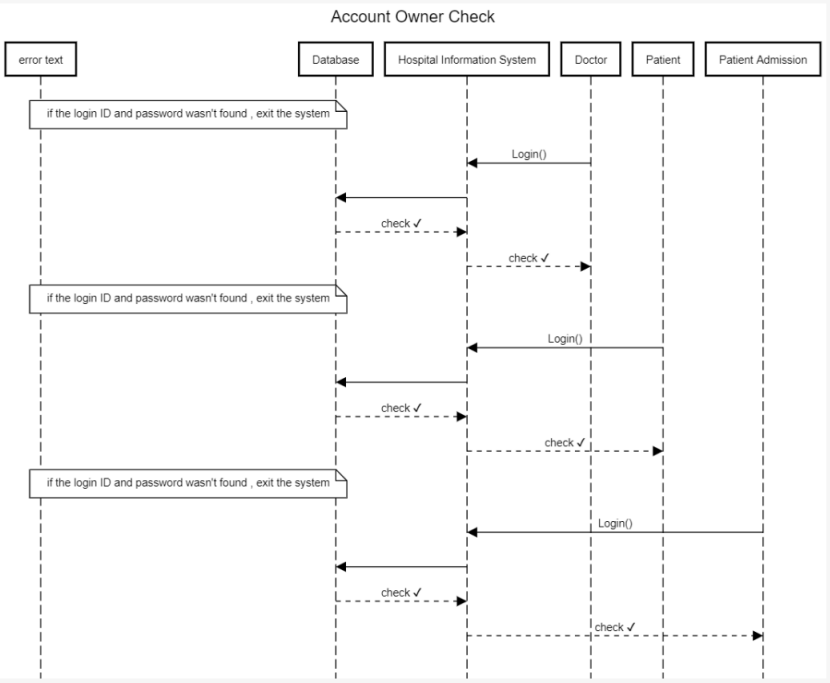

PatientAdmission
TC Kimlik Numarasina gore arama
Hastanin bilgilerini getir
Guncelle
Gecmis randevulariniz
Dec 29,2022 Cildiye
Dec 27,2022 Dahiliye
Dec 15,2022 Dahiliye
Nov 18,2022 KBB
Oct 26,2022 KBB
Bugunku Randevular
Dec 29,2022 Hacer A.
Dec 29,2022 Duygu Go
Dec 29,2022 Irem C.
Dec 29,2022 Gulseren (
Dec 29,2022 Nuray Y.
Personel adina gore arama
Personelin bilgilerini getir
Guncelle
Gelecek randevulariniz
Jan 03,2023 Dahiliye
Jan 05,2023 Cildiye
Jan 06,2023 Kadin Dogun
Laboratuvar Sonuclari
Dec 29,2022 Alerji Test
Dec 29,2022 Kan Testi
Dec 29,2022 Alerji Test
Dec 29,2022 Alerji Test
Dec 29,2022 Kan Testi
Cikis yap

Statechart

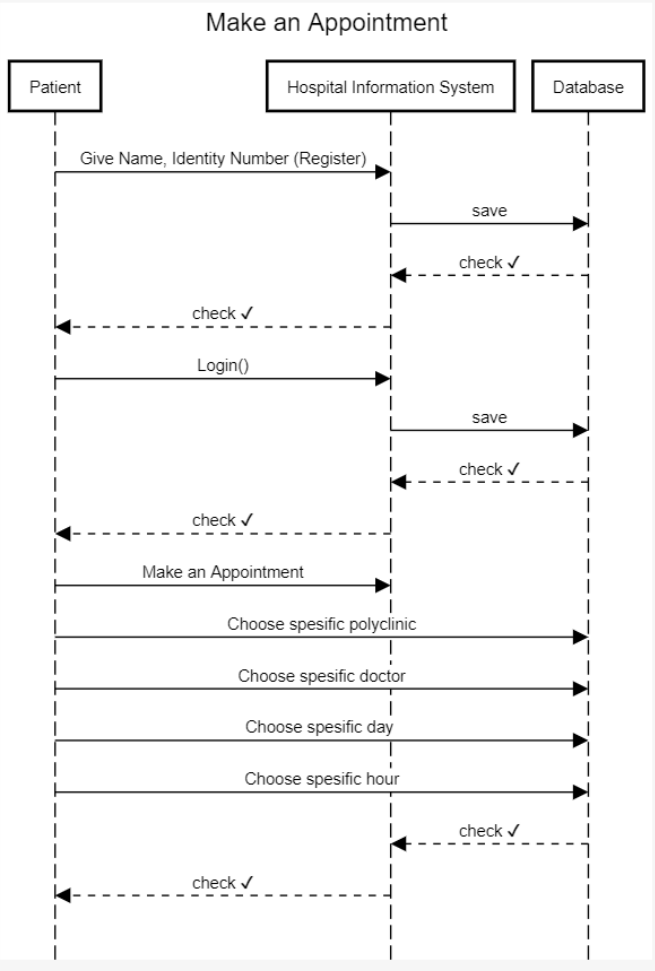

For the Patient
Control
Login
Control
For the Doctor
This function can repeat as wish
Make an Appointment
Control
See the appointment
This function can repeat as wish
Control
Medical Examination
Control
Want a Test
'Patient Admission' controls everything according to the Database
'Want a Test' needs specific situation
Control
Control
Change Information
Control
Write out a prescription

Sequence Diagram

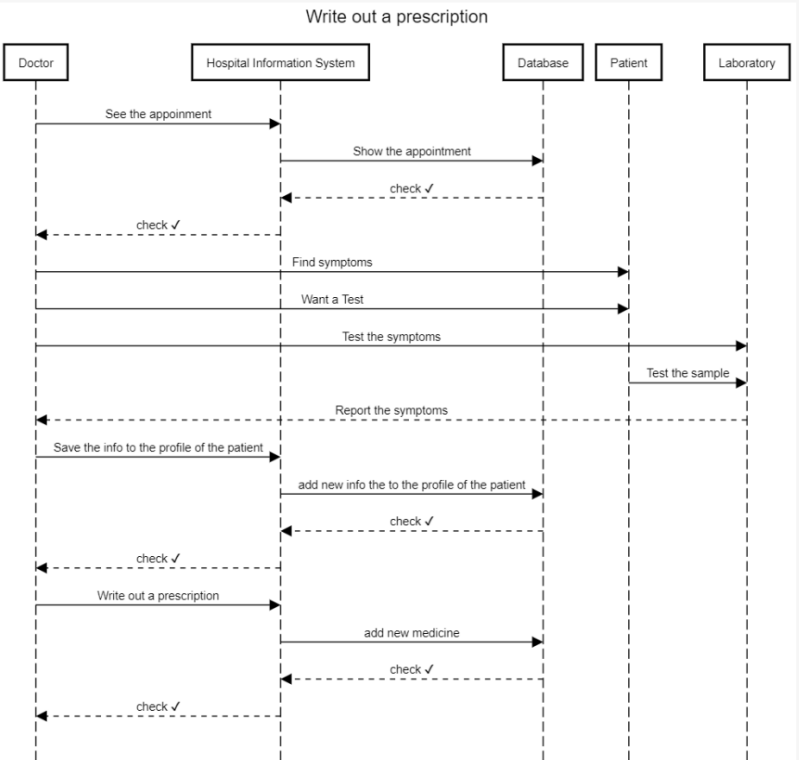
```
title Account Owner Check

participant error text
participant Database
participant Hospital Information System

note over Database,error text:if the login ID and
password wasn't found , exit the system

Doctor->Hospital Information System:Login()
Hospital Information System->Database:
Database-->Hospital Information System:check ✓
Hospital Information System-->Doctor:check ✓

note over Database,error text:if the login ID and
password wasn't found , exit the system

Patient->Hospital Information System:Login()
Hospital Information System->Database:
Database-->Hospital Information System:check ✓
Hospital Information System-->Patient:check ✓

note over Database,error text:if the login ID and
password wasn't found , exit the system

Patient Admission->Hospital Information System:Login()
Hospital Information System->Database:
Database-->Hospital Information System:check ✓
Hospital Information System-->Patient Admission:check ✓
```




```
title Make an Appointment
//hasta bilgilerini vermeli
//bilgi check
//klinik doktor randevu (database)
//randevu check (database)
//success

Patient->Hospital Information System:Give Name, Identity
Number (Register)
Hospital Information System->Database:save
Database-->Hospital Information System:check ✓
Patient<--Hospital Information System:check ✓
Patient->Hospital Information System:Login()
Hospital Information System->Database:save
Database-->Hospital Information System:check ✓
Patient<--Hospital Information System:check ✓
Patient->Hospital Information System: Make an
Appointment
Patient->Database:Choose spesific polyclinic
Patient->Database:Choose spesific doctor
Patient->Database:Choose spesific day
Patient->Database:Choose spesific hour
Database-->Hospital Information System:check ✓
Hospital Information System-->Patient:check ✓

// title muayene
//doktor teshis
//analyse
//sample
//test lab
//title save info see appointment
//change info
// write out a prescription
//
```



```
title Write out a prescription

Doctor->Hospital Information System:See the appoinment
Hospital Information System->Database:Show the
appointment
Database-->Hospital Information System:check ✓
Hospital Information System-->Doctor:check ✓
Doctor->Patient:Find symptoms
Doctor->Laboratory:Test the symptoms
Patient->Laboratory:Test the sample
Laboratory-->Doctor:Report the symptoms
Doctor->Hospital Information System: Save the info to
the profile of the patient
Hospital Information System->Database:add new info the
to the profile of the patient
Database-->Hospital Information System:check ✓
Hospital Information System-->Doctor:check ✓
Doctor->Hospital Information System: Write out a
prescription
Hospital Information System->Database:add new medicine
Database-->Hospital Information System:check ✓
Hospital Information System-->Doctor:check ✓

// title muayene
//doktor teshis
//analyse
//sample
//test lab
//title save info see appointment
//change info
// write out a prescription
//
```



Pseudocode

LogIn

```
public bool Login(String username,string password)
{
bool = false;
click the 'giris yap' button this is an action
get data from user through interface
String username = Readline(textbox.Text);
String password = Readline(textbox.Text);
String ID = '', username+password;
check there are or not of data in the database
String value = select username, password from patient database like 'ID'
if (there are --> value isn't void)
 {
 confirm the login
 open PatientPage
 bool == true;
 }
else (there aren't --> value is void)
 {
 give an alert to the user 'your username or your password are wrong'
 bool == false;
 }
return bool;
}
```

SignUp

```
public void SignUp()
{
click the 'kayit ol' button this is an action
get data from user through interface
String name = Readline(textbox.Text);
String surname = Readline(textbox.Text);
String id = Readline(textbox.Text);
String password1 = Readline(textbox.Text);
String password2 = Readline(textbox.Text);
do
 {
  if(password1==password2)
   {
    continue;
   }
  else(password1!=password2)
   {
    give an alert to the user ' your passwords don't match each other'
   }
 }
while
 {
check there are or not of data in the database
 if (there are --> value isn't void)
  {
  give an alert to the user 'You have an account already'
  bool == false;
  }
 else (there aren't --> value is void)
  {
  save data to patientdatabase
  give an alert to the user 'Now you can login'
  bool == true;
  }
 }
}
```

CancelIt

```
Public bool CancelAnAppointment(string polyclinic, doctor, day, hour)
{
bool=false
click the 'iptal et' button this is an action
String polyclinic = Readline(combobox.Text);
String doctor = Readline(combobox.Text);
String day = Readline(DateTimePicker.Text);
String hour = Readline(combobox.Text);
get data from the user through interface
check there are or not of data in the database
String appointment = '', polyclinic++doctor++day++hour ;
if (lookeditup(appointment)==true)
 {
 Database.Remove(appointment);
 bool==true
 }
else(lookeditup(appointment)==false)
 {
  give an alert to the user 'there isn't an appointment in that time'
  bool==false
 }
return bool
}
```

Make An Appointment

```
Public bool MakeAnAppointment(string polyclinic, doctor, day, hour)
{
bool=false
click the 'randevu' button this is an action
String polyclinic = Readline(combobox.Text);
String doctor = Readline(combobox.Text);
String day = Readline(DateTimePicker.Text);
String hour = Readline(combobox.Text);
get data from the user through interface
check there are or not of data in the database
String appointment = '', polyclinic++doctor++day++hour ;
if (lookeditup(appointment)==true)
 {
 give an alert to the user 'there is an appointment in that time'
 bool==false
 }
else(lookeditup(appointment)==false)
 {
  Database.Add(appointment);
  bool==true
 }
return bool
}
```

Find appointment from database

```
string appointment == textbox.text;
lookeditup(appointment);
private bool lookeditup (string appointment)
{
bool=false;
string match = '',select polyclinic, doctor, day, hour from appointment database like
'appointment'
sql command DBconnection
check execute
if(match == '--> match is void)
 {
 bool==false
 }
else (match == '--> match is found)
 {
 bool==true
 }
return bool;
}
```

Find patient from database

```
string patient == textbox.text;
lookeditup(patient);
private bool lookeditup (string patient)
{
bool=false;
string match = '', select name, surname, ID from patient database like 'patient'
sql command DBconnection
check execute
if(match == '--> match is void)
 {
 bool==false
 }
else (match == '--> match is found)
 {
 bool==true
 }
return bool;
}
```

Change in the database

```
public bool Update(string x)
{
bool=false
you already login so the system have your data
you want to change
click the 'Guncelle' button this is an action
first of all find your data where in database
//lookeditup(x); x is what you are looking
if(lookeditup(x)==true)
 {
 sql connection
 sql command
 update
 bool==true
 }
else(lookeditup(x)==false)
 {
  give an alert to the user 'not found any data about it'
  bool==false
 }
return bool
}
```

EndUptheSection

```
if you click the 'Cikis yap' button (this is an action) application will be closed
add it as properties 'form closing'
```