EHR Analysis

1 Introduction

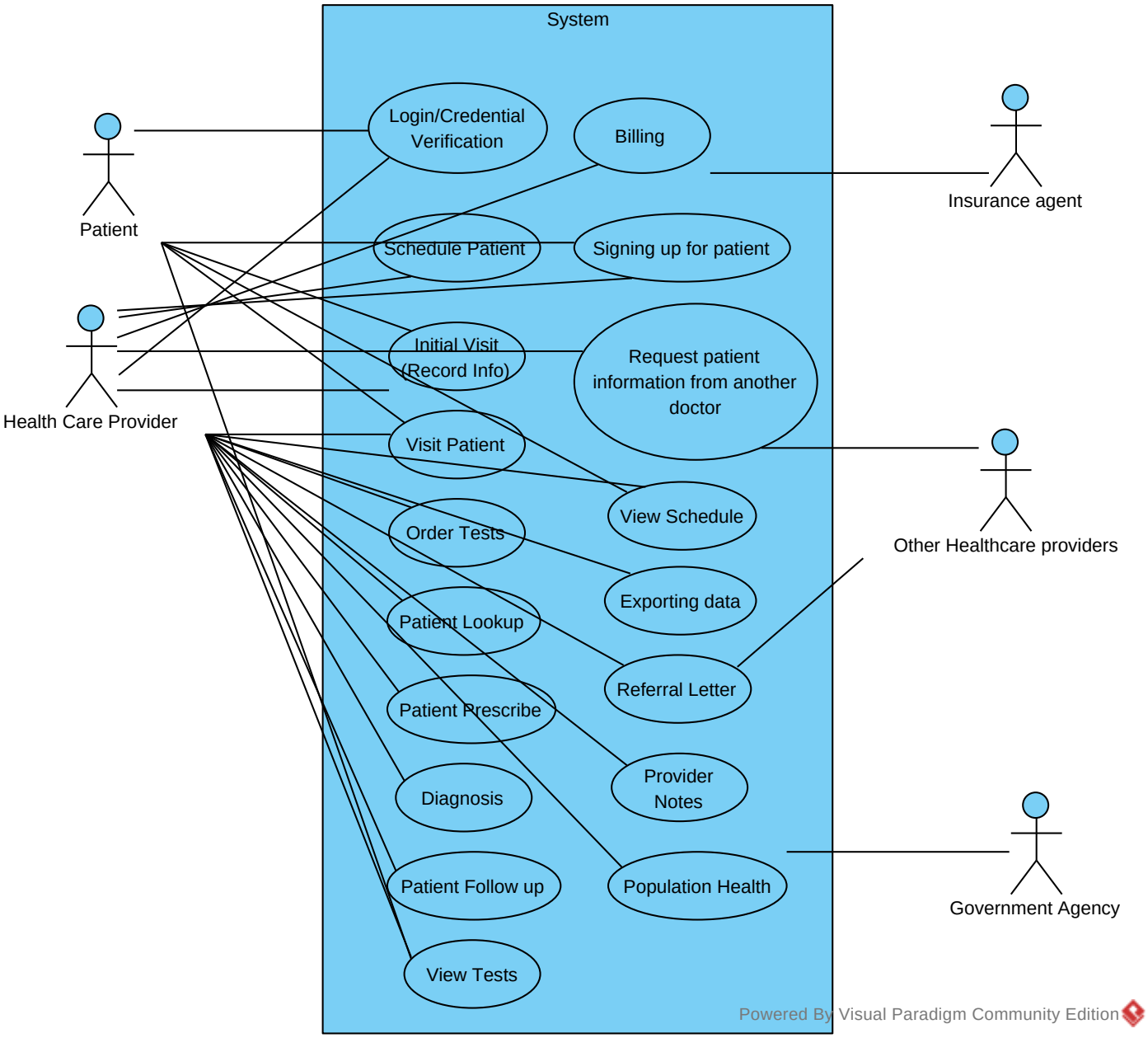
The United States Medical Industry makes up close to 18% of the total US GDP and is expected to grow at an average rate of 5.5 % for the next 10 years [4]. Within the past few years, this nearly 3.8 trillion dollar industry has been revolutionized by advances in the health IT technology. Once such revolutionary advancement was the creation of the Electronic Health Record System (EHR) which carried the potential to not only save the medical industry nearly 371 billion dollars over 15 years but also drastically increase access to healthcare information [5]. Adoption of the EHR has been pronounced with nearly 75% of Canadian doctors using some form of an EHR in a 2014 survey and 86.6% of US respondents in another 2014 study reporting that their healthcare provider maintained medical records in a computerized system. [2, 3].

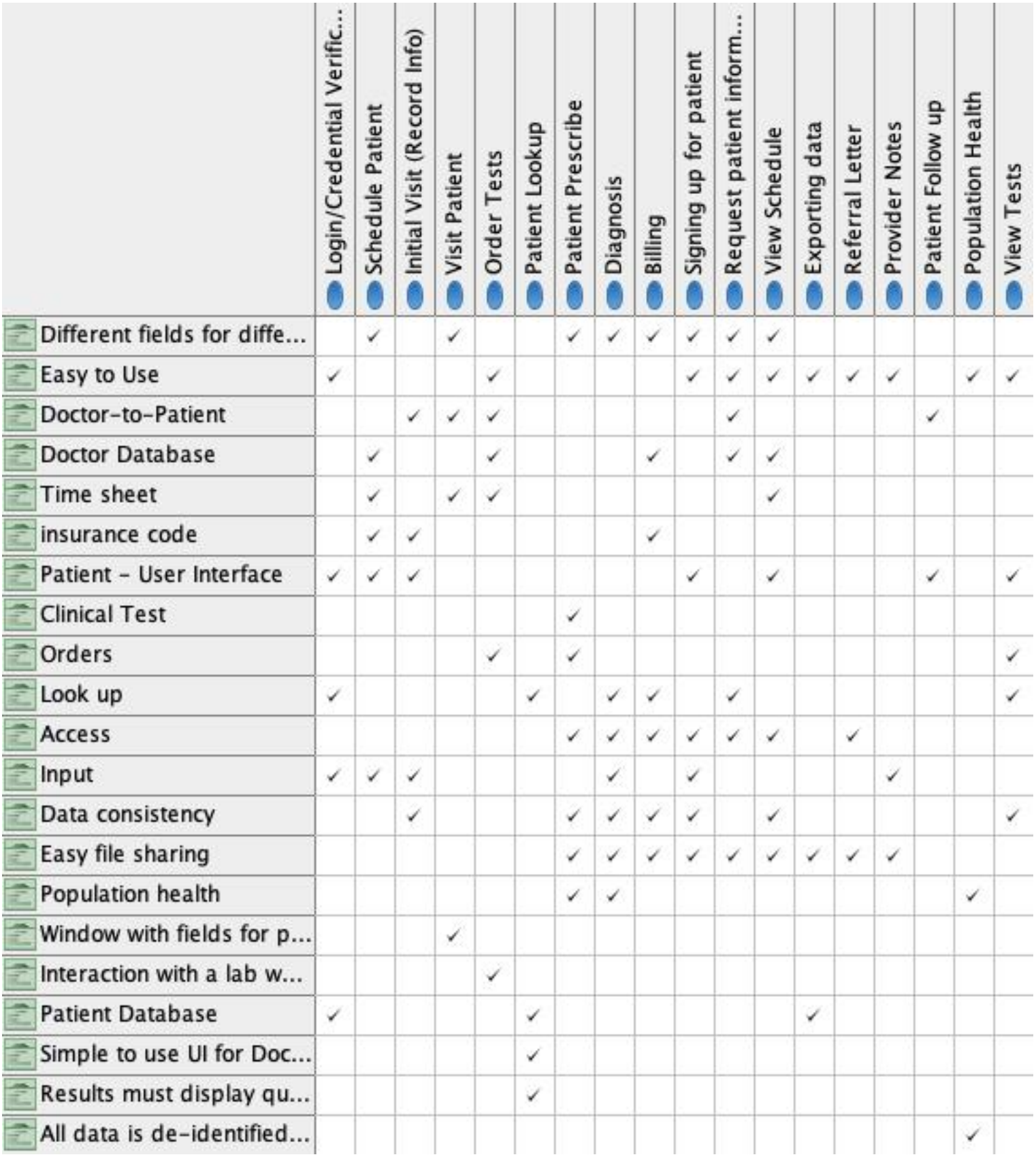
2 Previous Work

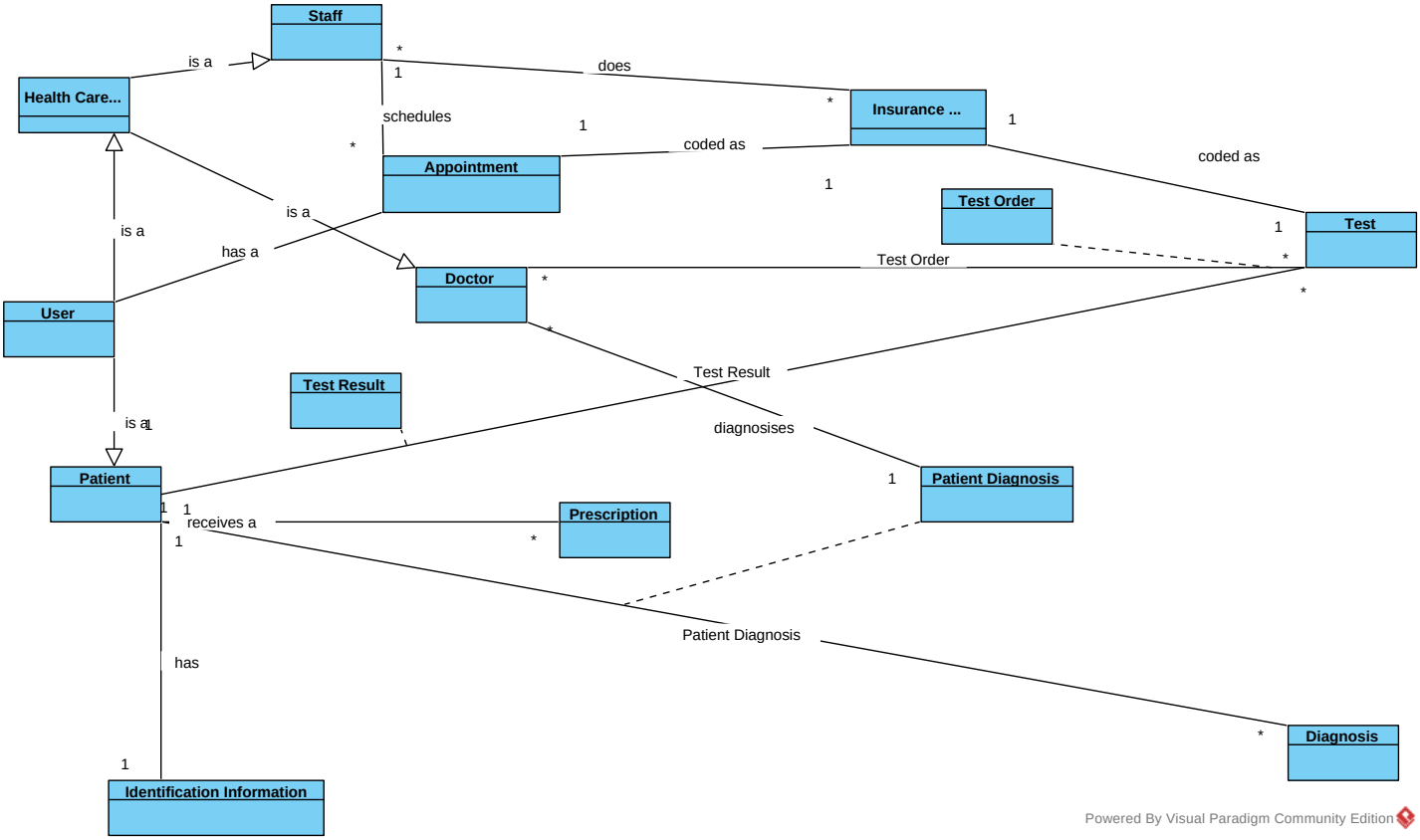
Currently two companies, Epic and Cerner, dominate the EHR market with a combined market share of 85% [6]. These two companies have developed systems that work in large hospital settings and are often used in order to communicate information across large hospital chains. However, these system and lesser known competitors, for all of their worth, remain far from a perfect solution to healthcare problems. Issues such as the complexity of the system, inability of users to anticipate potential problems, safety concerns, and difficulty in system migration mitigate some of the supposed benefits of EHR's [1]. These concerns have placed a stain on the EHR industry.

3 Proposition

Thus, our team goal for the course of this project is to develop an EHR specifically focused towards primary care and general practice physicians. In order to address preexisting concerns with existing EHRs, we plan on developing a system that focuses on ease of use for general and primary care healthcare providers and their patients. By developing a system with this goal in mind, we hope to create an EHR that fulfills the potential of an EHR system.


System
Login/Credential Verification
Billing
Schedule Patient
Signing up for patient
Initial Visit (Record Info)
Request patient information from another doctor
Visit Patient
View Schedule
Order Tests
Exporting data
Patient Lookup
Referral Letter
Patient Prescribe
Provider Notes
Diagnosis
Patient Follow up
Population Health
View Tests
Patient
Health Care Provider
Insurance agent
Other Healthcare providers
Government Agency
Powered By Visual Paradigm Community Edition




Staff
Health Care...
Insurance ...
Appointment
Test Order
Test
Doctor
User
Test Result
Patient
Prescription
Patient Diagnosis
Identification Information
Diagnosis
is a
does
schedules
coded as
has a
receives a
diagnosises
has
Powered By Visual Paradigm Community Edition

Billing

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider, Insurance agent
Suppporting Actors	

Scenarios

Scenario

1. Total cost for service rendered is calculated
2. Services rendered are included on bill with cost
3. Day by which bill must be payed is included
4. Bill is sent to necessary parties (i.e. insurance, government taxing, patient)
5. System records payments made

Extensions

1.a. Invalid values are entered
  1. System signals error and rejects entry
  2. Office accountant responses to error
    2.1. Data for charging is saved in human readable format
      2.1.1. Office accountant manually enters data
      2.1.2. System recalculates and displays results
    2.2. Necessary data is not saved
      2.2.1. Accountant reports error
      2.2.2. Operation is put on hold until correct data is recovered

2.a. Services rendered are not available
  1. System reports error
  2. Accountant responds to errors
    2.1. Services are locatable
      2.1.1. Account enters data by hand
    2.2. Services are not locatable
      2.2.1. Accountant reports error
      2.2.2. Operation halted until correct data is recovered

3.a. Patient receives payment extension for extenuating circumstances

3.a. Patient receives payment extension for extenuating circumstances
   1. The extension is noted on the bill
   2. The extension is saved in the system and reported to other necessary services (insurance, government taxing)

4.a. Bill is unable to be sent due to extenuating system errors
   1. System reports error
   2. Necessary attendant (i.e. office accountant) manually sends data

Details

Level	User goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Patient provided a service.
Post-conditions	N/A
Author	N/A
Assumptions	N/A

Requirements

Different fields for different types of patient visits

Doctor Database

insurance code

Look up

Access

Data consistency

Easy file sharing

Diagnosis

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. Doctor diagnoses patient
2. Doctor opens patient's file
3. System creates new diagnosis for patient
4. Doctor enters patient's diagnosis
5. System saves and stores diagnosis in patient folder and in other necessary files

Extensions

2.a. Patients file is unable to open
   1. Doctor restarts system
   2. System reports error and continues in clean state

2.b. Doctor does not have permission to access file

4.a. Patient has additional ailments and requires more than one diagnosis
   1. Doctor creates multiple diagnoses
   2. System records multiple diagnoses and stores data under same visit

5.a. Patient requests copy of diagnosis
   1. System provides available information
   2. Doctor prints or sends the information to the patient in a secure way

#.a. At any time, System fails
   1. Doctor restarts system
   2. System reconstructs former state
      2.1. System detects anomaly
         2.1.1. Error is reported to doctor and IT and enters a clean state
         2.1.2. Doctor creates new diagnosis

Details

Details

Level	user goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Visit Patient
Post-conditions	N/A
Author	N/A
Assumptions	N/A

Requirements

Different fields for different types of patient visits

Look up

Access

Input

Data consistency

Easy file sharing

Population health

Initial Visit (Record Info)

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Patient, Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. Patient walks into doctor's office for a consultation
2. Patient checks in with staff, identifying themself
3. Staff check to see whether customer health sheet is complete
4. Patient health sheet is complete
5. Staff will check doctor's availability
6. Doctor is available
7. Patient is sent to doctor
8. Patient is evaluated by doctor
9. Doctor does not need to update health sheet

Extensions

2.a. Patient cannot identify themself and is a walk-in
   1. Patient is refused

2.b. Patient cannot identify themself but has an appointment
   1. Patient logs into the system
   2. Patient checks into appointment through the system

4.a. Patient health sheet is empty/incomplete
   1. Patient logs into system
   2. Patient fills any empty/incomplete sections of health sheet

6.a. Doctor is unavailable
   1. Staff gives patient estimate as to when doctor will be available
   2. Staff asks patient to wait in waiting room

9.a. Doctor needs to update health sheet
   1. Doctor gives staff the information necessary to update the health sheet
   2. Staff logs into the system

2. Staff logs into the system
3. Staff makes necessary changes to the health sheet

#.a. anytime system does not respond

1. Staff will restart system

Details

Level	User goals
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Login/Credential Verification
Post-conditions	Patient information is recorded.
Author	N/A
Assumptions	N/A

Requirements

Doctor-to-Patient

insurance code

Patient - User Interface

Input

Data consistency

Login/Credential Verification

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider, Patient
Suppporting Actors	

Scenarios

Scenario

1. Patient accesses system
2. System prompts client to enter their credentials
3. Patient enters their credentials
4. System checks e-mail username to see if an account is associated
5. Account is associated
6. System checks password to see if it matches the account password
7. Password is correct
8. System redirects patient to patient home page
9. After doing what is necessary, patient selects to sign out
10. System locks the user out, requiring credentials to sign in again

Extensions

3.a. Patient to does not yet have an account
   1. Patient selects option to create an account
   2. System redirects patient to account creation

5.a. E-mail entered does not match an account
   1. System prompts patient to re-enter credentials
      1.1. Patient re-enters credentials until correct
      1.2. Patient does not have an account
         1.2.1. Patient chooses to create an account

7.a. Password entered does not match account password
   1. System prompts patient to re-enter password
      1.1. Patient re-enters credentials until correct
      1.2. Patient does not have an account
         1.2.1. Patient chooses to create an account

1.2.1. Patient chooses to create an account

Details

Level	User goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A
Post-conditions	Patient gains access to the system
Author	N/A
Assumptions	N/A

Requirements

Patient - User Interface

Look up

Input

Patient Database

Order Tests

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. Doctor opens window to order test.
2. Doctor selects patient in need of test.
3. Doctor selects test to perform.
4. Doctor sends order to lab.
5. Lab receives order successfully.

Extensions

2.a. Doctor closes window while selecting patient.
   1. Window closes, patient data remains unchanged
   2. Doctor may reopen window and select patient again

5.a. Lab does not receive test order
   1. Doctor may send order again

Details

Details

Level	user goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Login/Credential Verification
Post-conditions	Necessary test for patient is determined. Doctor sends test order. Lab receives order.
Author	N/A
Assumptions	N/A

Requirements

Doctor-to-Patient

Doctor Database

Time sheet

Orders

Interaction with a lab which will receive test orders

Patient Follow up

This use case details the EHR use of following up with a patient after their appointment in order to provide patients with information that they would need.

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. Doctor concludes visit with patient
2. System prompts doctor to enter follow up information.
3. Doctor enters follow up information as well as other information doctor wishes to share with patient
4. System bundles doctors follow up notes with prescription information and test information
5. System sends message to patient to view their follow up information
6. Patient clicks on follow up panel
7. Patient views doctors notes
8. Patient exits follow up panel

Extensions

3.a. Follow up information has not all been created yet
   1. System notes that this information needs to be collected and is still waiting
   2. System displays blank information for these fields
   3. Once information has been collected, system updates record with proper information

6.a. Follow up panel is not updated
   1. System prints error message

7.a. Doctors notes are not complete
   1. System notes blanks in results and fills in information as it comes in

#.a. At any time user chooses to exit program
   1. System saves information needed and returns to main screen

Details

Level	N/A
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Visit PatientDiagnosisOrder TestsPatient PrescribeInitial Visit (Record Info)Patient Lookup
Post-conditions	N/A
Author	N/A
Assumptions	N/A

Requirements

Doctor-to-Patient

Patient - User Interface

Patient Lookup

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. Doctor enters a patient name into search bar.
2. Doctor clicks on patient name.
3. Patient information is displayed.
4. Doctor exits window.

Extensions

1.a. Patient has no record in database
   1. System displays no results.
   2. Doctor may search a new name

Details

Level	user goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Login/Credential Verification
Post-conditions	N/A
Author	N/A
Assumptions	N/A

Requirements

Requirements

Look up

Patient Database

Simple to use UI for Doctor

Results must display quickly

Patient Prescribe

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. Doctor determines prescription
2. Electronic prescription is created
3. Doctor stores details of prescription on patients file
4. System stores electronic prescription
5. Prescription is added to patients file
6. System prints out receipt or sends to corresponding pharmacy

Extensions

1.a. Patient does not receive prescription from diagnosis
   1. A prescription is not created

2.a. Electronic prescription does not generate
   1. Doctor closes system and restarts it
   2. Doctor reenters credentials and tries again
      2.1. If system still refuses to work, prior system state is loaded and necessary departments are notified

3.a. Patients file won't open
   1. Doctor closes system and restarts it
   2. If system still doesn't work notify necessary departments
      2.1. Store data on paper until system works correctly

4.a. System is unable to store electronic prescription correctly
   1. System state is saved
   2. Doctor is notified of error
   3. Doctor notifies correct department
      3.1. Data is saved on paper until system can save correctly

5.a. System stores patient data in wrong patient file

5.a. System stores patient data in wrong patient file
1. System alerts doctor and IT of error
2. Data is saved but removed from incorrect file
3. Doctor reenters data or saves it on paper

6.a. Prescription is unable to be shared with pharmacy
1. System lets doctor know error
2. System restarts but saves current state
   2.1. Doctor's office manually calls in prescription if system is down for time being

#.a. Anytime system fails
1. Data is stored on paper to later be input to the system
2. System is restart by IT
3. System reconstructs to prior state
   3.1. If system detects anomalies in system, sends message to doctor and corresponding

Details

Level	user goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Patient Prescribe
Post-conditions	N/A
Author	N/A
Assumptions	N/A

Requirements

Requirements

Different fields for different types of patient visits

Clinical Test

Orders

Access

Data consistency

Easy file sharing

Population health

Population Health

This use case calculates population health parameters for reporting to government agencies and for statistical purposes.

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider, Government Agency
Suppporting Actors	

Scenarios

Scenario

1. User clicks on the population health parameter list
2. System displays a list of population health parameters for which the user can look for.
   - 2.1. Parameters include: Number of patients presenting with any particular condition, dates with a higher than normal number of patient visits, demographics of patients, vital signs, and test results for the population of patients.
3. System calculates results based on the parameters provided.
4. System displays results
   - 4.1. User can choose to adjust display options such as date ranges or graph coordinates.
   - 4.2. System will modify results to accommodate this
5. System allows for users to download/ save a copy of the results

Extensions

- 3.a. System fails to calculate results based on the parameters provided
  1. System prints an error message and returns to population health parameter list
- 4.a. System fails to display results
  1. System prints an error message and returns to the population health parameter
- 5.a. System fails to download correctly
  1. System prints an error.
- #.a. At any time the user can choose to leave this panel
  1. System will exit this panel without any data loss

Details

Level	N/A
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Login/Credential Verification
Post-conditions	N/A
Author	Sam Shenoi
Assumptions	N/A

Requirements

Population health

All data is de-identified in order to protect patient privacy

Provider Notes

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider
Suppporting Actors	

Request patient information from another doctor

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider, Other Healthcare providers
Suppporting Actors	

Scenarios

Scenario

1. Request for Doctor's name or id.
2. Enters correct information.
3. Display and ask whether the doctor the user are trying to access is correct.
4. User approves.
5. System retrieves the doctor information.
6. System parses and display readable information to user.

Extensions

2.a. user enters incorrect information
   1. Reply with an error message and to try again.
   2. User enters correct information.
   3. Go to 3 in main scenario.

4.a. user declines
   1. Take user back to the number 1 of the main scenario

5.a. an error occurs retrieving the information
   1. Send error message to technician.
   2. Tell user to try again later.

Details

Details

Level	user goals
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Login/Credential Verification
Post-conditions	N/A
Author	N/A
Assumptions	N/A

Requirements

Different fields for different types of patient visits

Doctor-to-Patient

Doctor Database

Look up

Access

Easy file sharing

Schedule Patient

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. Patient asks to schedule appointment
2. Staff asks patient for credentials
3. Patient provides correct credentials to staff
4. Staff asks patient which time is convenient for appointment
5. Patient gives staff valid time for appointment
6. Staff enters new appointment into schedule at requested time
7. Schedule updated with new appointment

Extensions

2.a. This is patient's first visit
   1. Proceed with first visit protocol

3.a. Patient provides incorrect credentials
   1. If patient does not have account, patient signs up for one
   2. Patient tries again until correct credentials are provided

5.a. Appointment time given is invalid
   1. Patient is prompted for a new, available time until correct time is provided.

Details

Details

Level	User goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A
Post-conditions	Patient appointment added to schedule
Author	N/A
Assumptions	N/A

Requirements

Different fields for different types of patient visits

Doctor Database

Time sheet

insurance code

Patient - User Interface

Input

Signing up for patient

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider, Patient
Suppporting Actors	

Scenarios

Scenario

1. Patient arrives to sign up page.
2. Request patient's full name, email, DOB, sex, height, and weight.
3. Patient enters correct information.
4. Then request for patient contact number, marital status, and address.
5. Patient continues to enter correct information.
6. Then request for patient emergency contact information.
7. Patient enters emergency contact information.
8. Ask whether patient is taking any medication.
9. Patient answers no.
10. Ask whether patient has any current or past health conditions.
11. Patient answer no.
12. Request patient to make password.
13. Patient creates password.
14. Create patient id number.
15. Patient information is pushed onto the patient database.
16. Patient is then fully signed up.
17. Patient is then met with a sign-up completion window that shows their id.

Extensions

3.a. Patient enters invalid email address
   1. The system request patient to enter a correct email
   2. Patient enters correct email

9.a. Patient says yes
   1. Request medication patient is taking
   2. Patient enters medication

2. Patient enters medication

11.a. Patient says yes

1. Request for patients past or current health conditions
2. Patient enters past or current health conditions

Details

Level	User Goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	N/A
Post-conditions	N/A
Author	N/A
Assumptions	N/A

Requirements

Different fields for different types of patient visits

Patient - User Interface

Access

Input

Data consistency

Easy file sharing

View Schedule

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider, Patient
Suppporting Actors	

Scenarios

Scenario

1. Ask whether user is a doctor or patient.
2. User enters type.
3. System then prompt user to enter id number and password.
4. User enters correct credentials
5. System fetches schedule information
6. Display schedule information.

Extensions

4.a. User enters wrong credentials
   1. Prompt user to enter credentials again.
   2. User enters correct credentials
   3. Go to 5 in main scenario.

5.a. user is a doctor.
   1. Doctor information is fetched.
   2. Doctor schedule and information is displayed.

5.b. user is a patient
   1. Patient information is fetched.
   2. Patient schedule and information is displayed

Details

Details

Level	user goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Login/Credential VerificationSchedule Patient
Post-conditions	N/A
Author	N/A
Assumptions	N/A

Requirements

Different fields for different types of patient visits

Doctor Database

Time sheet

Patient - User Interface

Access

Data consistency

Easy file sharing

View Tests

This use case determines how a patient or a provider can view test results that were previously conducted.

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider, Patient
Suppporting Actors	

Scenarios

Scenario

1. User clicks on view tests.
2. System displays list of test dates
3. User selects test date
4. System displays all of the test results of all tests associated with that test date
5. User unselects test date
6. System returns to previous state

Extensions

3.a. User selects view test results over time
   1. System displays a graph of each type of test results over time
   2. User decides to minimize the range of test results viewed
      2.1. System redraws graph to accommodate this

#.a. At any time, user decides to exit test result panel
   1. System gracefully leaves panel without doing anything to the data

Details

Details

Level	N/A
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Login/Credential VerificationOrder Tests
Post-conditions	N/A
Author	N/A
Assumptions	N/A

Requirements

Patient - User Interface

Orders

Look up

Data consistency

Visit Patient

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Patient, Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. Doctor clicks to open up a window for recording the patient's data and condition.
2. Doctor asks the patient about his/her condition.
3. Doctor records information in the open window.
4. Doctor saves the file.
5. Doctor exits the window.

Extensions

3.a. Doctor exits window while recording data
   1. Doctor will be prompted to save the file before exiting

4.a. File fails to save correctly
   1. Information remains unchanged
   2. Doctor may attempt to save again

Details

Details

Level	user goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Initial Visit (Record Info)Schedule PatientLogin/Credential Verification
Post-conditions	Record of visit is saved. Doctor is aware of the patient’s condition and can diagnose accurately.
Author	N/A
Assumptions	N/A

Requirements

Window with fields for patient data followed by text boxes to enter information

Different fields for different types of patient visits

Doctor-to-Patient

Time sheet

Exporting data

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. User will select the information that they wish to export
2. User will click the export button
3. User will select the type of file that they wish to have produced
4. User will select the OK button
5. User will select where they would like the file to be stored
6. User will select the OK button
7. The file will be exported to the specified location

Extensions

3.a. Desired file type is not available
  1. User will select cancel

5.a. Desired file location cannot be found
  1. User will select cancel

7.a. Error is saving the file
  1. User will be notified of the error
  2. System will not have saved the file to the location

Details

Level	user goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Login/Credential VerificationInitial Visit (Record Info)Provider Notes
Post-conditions	Desired file will be exported to the specified location
Author	Jordan Hurt
Assumptions	N/A

Requirements

Patient Database

Data consistency

Easy file sharing

Referral Letter

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider, Other Healthcare providers
Suppporting Actors	

Scenarios

Scenario

1. Provider will select the "Referral" Button
2. Provider will select the reason for referral
3. Provider will select Continue
4. Provider will select the provider the patient is being referred to
5. Provider will select continue
6. Provider will select continue
7. Provider will enter a name for the file
8. Provider will select the location to save the file
9. Provider will select the type of file that they want generated
10. Provider will select "Create"

Extensions

2.a. Multiple reasons for referral
   1. Provider selects all reasons for referral

4.a. Provider desired is not an option
   1. Provider selects other
   2. Provider types in the name of the provider into the system

#.a. Provider wants to stop creating the file
   1. Provider selects cancel button

Details

Level	user goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Preformated referral letters loaded into the system
Post-conditions	Generate file for referral letter
Author	N/A
Assumptions	N/A

Requirements

Patient Database

Access

Data consistency

Easy file sharing

Provider Notes

Information

Rank	Unspecified
ID	
Status	Unspecified
Justification	
Primary Actors	Health Care Provider
Suppporting Actors	

Scenarios

Scenario

1. Provider selects the Patient Visit tab
2. Provider enters in the chief complaint into the box labeled "Chief Complaint"
3. Provider enters in patient's vitals into the appropriate input boxes
4. Provider enters in their notes from the physical exam into the input box labeled "Physical Exam Notes"
5. Provider enters in their recommendations for the patient's next steps into the "Next Steps" input box

Extensions

2.a. If a complaint is not a reason for the visit
  1. Enter in the reason for the visit into the box labeled "Chief Complaint"

4.a. If no physical exam is need
  1. Enter in the conversations had between the patient and the provider

#.a. After completing step 1, all other steps maybe done in any order

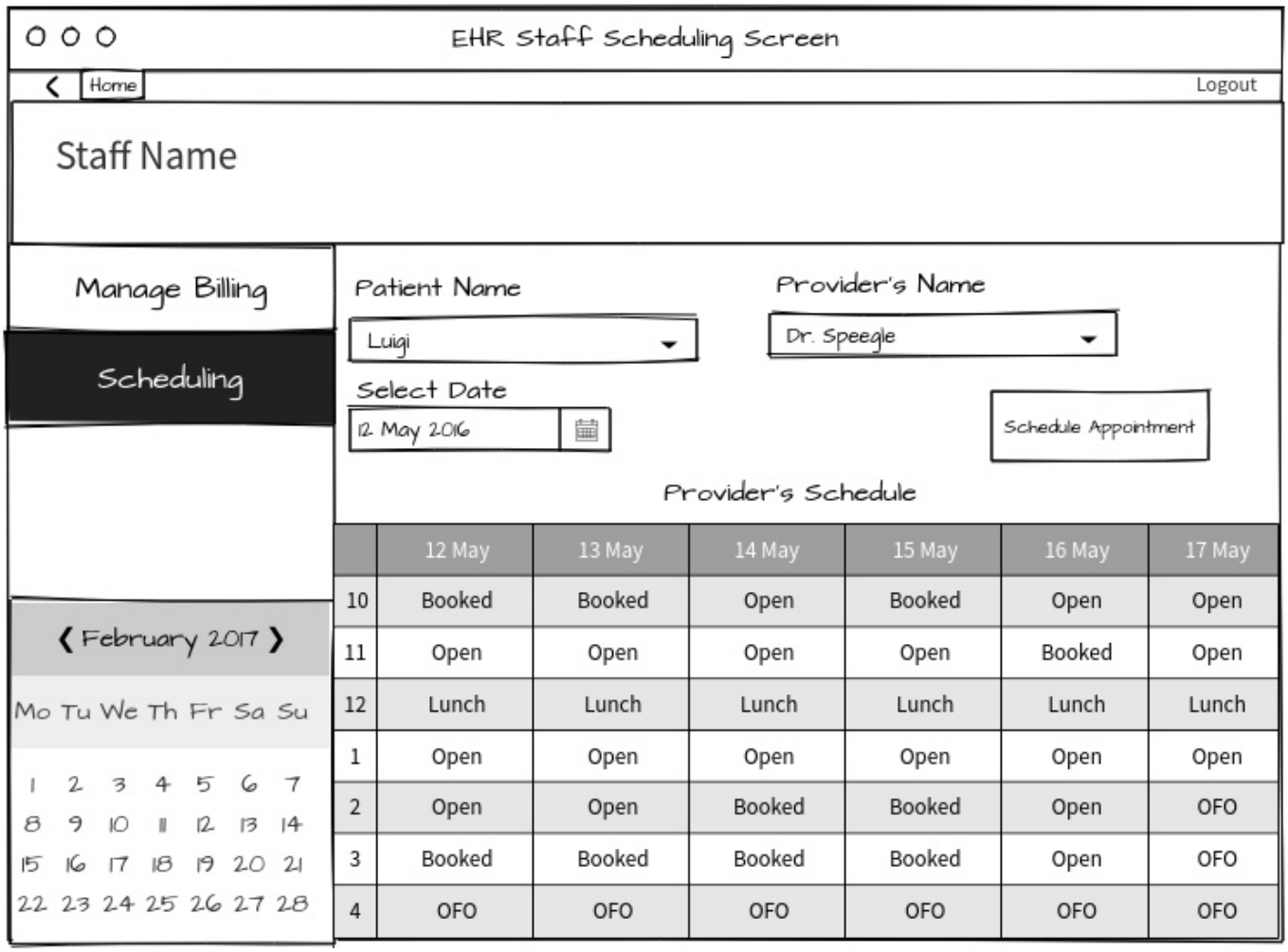
Details

Level	user goal
Complexity	N/A
Use Case Status	N/A
Implementation Status	N/A
Preconditions	Provider already is within the paitent's profile
Post-conditions	Information will be saved in the paitnet's file
Author	N/A
Assumptions	N/A

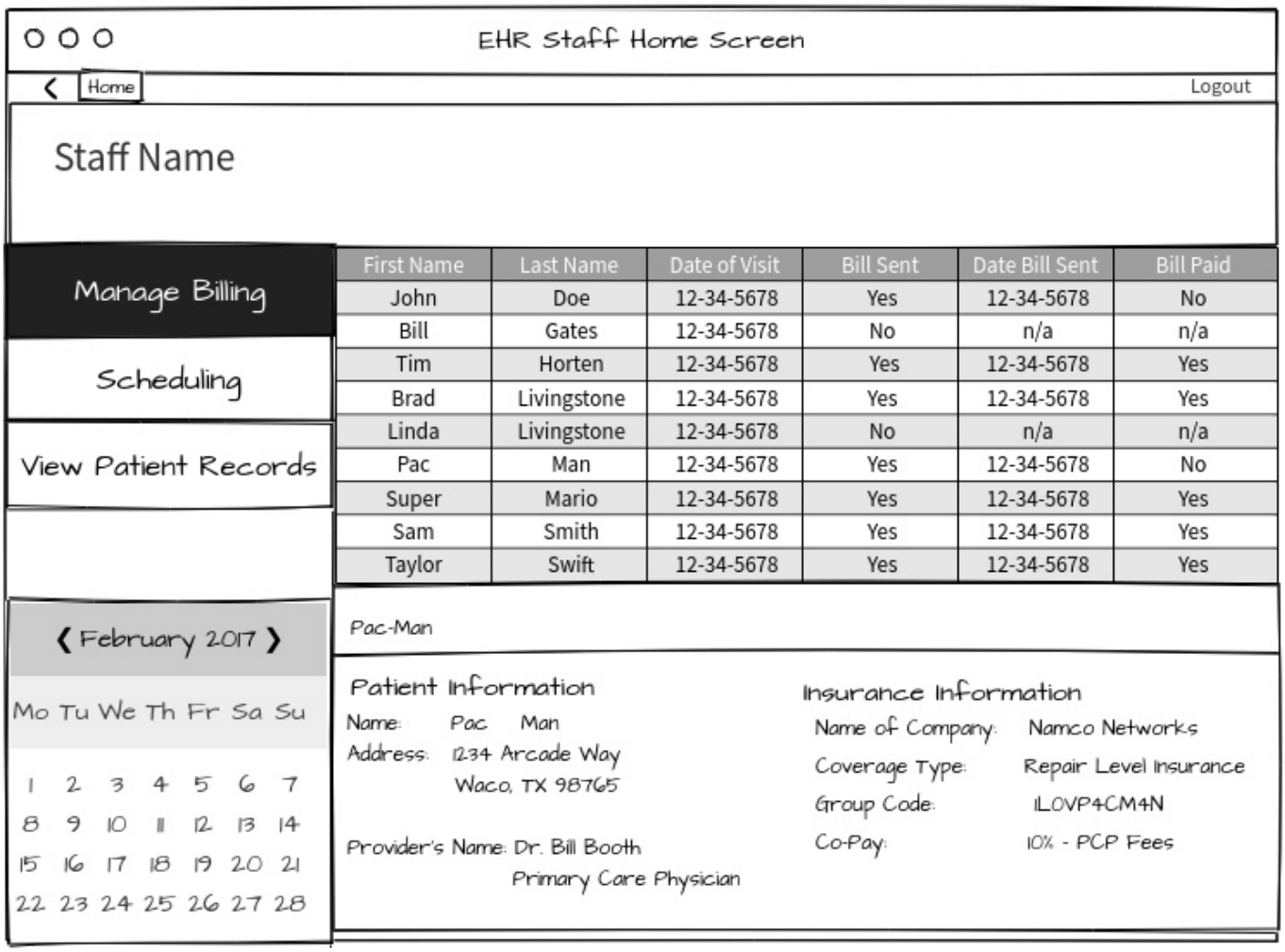
Requirements

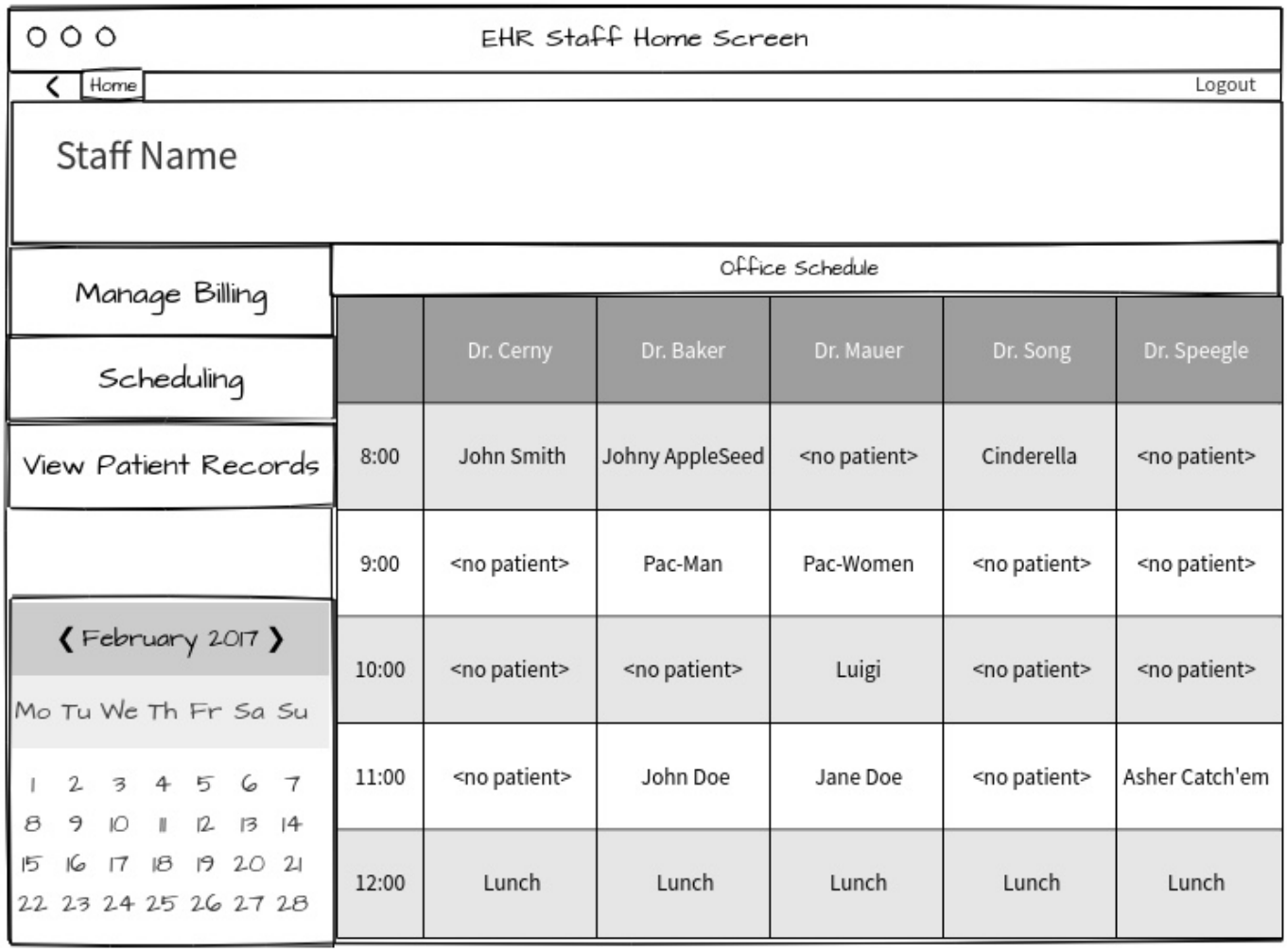
Input

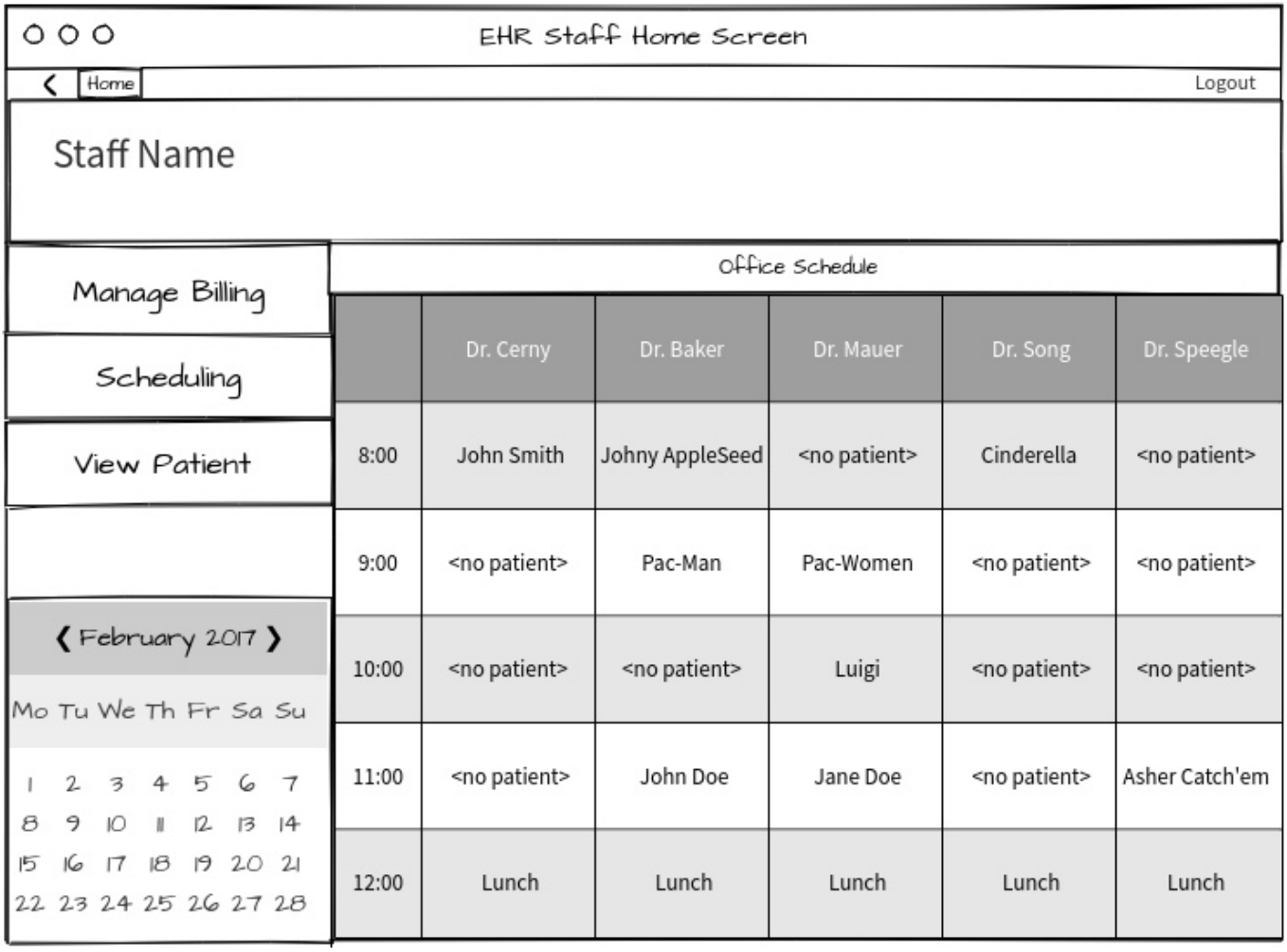
Easy file sharing

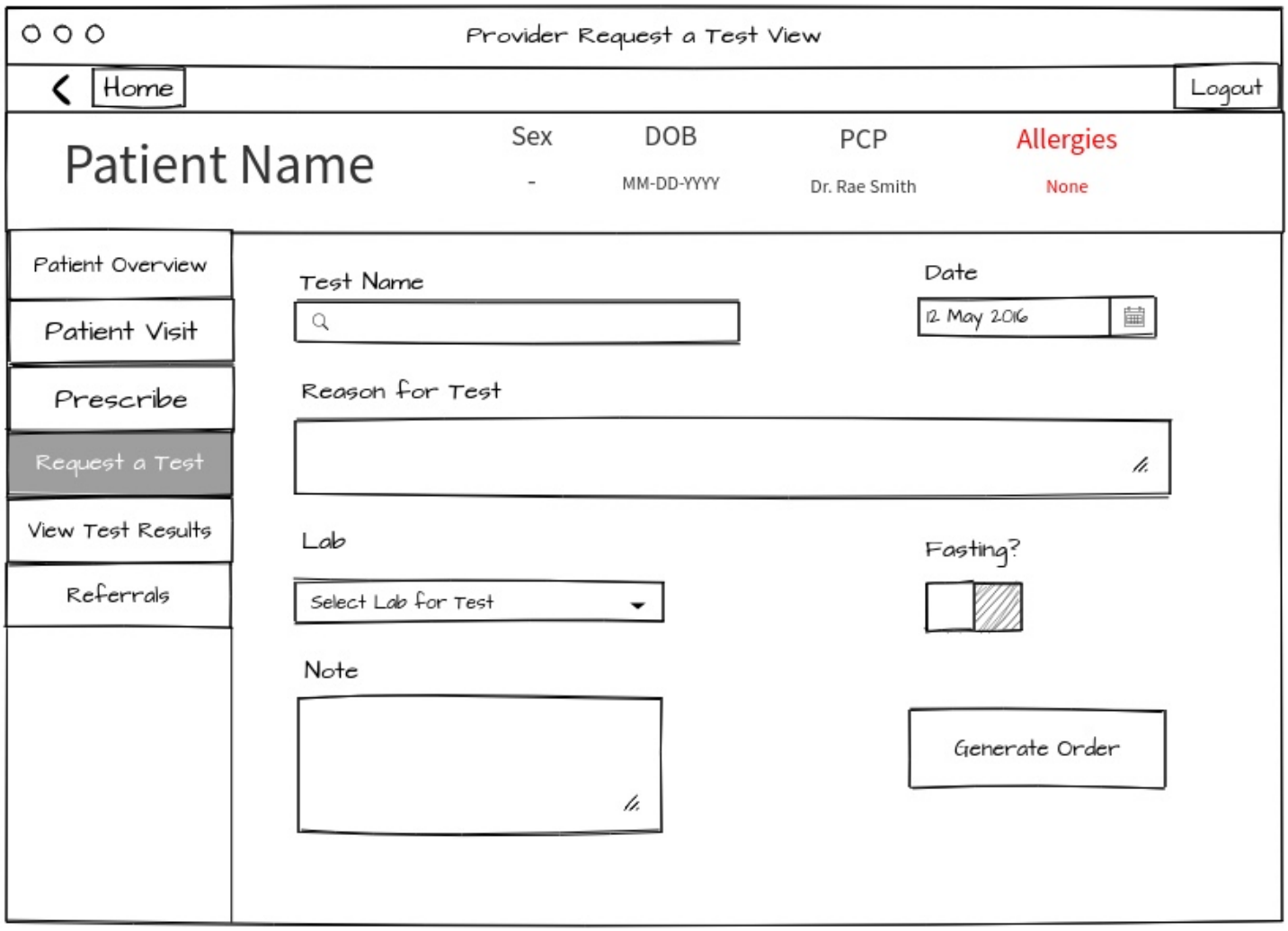


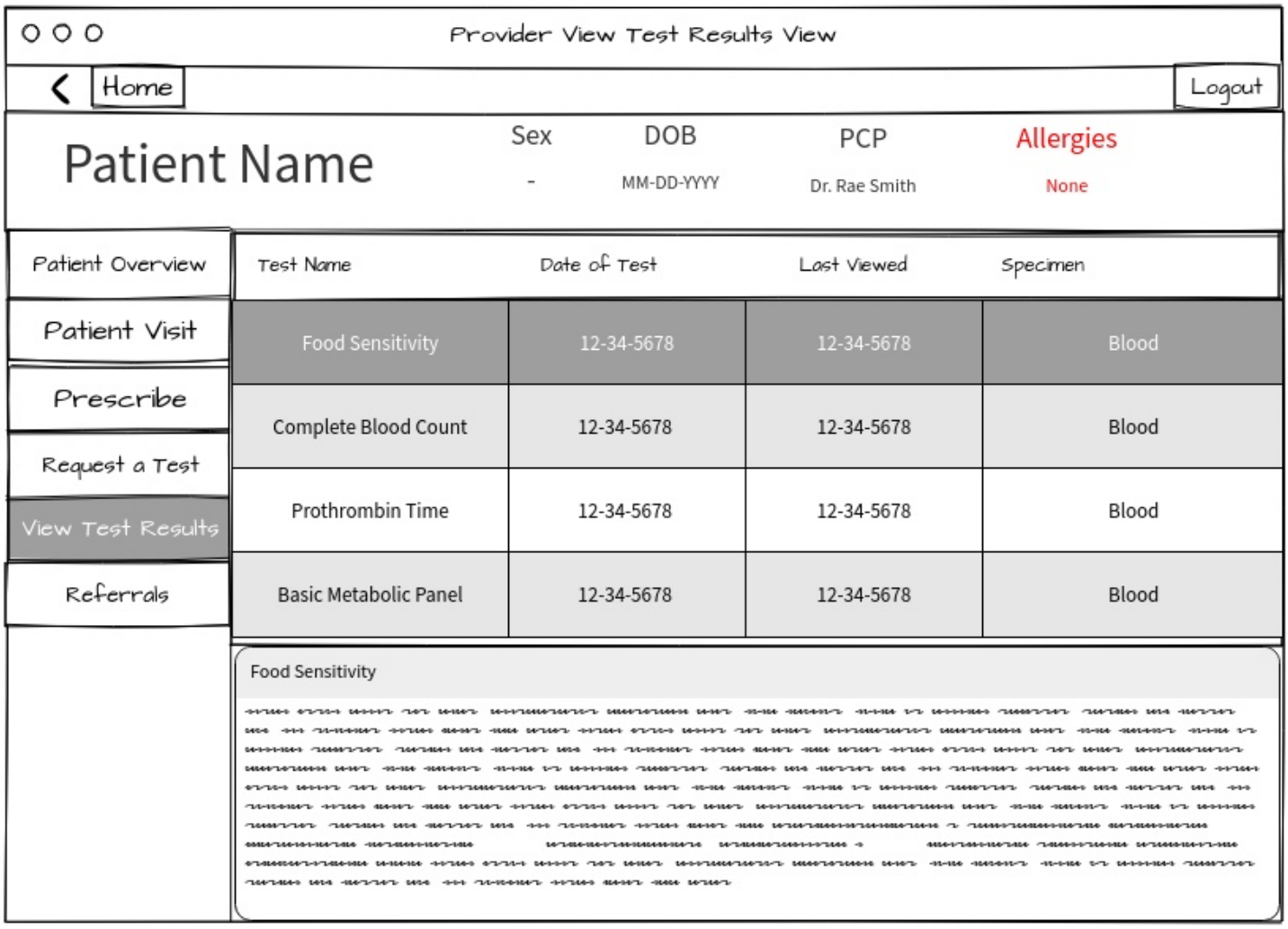
	12 May	13 May	14 May	15 May	16 May	17 May
10	Booked	Booked	Open	Booked	Open	Open
11	Open	Open	Open	Open	Booked	Open
12	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1	Open	Open	Open	Open	Open	Open
2	Open	Open	Booked	Booked	Open	OFO
3	Booked	Booked	Booked	Booked	Open	OFO
4	OFO	OFO	OFO	OFO	OFO	OFO

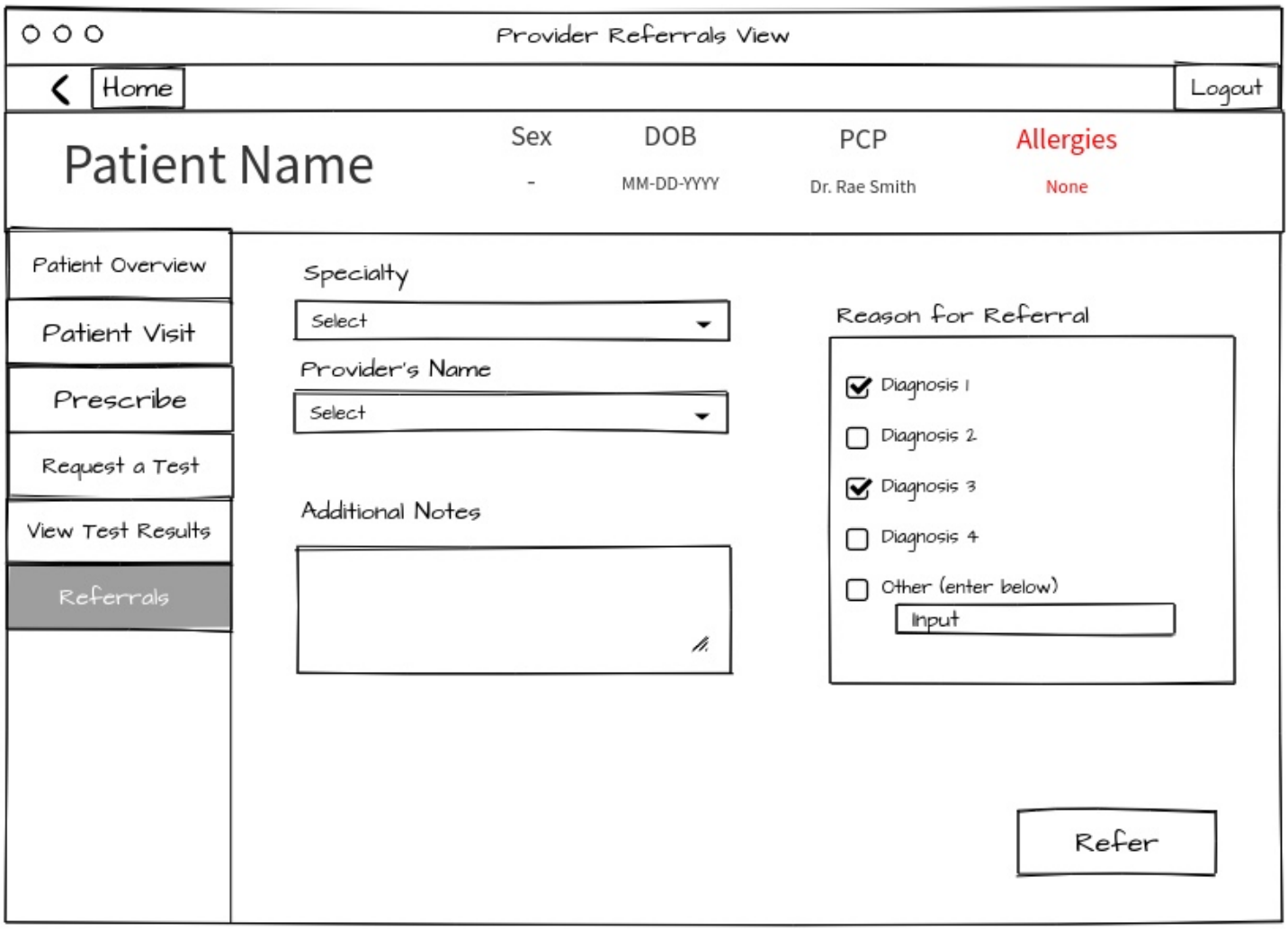

EHR Staff Home Screen
Home
Logout
Staff Name
Manage Billing
Scheduling
View Patient Records
First Name
Last Name
Date of Visit
Bill Sent
Date Bill Sent
Bill Paid
John
Doe
12-34-5678
Yes
12-34-5678
No
Bill
Gates
12-34-5678
No
n/a
n/a
Tim
Horten
12-34-5678
Yes
12-34-5678
Yes
Brad
Livingstone
12-34-5678
Yes
12-34-5678
Yes
Linda
Livingstone
12-34-5678
No
n/a
n/a
Pac
Man
12-34-5678
Yes
12-34-5678
No
Super
Mario
12-34-5678
Yes
12-34-5678
Yes
Sam
Smith
12-34-5678
Yes
12-34-5678
Yes
Taylor
Swift
12-34-5678
Yes
12-34-5678
Yes
February 2017
Mo Tu We Th Fr Sa Su
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
Pac-Man
Patient Information
Name: Pac Man
Address: 1234 Arcade Way
Waco, TX 98765
Provider's Name: Dr. Bill Booth
Primary Care Physician
Insurance Information
Name of Company: Namco Networks
Coverage Type: Repair Level Insurance
Group Code: ILOVP4CM4N
Co-Pay: 10% - PCP Fees

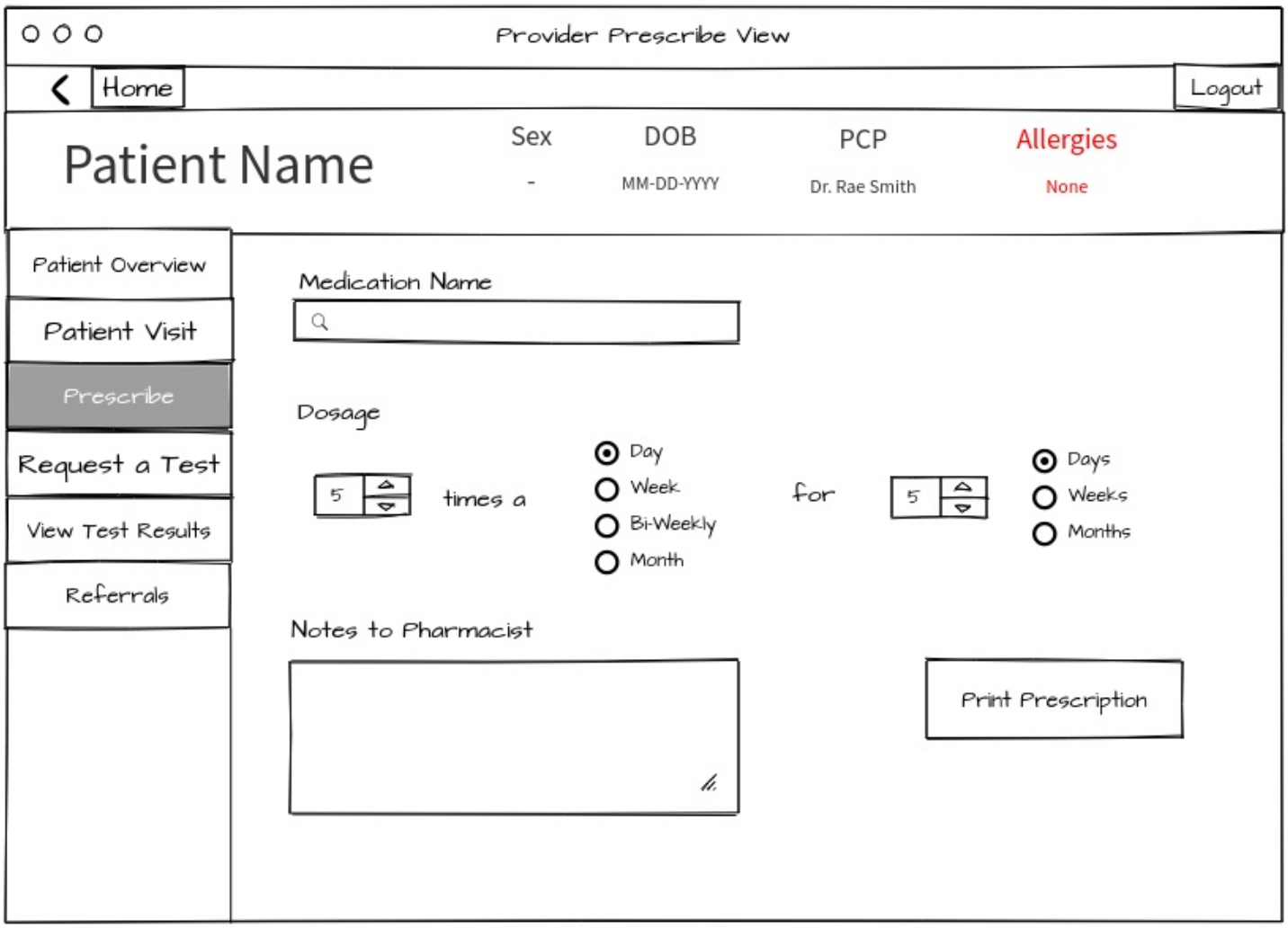

EHR Staff Home Screen
Home
Logout
Staff Name
Manage Billing
Scheduling
View Patient Records
Office Schedule
Dr. Cerny
Dr. Baker
Dr. Mauer
Dr. Song
Dr. Speegle
8:00
John Smith
Johny AppleSeed
<no patient>
Cinderella
<no patient>
9:00
<no patient>
Pac-Man
Pac-Women
<no patient>
<no patient>
10:00
<no patient>
<no patient>
Luigi
<no patient>
<no patient>
11:00
<no patient>
John Doe
Jane Doe
<no patient>
Asher Catch'em
12:00
Lunch
Lunch
Lunch
Lunch
Lunch
February 2017
Mo Tu We Th Fr Sa Su
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28

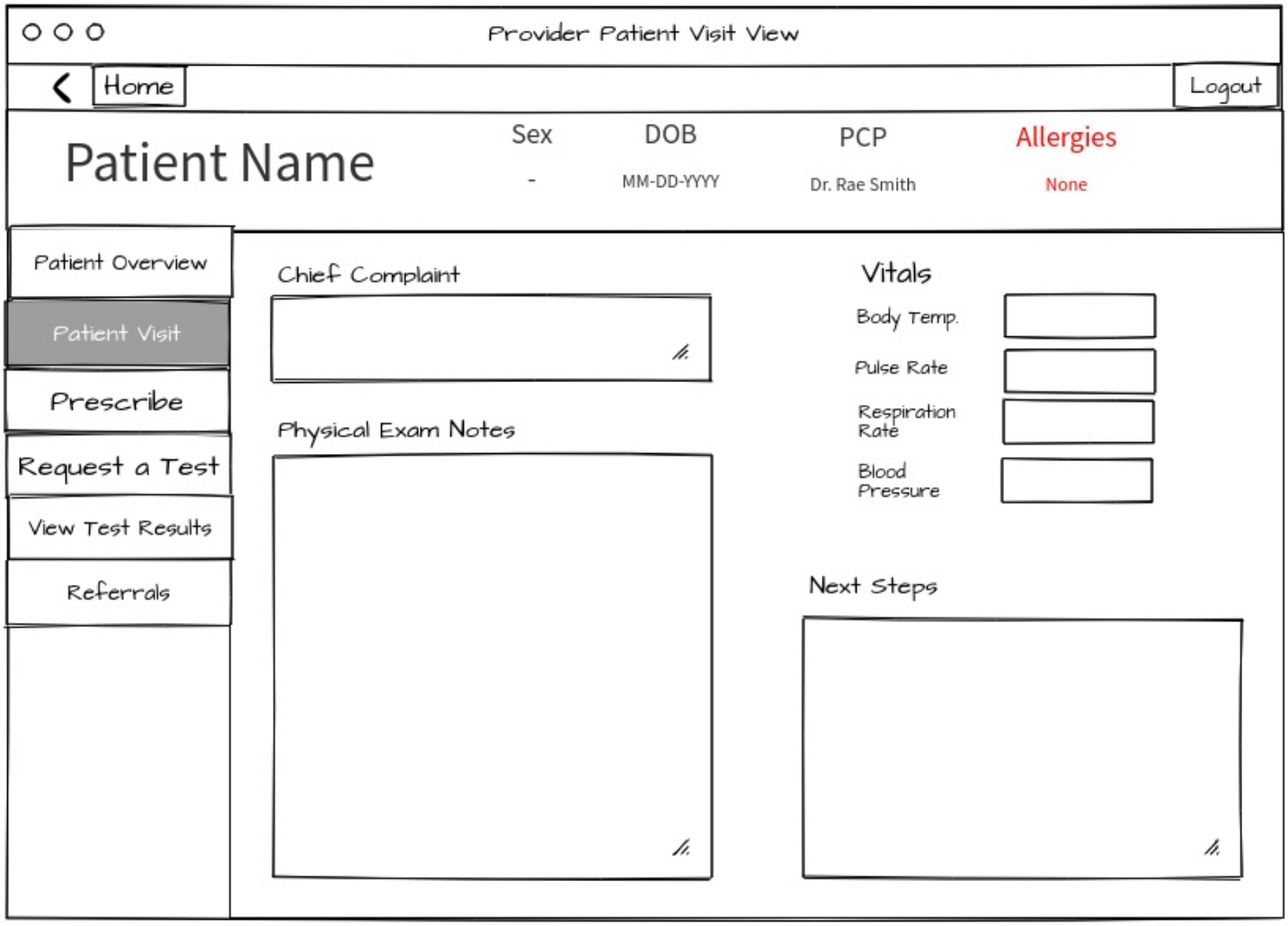

EHR Staff Home Screen
Home
Logout
Staff Name
Manage Billing
Scheduling
View Patient
Office Schedule
Dr. Cerny
Dr. Baker
Dr. Mauer
Dr. Song
Dr. Speegle
8:00
John Smith
Johny AppleSeed
<no patient>
Cinderella
<no patient>
9:00
<no patient>
Pac-Man
Pac-Women
<no patient>
<no patient>
10:00
<no patient>
<no patient>
Luigi
<no patient>
<no patient>
11:00
<no patient>
John Doe
Jane Doe
<no patient>
Asher Catch'em
12:00
Lunch
Lunch
Lunch
Lunch
Lunch
February 2017
Mo Tu We Th Fr Sa Su
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28


Provider Request a Test View
Home
Logout
Patient Name
Sex
-
DOB
MM-DD-YYYY
PCP
Dr. Rae Smith
Allergies
None
Patient Overview
Patient Visit
Prescribe
Request a Test
View Test Results
Referrals
Test Name
Date
12 May 2016
Reason for Test
Lab
Select Lab for Test
Fasting?
Note
Generate Order


Provider View Test Results View
Home
Logout
Patient Name
Sex
-
DOB
MM-DD-YYYY
PCP
Dr. Rae Smith
Allergies
None
Patient Overview
Patient Visit
Prescribe
Request a Test
View Test Results
Referrals
Test Name
Date of Test
Last Viewed
Specimen
Food Sensitivity
12-34-5678
12-34-5678
Blood
Complete Blood Count
12-34-5678
12-34-5678
Blood
Prothrombin Time
12-34-5678
12-34-5678
Blood
Basic Metabolic Panel
12-34-5678
12-34-5678
Blood
Food Sensitivity


Provider Referrals View
Home
Logout
Patient Name
Sex
-
DOB
MM-DD-YYYY
PCP
Dr. Rae Smith
Allergies
None
Patient Overview
Patient Visit
Prescribe
Request a Test
View Test Results
Referrals
Specialty
Select
Provider's Name
Select
Additional Notes
Reason for Referral
Diagnosis 1
Diagnosis 2
Diagnosis 3
Diagnosis 4
Other (enter below)
Input
Refer


Provider Prescribe View
Home
Logout
Patient Name
Sex
-
DOB
MM-DD-YYYY
PCP
Dr. Rae Smith
Allergies
None
Patient Overview
Patient Visit
Prescribe
Request a Test
View Test Results
Referrals
Medication Name
Dosage
5
times a
Day
Week
Bi-Weekly
Month
for
5
Days
Weeks
Months
Notes to Pharmacist
Print Prescription


Provider Patient Visit View
Home
Logout
Patient Name
Sex
-
DOB
MM-DD-YYYY
PCP
Dr. Rae Smith
Allergies
None
Patient Overview
Patient Visit
Prescribe
Request a Test
View Test Results
Referrals
Chief Complaint
Physical Exam Notes
Vitals
Body Temp.
Pulse Rate
Respiration Rate
Blood Pressure
Next Steps

Provider Patient Overview View

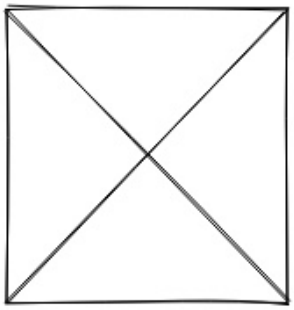
Home

Logout

Patient Name

Sex	DOB	PCP	Allergies
-	MM-DD-YYYY	Dr. Rae Smith	None

- Patient Overview
- Patient Visit
- Prescribe
- Request a Test
- View Test Results
- Referrals



Diagnosis

Current Medications

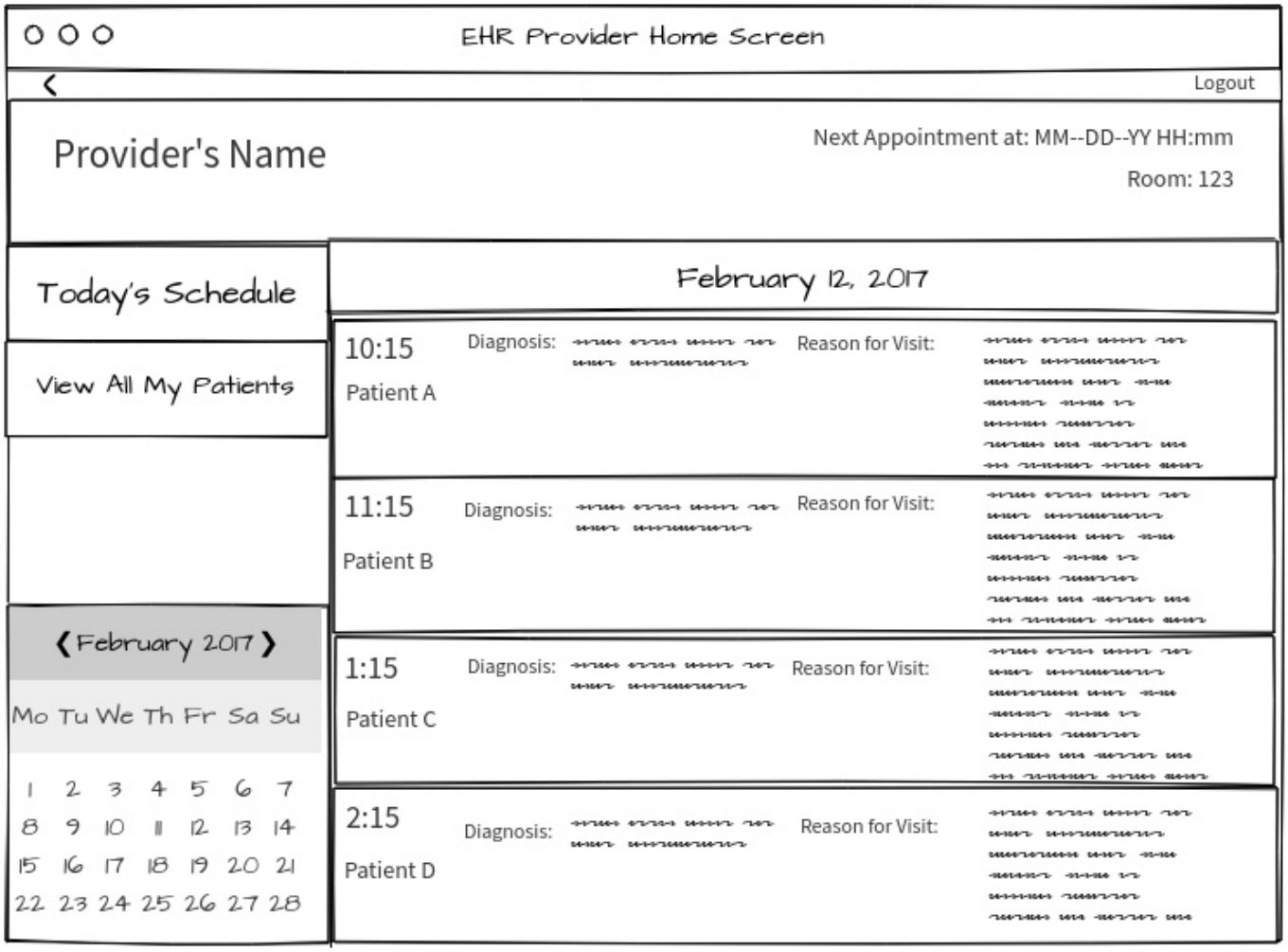
- Item 1
- Item 2
- Item 3
- Item 4

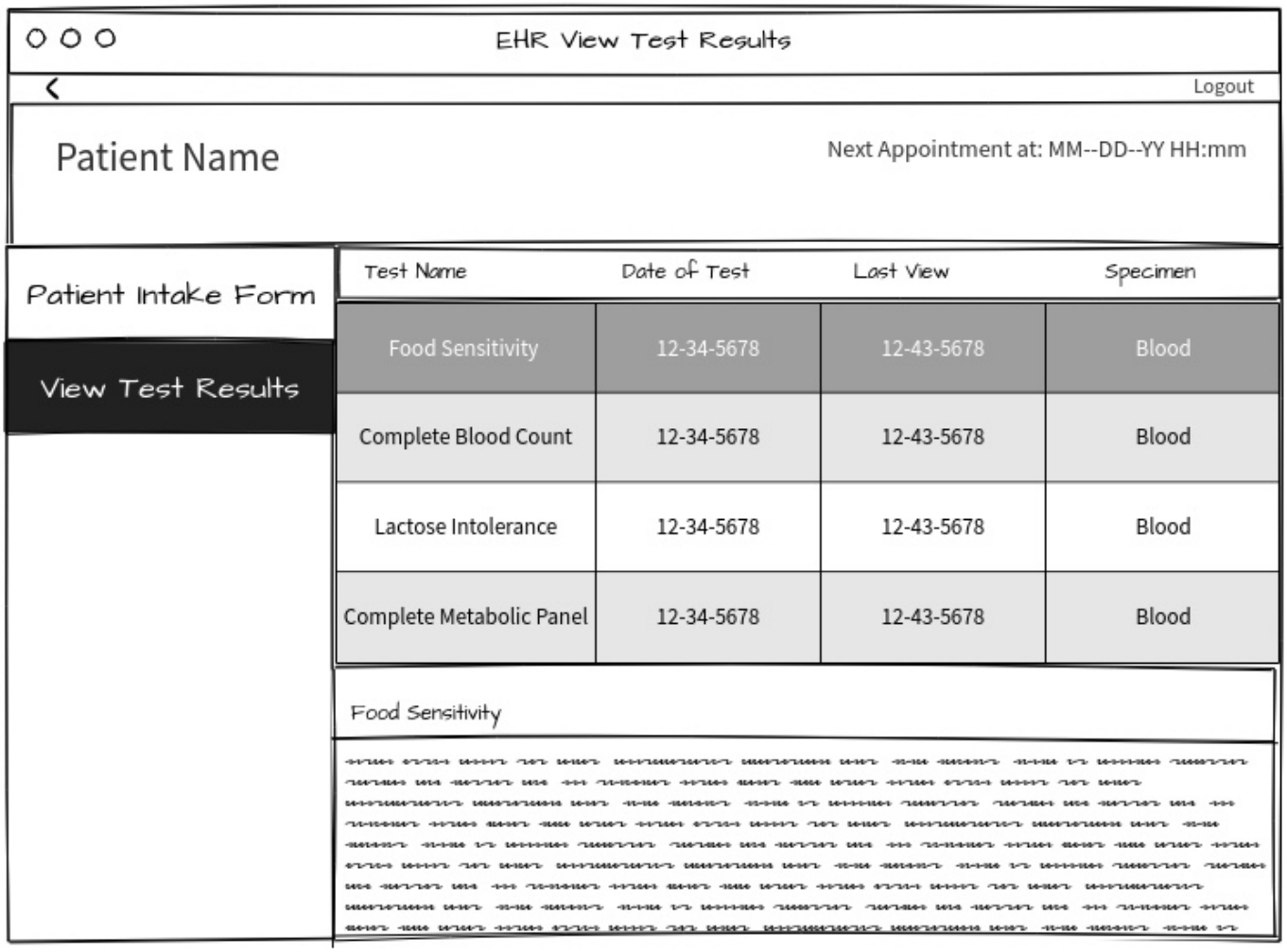
Next Appointment

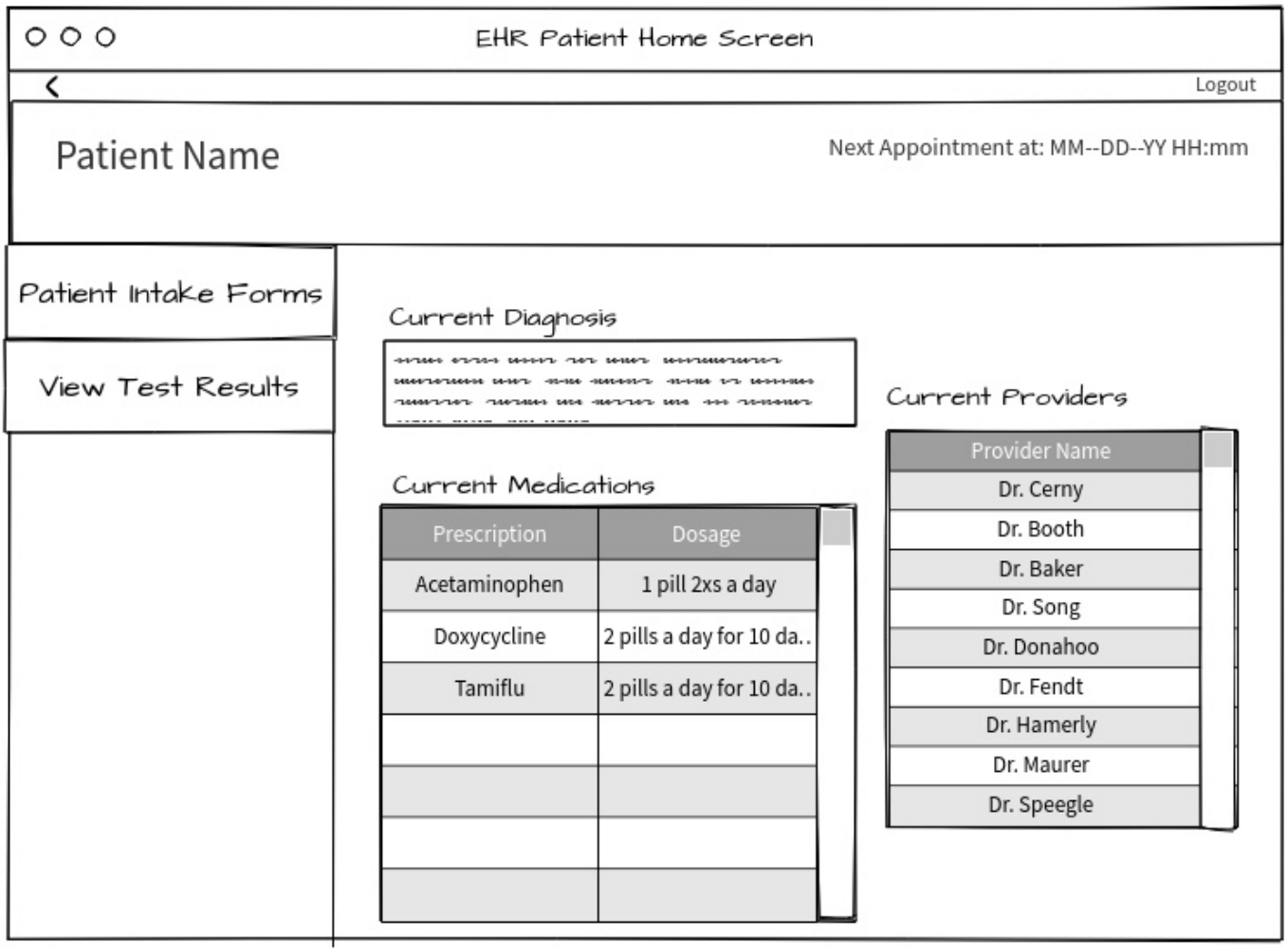
Tests and Results

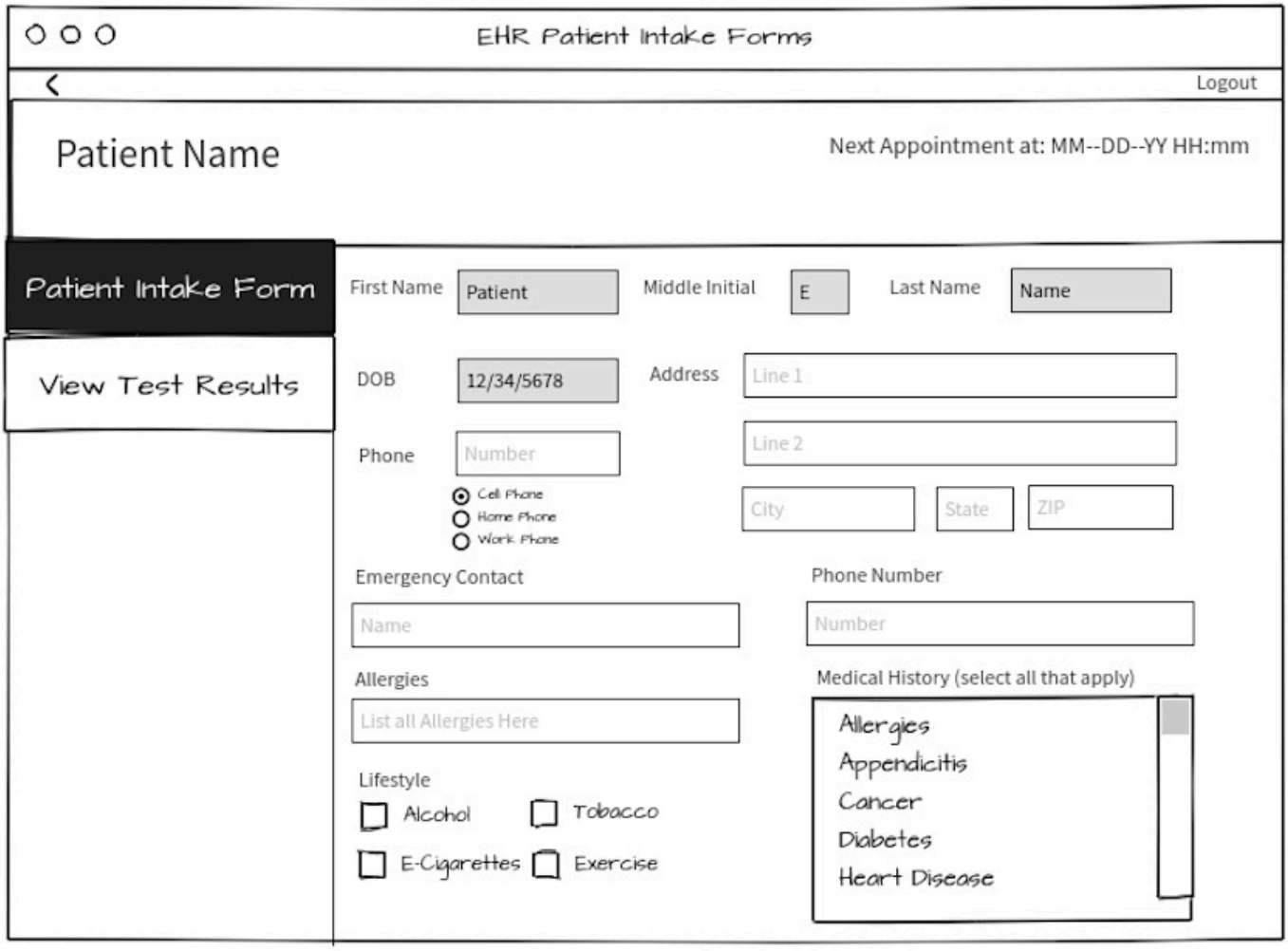
- Item 1
- Item 2
- Item 3
- Item 4

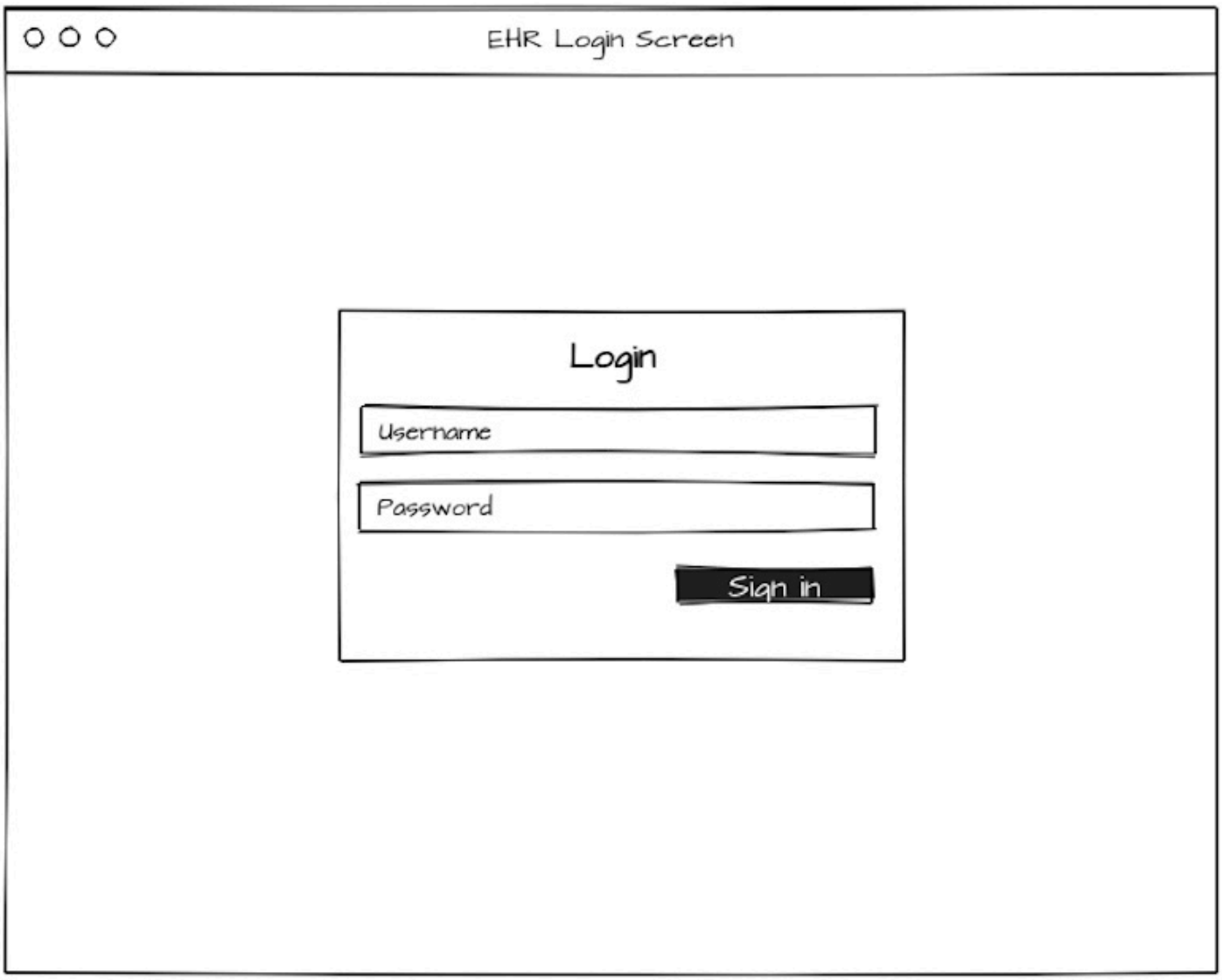
Patient History

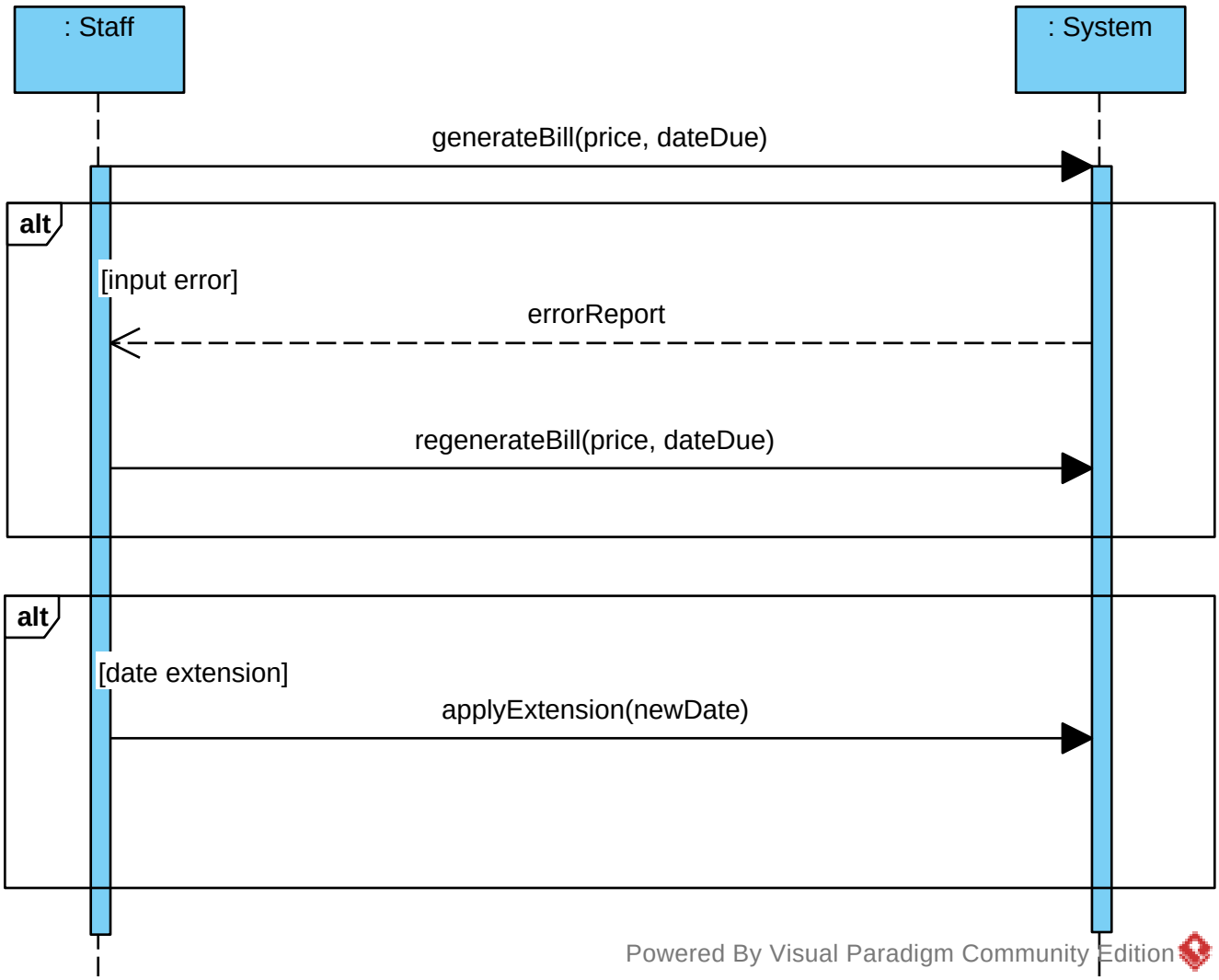

EHR Provider Home Screen
Logout
Provider's Name
Next Appointment at: MM--DD--YY HH:mm
Room: 123
Today's Schedule
View All My Patients
February 12, 2017
10:15
Patient A
Diagnosis:
Reason for Visit:
11:15
Patient B
Diagnosis:
Reason for Visit:
1:15
Patient C
Diagnosis:
Reason for Visit:
2:15
Patient D
Diagnosis:
Reason for Visit:
February 2017
Mo Tu We Th Fr Sa Su
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28

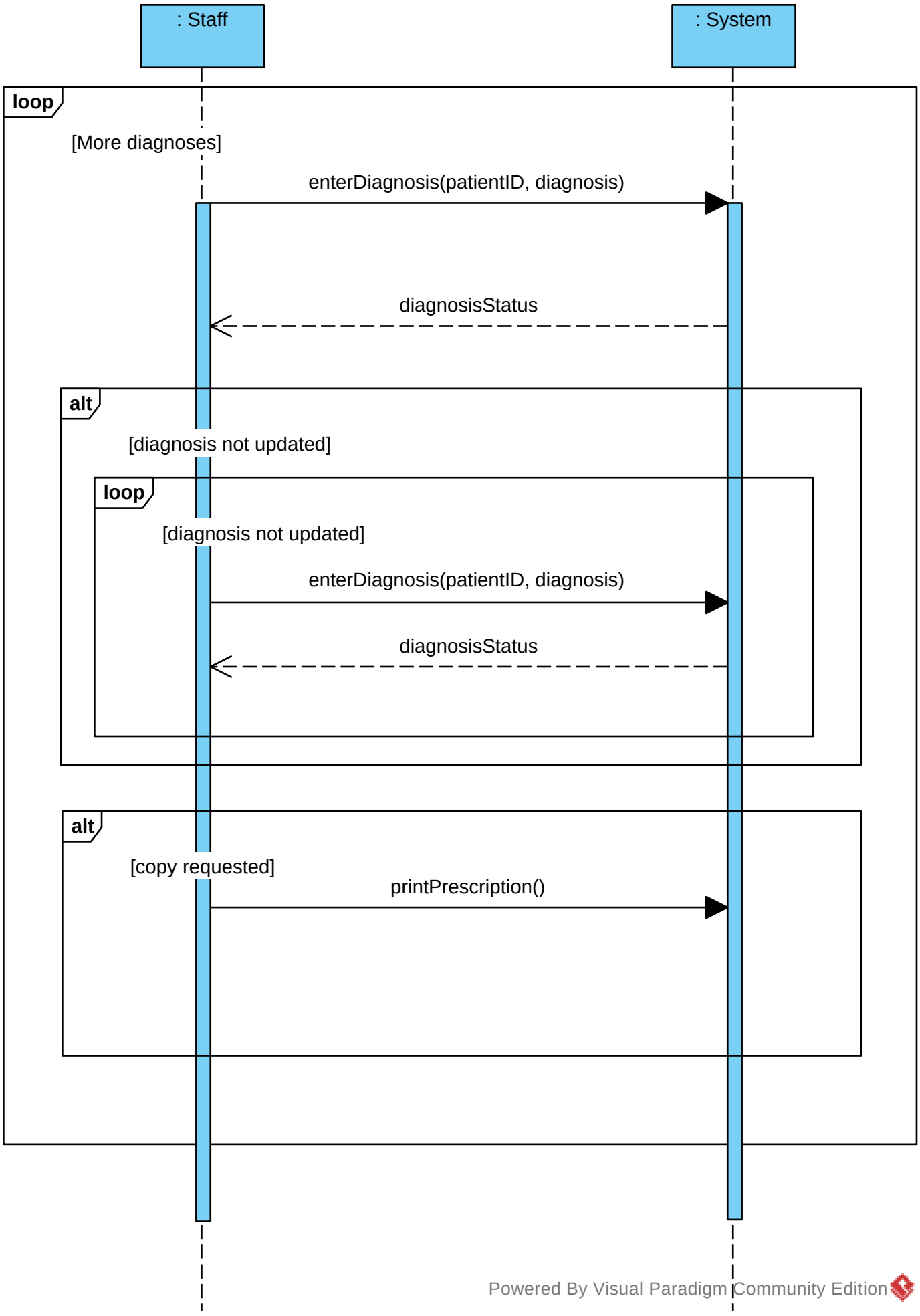

EHR View Test Results
Logout
Patient Name
Next Appointment at: MM--DD--YY HH:mm
Patient Intake Form
View Test Results
Test Name
Date of Test
Last View
Specimen
Food Sensitivity
12-34-5678
12-43-5678
Blood
Complete Blood Count
12-34-5678
12-43-5678
Blood
Lactose Intolerance
12-34-5678
12-43-5678
Blood
Complete Metabolic Panel
12-34-5678
12-43-5678
Blood
Food Sensitivity

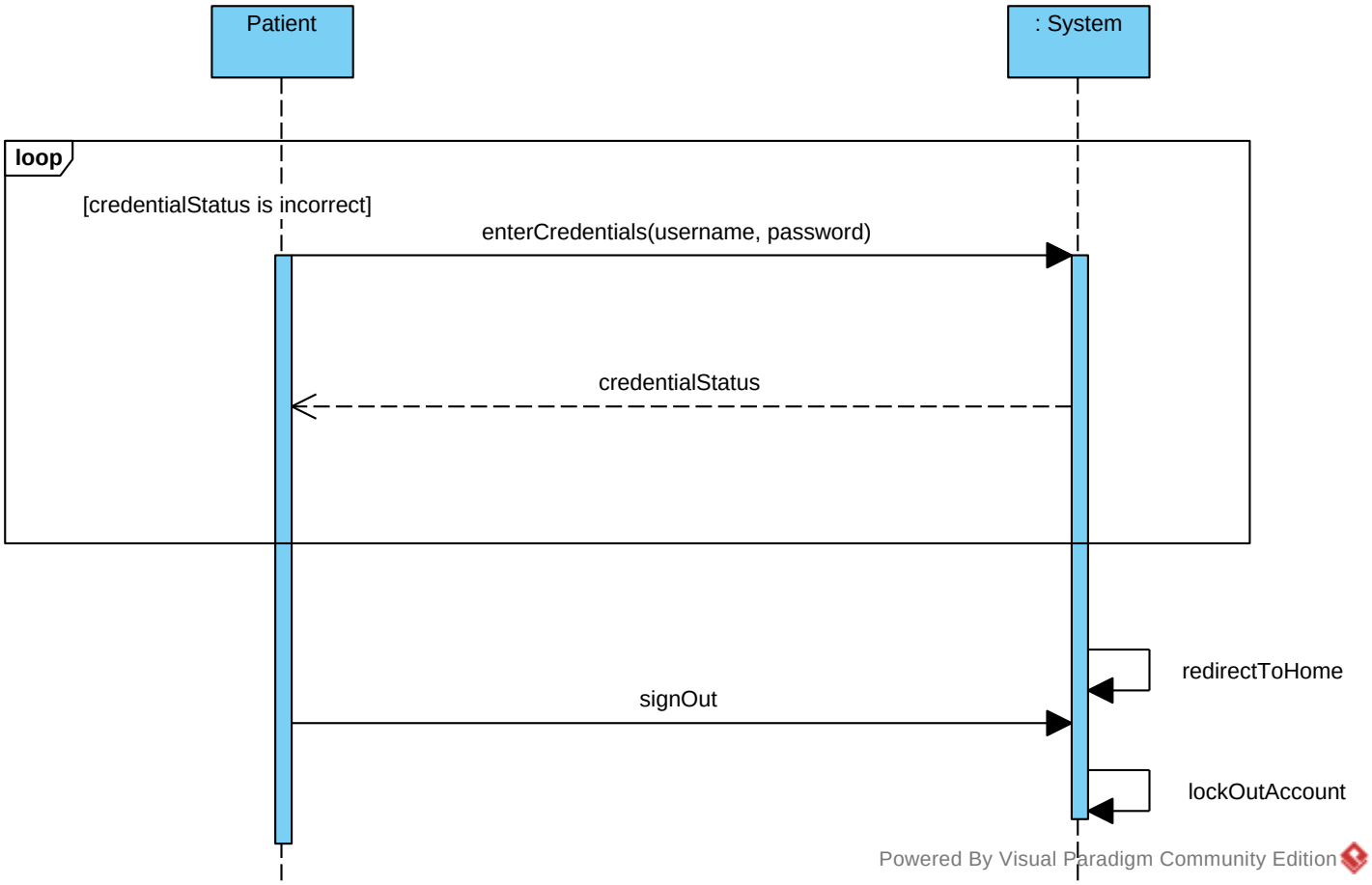

EHR Patient Home Screen
Logout
Patient Name
Next Appointment at: MM--DD--YY HH:mm
Patient Intake Forms
View Test Results
Current Diagnosis
Current Medications
Prescription
Dosage
Acetaminophen
1 pill 2xs a day
Doxycycline
2 pills a day for 10 da..
Tamiflu
2 pills a day for 10 da..
Current Providers
Provider Name
Dr. Cerny
Dr. Booth
Dr. Baker
Dr. Song
Dr. Donahoo
Dr. Fendt
Dr. Hamerly
Dr. Maurer
Dr. Speegle

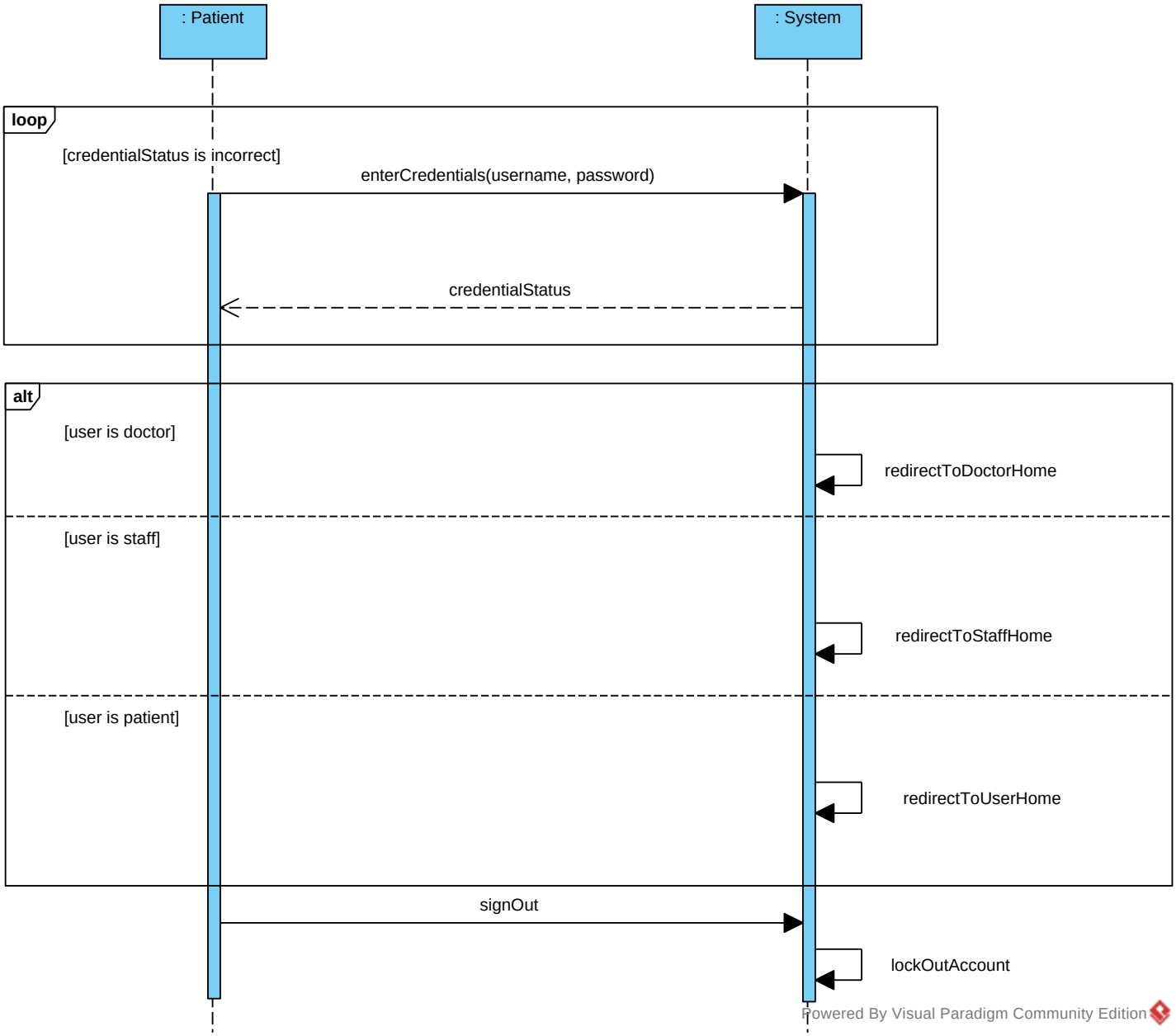

EHR Patient Intake Forms
Logout
Patient Name
Next Appointment at: MM--DD--YY HH:mm
Patient Intake Form
View Test Results
First Name
Patient
Middle Initial
E
Last Name
Name
DOB
12/34/5678
Address
Line 1
Line 2
Phone
Number
Cell Phone
Home Phone
Work Phone
City
State
ZIP
Emergency Contact
Name
Phone Number
Number
Allergies
List all Allergies Here
Medical History (select all that apply)
Allergies
Appendicitis
Cancer
Diabetes
Heart Disease
Lifestyle
Alcohol
Tobacco
E-Cigarettes
Exercise

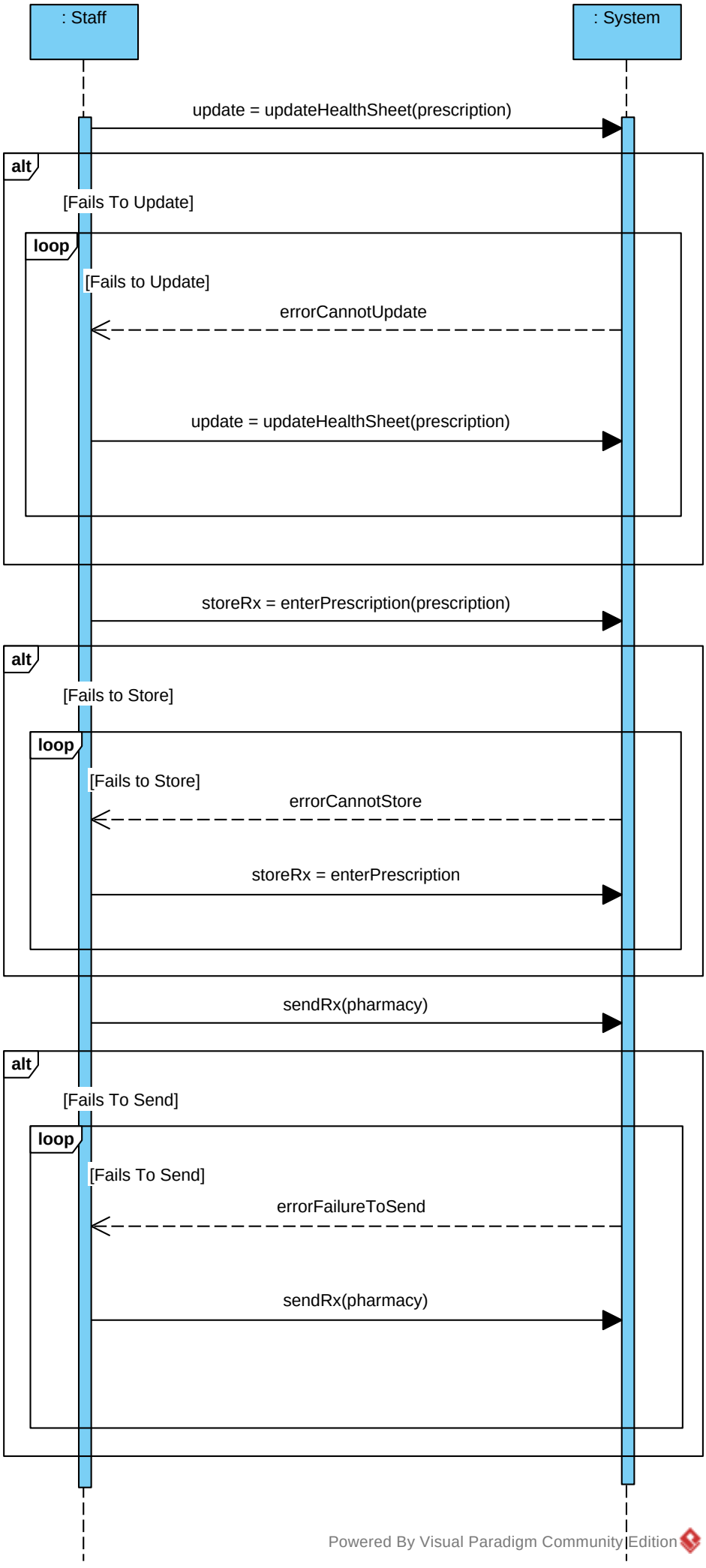

EHR Login Screen
Login
Username
Password
Sign in

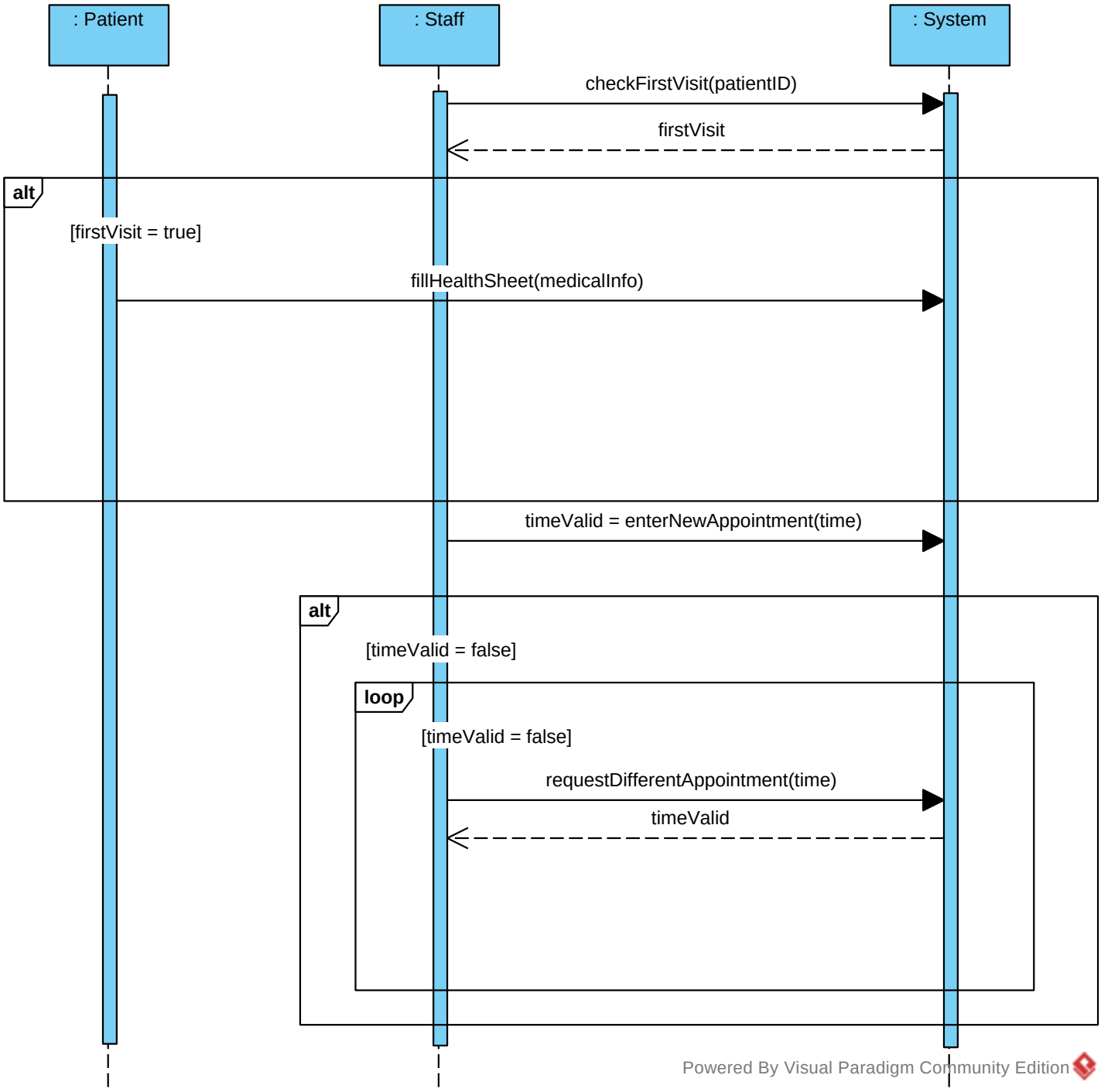

: Staff
: System
generateBill(price, dateDue)
alt
[input error]
errorReport
regenerateBill(price, dateDue)
alt
[date extension]
applyExtension(newDate)
Powered By Visual Paradigm Community Edition




Patient
: System
loop
[credentialStatus is incorrect]
enterCredentials(username, password)
credentialStatus
redirectToHome
signOut
lockOutAccount
Powered By Visual Paradigm Community Edition


: Patient
: System
loop
[credentialStatus is incorrect]
enterCredentials(username, password)
credentialStatus
alt
[user is doctor]
redirectToDoctorHome
[user is staff]
redirectToStaffHome
[user is patient]
redirectToUserHome
signOut
lockOutAccount
Powered By Visual Paradigm Community Edition




: Patient
: Staff
: System
checkFirstVisit(patientID)
firstVisit
alt
[firstVisit = true]
fillHealthSheet(medicalInfo)
timeValid = enterNewAppointment(time)
alt
[timeValid = false]
loop
[timeValid = false]
requestDifferentAppointment(time)
timeValid
Powered By Visual Paradigm Community Edition

Project manager	
Project dates	Jan 31, 2020 - May 1, 2020
Completion	0%
Tasks	20
Resources	4

Tasks

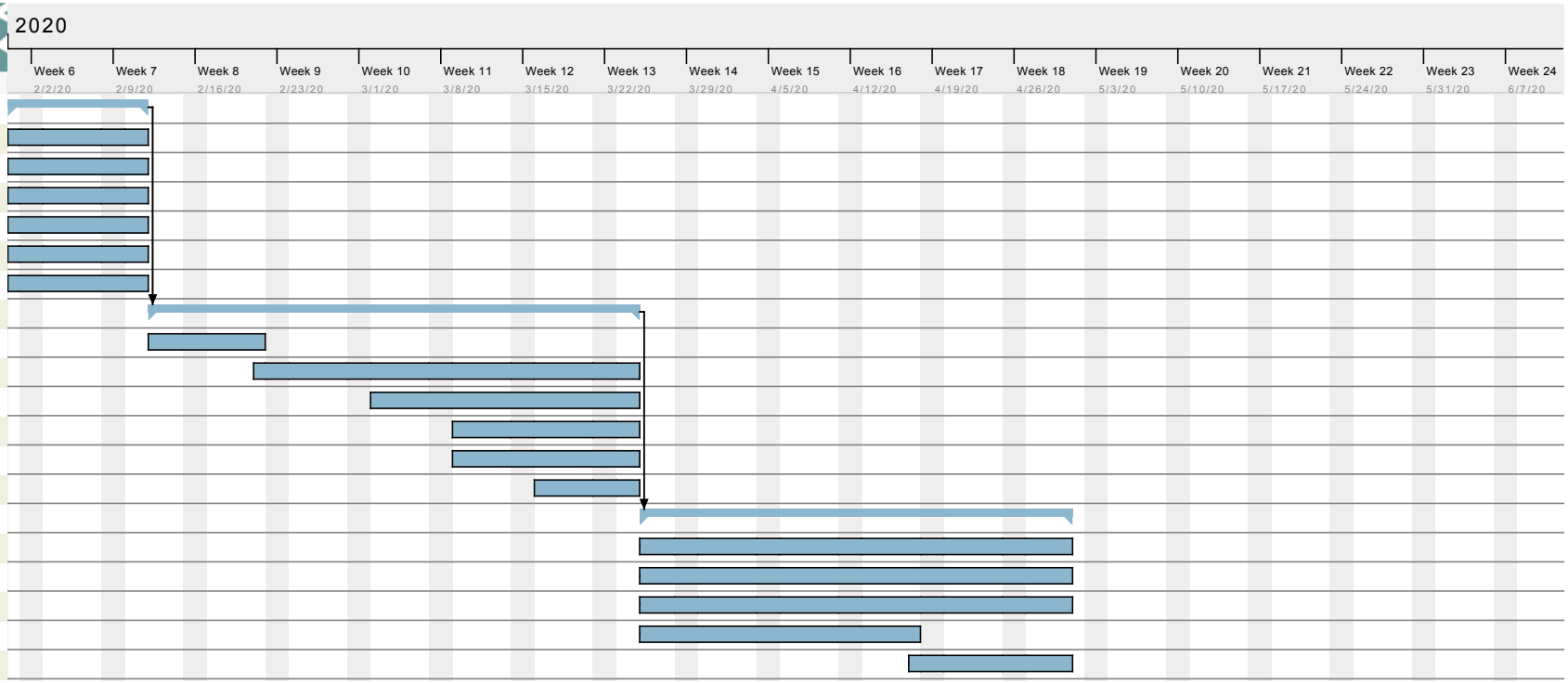
Name	Begin date	End date
Iteration 1	1/31/20	2/11/20
Requirements	1/31/20	2/11/20
Use Cases	1/31/20	2/11/20
Operations	1/31/20	2/11/20
User Interface sketches	1/31/20	2/11/20
Domain Model	1/31/20	2/11/20
SSD	1/31/20	2/11/20
Iteration 2	2/12/20	3/24/20
Diagrams	2/12/20	2/21/20
Git	2/21/20	3/24/20
Maven	3/2/20	3/24/20
GUI	3/9/20	3/24/20
Prototype 2	3/9/20	3/24/20
Testing	3/16/20	3/24/20
Iteration 3	3/25/20	4/30/20
Maven	3/25/20	4/30/20
Git	3/25/20	4/30/20
GUI	3/25/20	4/30/20
Prototype	3/25/20	4/17/20
Testing	4/17/20	4/30/20

Resources

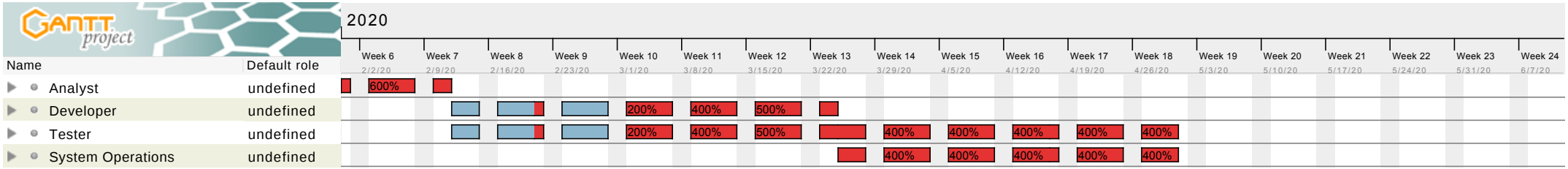
Name	Default role
Analyst	undefined
Developer	undefined
Tester	undefined
System Operations	undefined

Gantt Chart

Name	Begin date	End date
Iteration 1	1/31/20	2/11/20
Requirements	1/31/20	2/11/20
Use Cases	1/31/20	2/11/20
Operations	1/31/20	2/11/20
User Interface s...	1/31/20	2/11/20
Domain Model	1/31/20	2/11/20
SSD	1/31/20	2/11/20
Iteration 2	2/12/20	3/24/20
Diagrams	2/12/20	2/21/20
Git	2/21/20	3/24/20
Maven	3/2/20	3/24/20
GUI	3/9/20	3/24/20
Prototype 2	3/9/20	3/24/20
Testing	3/16/20	3/24/20
Iteration 3	3/25/20	4/30/20
Maven	3/25/20	4/30/20
Git	3/25/20	4/30/20
GUI	3/25/20	4/30/20
Prototype	3/25/20	4/17/20
Testing	4/17/20	4/30/20



Resources Chart



Project manager	
Project dates	Jan 31, 2020 - May 1, 2020
Completion	0%
Tasks	20
Resources	4

Tasks

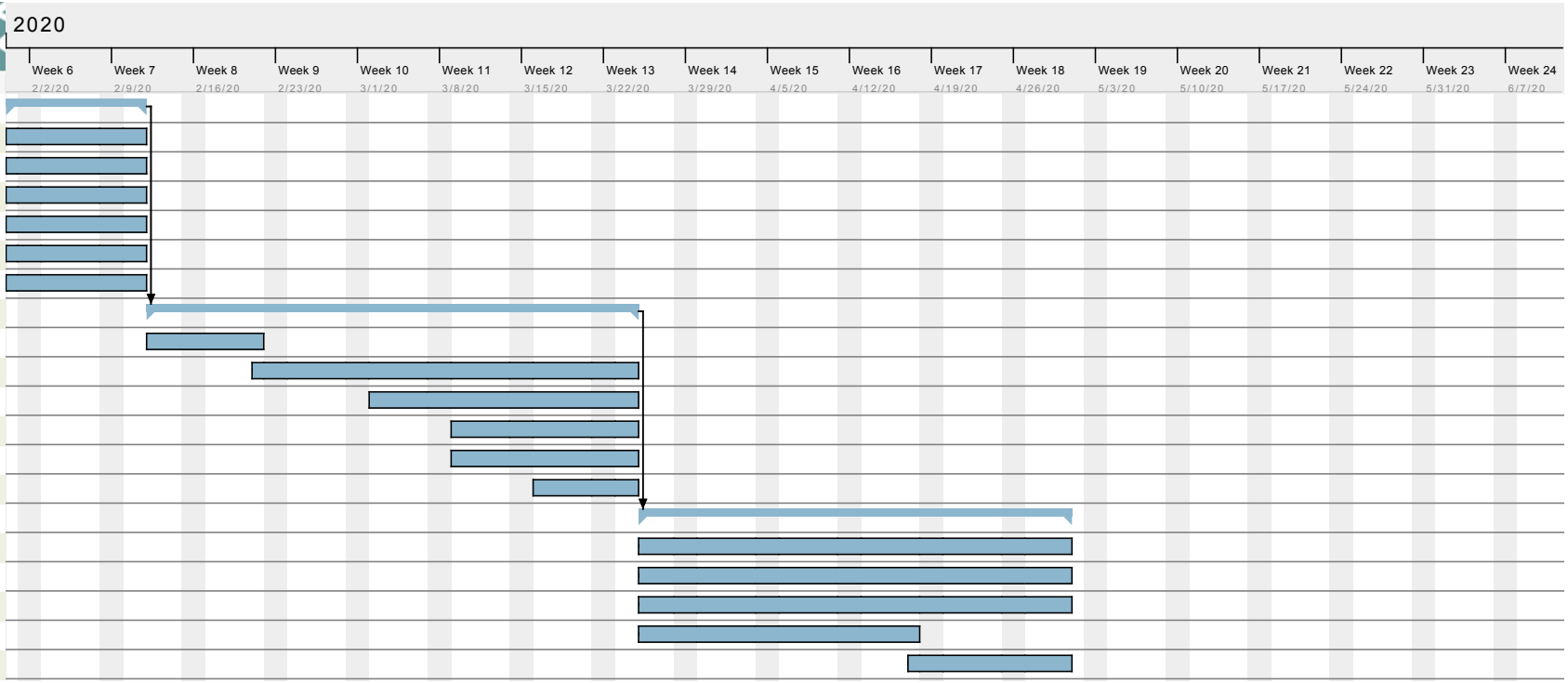
Name	Begin date	End date
Iteration 1	1/31/20	2/11/20
Requirements	1/31/20	2/11/20
Use Cases	1/31/20	2/11/20
Operations	1/31/20	2/11/20
User Interface sketches	1/31/20	2/11/20
Domain Model	1/31/20	2/11/20
SSD	1/31/20	2/11/20
Iteration 2	2/12/20	3/24/20
Diagrams	2/12/20	2/21/20
Git	2/21/20	3/24/20
Maven	3/2/20	3/24/20
GUI	3/9/20	3/24/20
Prototype 2	3/9/20	3/24/20
Testing	3/16/20	3/24/20
Iteration 3	3/25/20	4/30/20
Maven	3/25/20	4/30/20
Git	3/25/20	4/30/20
GUI	3/25/20	4/30/20
Prototype	3/25/20	4/17/20
Testing	4/17/20	4/30/20

Resources

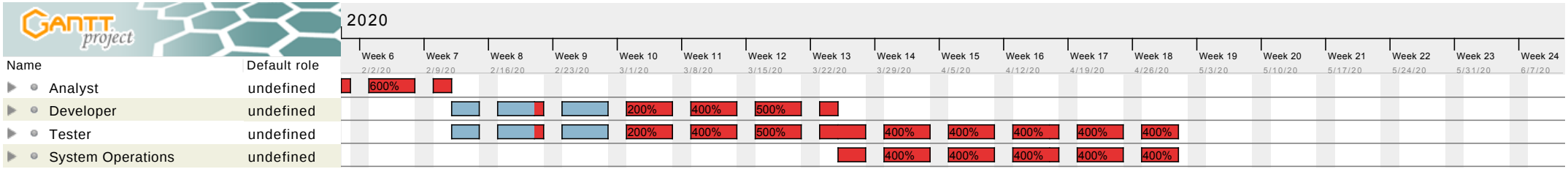
Name	Default role
Analyst	undefined
Developer	undefined
Tester	undefined
System Operations	undefined

Gantt Chart

Name	Begin date	End date
Testing	1/31/20	2/11/20
Requirements	1/31/20	2/11/20
Use Cases	1/31/20	2/11/20
Operations	1/31/20	2/11/20
User Interface s...	1/31/20	2/11/20
Domain Model	1/31/20	2/11/20
SSD	1/31/20	2/11/20
Iteration 2	2/12/20	3/24/20
Diagrams	2/12/20	2/21/20
Git	2/21/20	3/24/20
Maven	3/2/20	3/24/20
GUI	3/9/20	3/24/20
Prototype 2	3/9/20	3/24/20
Testing	3/16/20	3/24/20
Iteration 3	3/25/20	4/30/20
Maven	3/25/20	4/30/20
Git	3/25/20	4/30/20
GUI	3/25/20	4/30/20
Prototype	3/25/20	4/17/20
Testing	4/17/20	4/30/20



Resources Chart



4 Glossary

EHR. Electronic Health Record System. A system that assists **health care providers** organize **patient** information, correctly assign **insurance codes** for health care billing, and manages a **medical practice's** schedule.

Health care provider. A person or group of individuals who deliver a **health care service** to a **patient**. May comprise of **doctors** and **staff**.

Health care service. A service in which a **patient** receives some attention toward a specific ailment or medical problem from a **health care provider**.

Patient. A person who is suffering from some specific ailment or medical problem and seeks medical attention.

Doctor. A healthcare provider who specifically treats a **patient's** ailment or medical problem. Works as part of a **medical practice**.

Staff. Auxiliary health care professionals who assist **doctor's** treat a **patients** ailment or medical problem. Main responsibilities include assigning **insurance codes** for health care billing. Works as part of a **medical practice**.

Medical practice. A group of healthcare providers.

Insurance codes. A code corresponding to a specific ailment or medical problem used for medical billing purposes with medical insurance companies.

References

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