

Use Cases

Arfib

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Abstract

Atrial fibrillation is one of the most prevalent cardiovascular conditions worldwide. To address the management of this condition, an application—Arfib—will be developed to support the monitoring and management of atrial fibrillation patients. A key feature of the app is the ability for patients to upload real-time ECG measurements via the VitalJacket device. Additionally, doctors have access to their patients' data, including ECG measurements, logged symptoms, and medication adherence, allowing for better-informed clinical decisions and improved patient care.

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Chapter 1

Requirements

An app is being developed for atrial fibrillation monitoring. This app is used by both patients monitoring this condition and respective doctors. This way, the app should allow for both patient and doctor separate interfaces.

A main part of this app is the ability to measure ECG signals, and display them in real-time while being measured. A patient has to have the ability to make new measurements as well as consult old ones. Each measurement should be analyzed, storing that information with the measurement result.

[Patient Symptoms]

Patients can also track their medication in the app. They should be able to log the medication that they need to take in each day, and see in which days they need to take which medications. For each medication certain information needs to be available to see and edit, if needed, and patients can add new medication filling out the required information. Patients should be able to see all medications in a simple view.

There is a blog inside the app, in which authorized personnel -doctors- can publish different posts. There should be an interface in which patients can see the blog posts and read each one in a dedicated page.

[Doctor Interface]

Doctors have access to comprehensive information about all their patients through the application. They can view a list of their patients and, by selecting a specific patient, gain access to detailed records, including measurements, logged symptoms, and logged medications. Additionally, doctors have the capability to suggest medications directly through the application. This feature is particularly beneficial in cases where a prescribed medication has not yet been added by the patient.

To further support patient engagement and education, doctors can also contribute to the blog by publishing posts on relevant topics. They are able to create new posts as well as edit existing ones, ensuring their patients remain informed about key updates and health-related information.

Chapter 2

Use Case Diagram

2.1 Actors

Considering the system requirements, it was possible to identify the actors represented in Figure 2.1.

2.1.1 Diagram

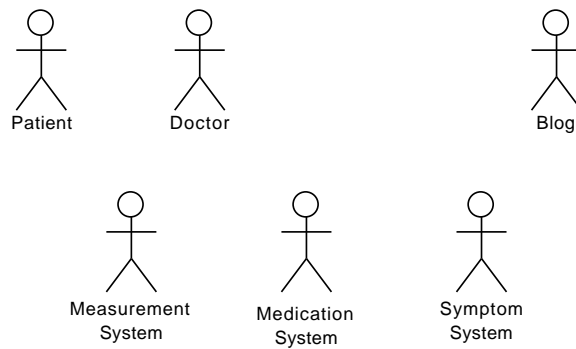


Figure 2.1: Actors.

2.1.2 Patient

2.1.3 Doctor

2.1.4 Measurement System

2.1.5 Medication System

2.1.6 Symptom System

2.1.7 Blog

2.2 Use Cases

Considering the actors and system requirements, the following diagram represents the use cases for this system.

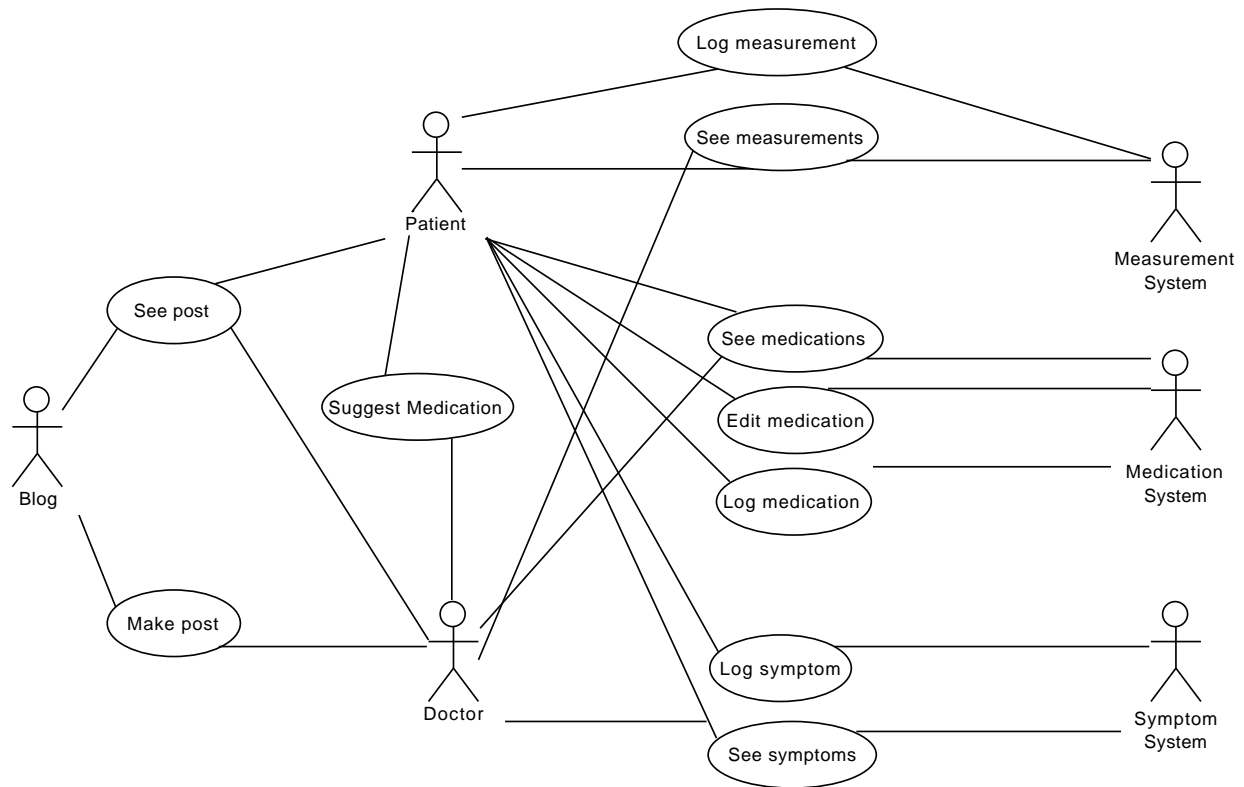


Figure 2.2: Use Case Diagram.

Chapter 3

Use Case Description

3.1 Measurement

3.1.1 Log Measurement

Brief Description This use case allows a patient to perform an ECG measurement using a device of their choosing. The patient must select a valid device, being able to add new devices. The measurement is shown in real time and can be stopped during the process.

Flow of Events

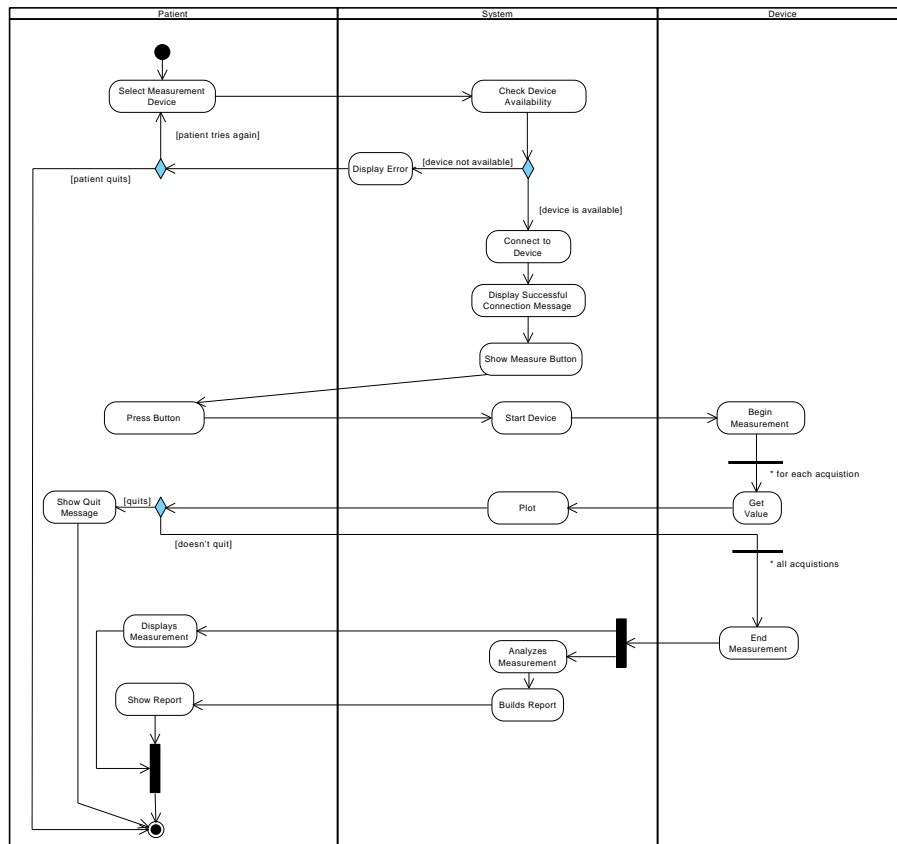


Figure 3.1: Log Measurement Activity Diagram.

3.1.2 See Measurement

Brief Description This use case allows a patient see its own previous measurements, or allows a doctor to see the previous measurements of their patients. Both have access to a list of the measurements, allowing them to choose a specific one to see in more detail.

Basic Flow

1. Select patient's measurements page.
2. Check access.
3. Display previous measurements.
4. Choose measurement of interest.
5. Display full information about measurement of interest.

Alternative Flows

- A1. Doctor or patient does not have access.
- A2. Show error message.
- A3. Quit.
- A4. See measurement closed.

3.2 Medications

3.2.1 Log Medication

Brief Description This use case allows a patient to affirm if they have taken their medication, and store that information.

Basic Flow

1. Select medication to log.
2. Confirm medication has been taken.
3. Change medication status.

Alternative Flows

- A1. Select medication to remove log.
- A2. Confirm mistake.
- A3. Change status of the mistakenly logged medication.

3.2.2 See Medications

Brief Description This use case allows a patient see its medications and respective logs, or allows a doctor to see the medications and logs of their patients. Both have access to the medication's logs and to the medications' information.

Basic Flow

1. Select patient's medications page.
2. Check access.
3. Display medication logs.
4. Choose medication of interest.
5. Display information about medication of interest.

Alternative Flows

- A1. Doctor or patient does not have access.
- A2. Show error message.
- A3. Quit.
- A4. See medication closed.

3.2.3 Edit Medication

Brief Description Allows the patient to change information regarding their medication, such as intake quantity, frequency and select an end date, from which the medication will not need to be taken. Also, the use case allows adding new medications.

Basic Flow

1. Select medication.
2. Enter edit mode.
3. Choose parameter to change.
4. Exit edit mode.

Alternative Flows

- A1. Select new medication.
- A2. Fill the required information.
- A3. Add new medication.

3.2.4 Suggest Medication

Brief Description This use case allows a doctor to suggest a new medication for a given patient.

Basic Flow

1. Select patient.
2. Select medication.
3. Fill the required information.
4. Check information.
5. Send to patient.
6. Alert patient of suggestion.

3.2.5 See Symptoms

Brief Description Patients can review their previously logged symptoms in a manner similar to how doctors access a patient's symptom history. This feature offers two views: a calendar view, which provides an overview of all symptoms logged on each day, and a symptom-specific view, which focuses on a single symptom, displaying a calendar with its occurrences and corresponding intensity levels.

Basic Flow

1. Select patient's symptoms page.
2. Select desired view (calendar view or symptom-specific view).
3. Display symptoms logs.

Alternative Flows

- A1. Switch to a different view (e.g., from calendar view to symptom-specific view).
- A2. Select a different symptom while in symptom-specific view.
- A3. Select a different day while in calendar view.

3.3 Blog

3.3.1 See Post

Brief Description This use case allows both doctors and patients to select a post from a catalog and view its detailed information.

Basic Flow

1. Open blog page.
2. Choose the desired post.
3. Display the post in detail.

Alternative Flows

- A1. Select a different post.
- A2. Exit the blog page.
- A3. Error message if the post does not load.

3.3.2 Publish Post

Brief Description This use case allows doctors to publish a post on the application's blog, concerning topics relevant to atrial fibrillation.

Basic Flow

1. Select blog's page.
2. Enter edit mode.
3. Compose the post by writing the title and content.
4. Confirm the publication.
5. Exit edit mode after publishing.
6. Notify the doctor's patients of a new post.

Alternative Flows

- A1. Add images to the post.
- A2. Cancel the publishment.
- A3. Error message during upload.