**E-Hospital Project**

**-Documentation-**

**Domain Model**

A diagram of a medical procedure

Description automatically generated with medium confidence

**Business Use Case**

A diagram of a person

Description automatically generated

**Software Use Case**

A diagram of a medical procedure

Description automatically generated

**Use case descriptors**

|  |  |
| --- | --- |
| **ID** | UC1 |
| **Name** | Registring a patient |
| **Description** | Guard Doctor registers the patient in the system |
| **Actors** | Guard Doctor |
| **Preconditions** | The actor is logged into the system |
| **Postconditions** | Patient is registered in the system |
| **Main Flow** | |  |  | | --- | --- | | Assigned Doctor | System | | 1. Write patient information |  | | 2. Confirm patient details | 3. Confirmation status | |
| **Alternate flows** | Patient info is invalid  Patient is not registered in the hospital system |
| **Frequency** | Often |
| **Priority** | High |

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| --- | --- |
| **ID** | UC2 |
| **Name** | Internation of a patient |
| **Description** | Assigned Doctor internates a patient in a saloon |
| **Actors** | Assigned Doctor |
| **Preconditions** | Actors are logged in  Patient is already registered in the system |
| **Postconditions** | Patient status is set to interned |
| **Main Flow** | |  |  | | --- | --- | | Assigned Doctor | System | | 1. Write patient information |  | | 2. Confirm patient details | 3. Confirmation status | |
| **Alternate flows** | Patient not registered into the system  Error message |
| **Frequency** | Often |
| **Priority** | High |

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| --- | --- |
| **ID** | UC3 |
| **Name** | Release an interned patient |
| **Description** | Assigned Doctor releases the patient from the hospital if he deems that the treatment is over |
| **Actors** | Assigned Doctor |
| **Preconditions** | Actors are logged in |
| **Postconditions** | Patient is released from the hospital and allowed to go home  Internation status is changed  Clinical file is updated and finished |
| **Main Flow** | |  |  | | --- | --- | | Assigned Doctor | System | | 1. Request the lists of the interned patients | 2. Provides the list of patients that the doctor is assigned to | | 3. Select the patient that gets to be released [A1][A2] |  | | 4. Confirming the release | 5. Patient is marked as released | |
| **Alternate flows** | A1 Assigned Doctor requests access to a patient that is not assigned to him  Display error, go back to step 1  A2 Assigned Doctor requests access to a patient that is not assigned to him  Display error, notify system administrator |
| **Frequency** | Often |
| **Priority** | High |

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| --- | --- |
| **ID** | UC4 |
| **Name** | Update Clinical File |
| **Description** | Assigned Doctor updates the clinical file of a patient based on the evolution of the treatment |
| **Actors** | Assigned Doctor |
| **Preconditions** | Actors are logged in |
| **Postconditions** | The clinical file of a patient is updated |
| **Main Flow** | |  |  | | --- | --- | | Assigned Doctor | System | | 1. Selects the patient | 2. Returns the requested patient[A1][A2] | | 3. Update the clinical file |  | | 4. Confirm the made changes | 5. Confirmation status | |
| **Alternate flows** | A1 Assigned Doctor requests access to a patient that is not assigned to him  Display error, go back to step 1  A2 Assigned Doctor requests access to a patient that is not assigned to him  Display error, notify system administrator |
| **Frequency** | Often |
| **Priority** | High |

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| --- | --- |
| **ID** | UC5 |
| **Name** | View clinical file |
| **Description** | The Assigned Doctor requests to see the clinical file of a patient or a patient requests to see their own clincial file |
| **Actors** | Assigned Doctor, Patient |
| **Preconditions** | Actors are logged in |
| **Postconditions** | The Actors get access to the clinical file of the patient |
| **Main Flow** | |  |  |  | | --- | --- | --- | | Assigned Doctor | System | Patient | | 1. Request Clinical file | 2. Provide requested clinical file[A1][A2] | 1. Request Clinical file | |
| **Alternate flows** | A1 Actor does not have access to the requested clinical file  Display error, go back to request page  A2 Actor repeatedly requests access to a clinical file to which he does not have access to  Display error, notify system administrator |
| **Frequency** | Often |
| **Priority** | High |

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| --- | --- |
| **ID** | UC6 |
| **Name** | Login |
| **Description** | Software actors log in the system with their credentials |
| **Actors** | Guard Doctor, Assigned Doctor, Patient |
| **Preconditions** | System is running |
| **Postconditions** | Software actor gets logged in |
| **Main Flow** | |  |  | | --- | --- | | Software Actor | System | | 1. Choose to log in | 2. Show login form | | 3. Enter username and password | 4. Log in user[A1][A2] | |
| **Alternate flows** | A1 The provided credentials are incorrect  Display error, return to step 2 in the main flow  A2 Multiple invalid attempts to log in  Display error, notify system administrator |
| **Frequency** | Often |
| **Priority** | High |

**Detailed Functional Requirements**

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| --- | --- |
| **Functional Requirement** | **Grade** |
| **1. Registering a patient in the system** |  |
| 1A System stores the information about a patient as given by the Guard Doctor | 10 |
| **2.Internation and release of a patient** |  |
| 2A System changes status of a patient to interned at the request of the assigned doctor | 10 |
| 2B System changes status of a patient to released at the request of the assigned doctor | 10 |
| **3. Clinical File** |  |
| 3A System serves the clinical file to be seen by the patient or assigned doctor | 8 |
| 3B System updates the clinical file with changes made by the assigned doctor | 9 |
| 3C System updates the clinical file by adding the daily readings from the sensors fitted inside the bed | 10 |

**Non-functional requirements**

**Availability**

**- AV1:** The system has an availability of 99.99%

**Performance**

**- PERF1:** The system response type on average is 150ms and maximum response time is 3 seconds

**Reliability**

**- REL1:** The system has a MTBF of 336 hours

**Capacity**

**- CAP1:** The system can store 5000 patients, alongside their related data

**Usability**

**- USA1:** The system can be used by new users after a 45 minute training session.

**- USA2:** The system language can be set for Romanian and English

**Security:**

**- SEC1:** Users log in via username and password

**- SEC2:** Users can only access information and functions of the system based on their role and what they have access to

- **SEC3:** Passwords are stored in their encrypted form

**- SEC4:** System uses https

**- SEC5:** System is compliant with GDPR

**Operation Contracts**

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| --- | --- |
| **Operation** | Register patient(person p) |
| **Cross reference** | UC1 Registring a patient |
| **Preconditions** | ­Person p is not already in the system  Person p cannot be treated ambulatory |
| **Postconditions** | Person p added to the database  Clinical file cf created and associated with person p |

|  |  |
| --- | --- |
| **Operation** | Intern Patient(person p, internation i) |
| **Cross reference** | UC2 Internation of a patient |
| **Preconditions** | Person p is not already interned in the hospital |
| **Postconditions** | Person p associated with internation I  Internation i.ongoing = true |

|  |  |
| --- | --- |
| **Operation** | Release Patient(internation i) |
| **Cross reference** | UC3 Release an interned patient |
| **Preconditions** | Internation i is ongoing |
| **Postconditions** | Internation i.ongoing = false |

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| --- | --- |
| **Operation** | Update Clinical File(data d, clinical file cf) |
| **Cross reference** | UC4 Update Clinical File |
| **Preconditions** | Clinical File cf exists and is associated with a person p that is registered in the database |
| **Postconditions** | Add Data d to the Clinical File cf) |

**System Sequence Diagrams**

A diagram of a medical procedure

Description automatically generated

A diagram of a patient

Description automatically generated

A diagram of a patient

Description automatically generatedA diagram of a medical procedure

Description automatically generated

A diagram of a medical procedure

Description automatically generated

A screenshot of a computer program

Description automatically generated

**Design Class for Use Cases**

**UC1** A diagram of a medical procedure

Description automatically generated

**UC2** A diagram of a patient

Description automatically generated

**UC3** A diagram of a patient

Description automatically generated

**UC4** A diagram of a medical procedure

Description automatically generated

**UC5** A diagram of a patient

Description automatically generated

**UC6** A diagram of a username

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**Sequence Diagrams for Use Cases**

**Sequence for UC1**

A diagram of a project

Description automatically generated

**Sequence for UC2**

A diagram of a project

Description automatically generated

**Sequence for UC3**

A diagram of a process flow

Description automatically generated

**Sequence for UC4**

A diagram of a software project

Description automatically generated

**Sequence for UC5**

A diagram of a patient recovery program

Description automatically generated

**Sequence for UC6**

A diagram of a computer program

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