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Project Deliverable 3

1: Use Case Scenarios

Use case	Enter symptoms
Main success scenario	<ol style="list-style-type: none">1. System asks users to enter their symptoms2. System displays a list of common symptoms to the user3. User enters their symptoms as natural language or by choosing from provided list4. System verifies that the input provided by the user contains medical symptoms and is not malicious5. System identifies the symptoms from the natural language input
Extensions	User enters input which is gibberish or hard to understand <ol style="list-style-type: none">1. System analyzes input and determines it is not health symptoms2. System prompts user to try again User attempts prompt injection attack <ol style="list-style-type: none">1. System analyzes input and determines it may be an attack2. System logs attack and user information3. System prompts user to try again

Use case	Get symptoms explanation
Precondition	'Extract symptoms from input' success
Main success scenario	<ol style="list-style-type: none">1. System compiles LLM prompt for determining explanation for symptoms [1]2. System sends prompt to LLM (OpenAI GPT) and receives response (LLM completion)3. System shows explanation to user
Extensions	LLM service is down or unresponsive <ol style="list-style-type: none">1. System does not show explanation section to user

Use case	Get medicines and products for symptoms
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Precondition	'Extract symptoms from input' success
Main success scenario	<ol style="list-style-type: none"> 1. System compiles LLM prompt for determining products for symptoms [1] 2. System sends prompt to LLM (OpenAI GPT) and receives response (LLM completion) 3. System extracts product names from response 4. System finds generic medicines for the associated products 5. System finds all products associated with each generic medicines 6. System shows medicines and products to user
Extensions	<p>User symptoms have no medicinal solutions</p> <ol style="list-style-type: none"> 1. LLM determines there are no medicines or products for given symptoms (information contained in LLM response) 2. System informs user to visit medical professional if symptoms persist or get worse <p>LLM does not produce response in expected format</p> <ol style="list-style-type: none"> 1. System logs failure so developers can fix it later 2. System informs user to try again later

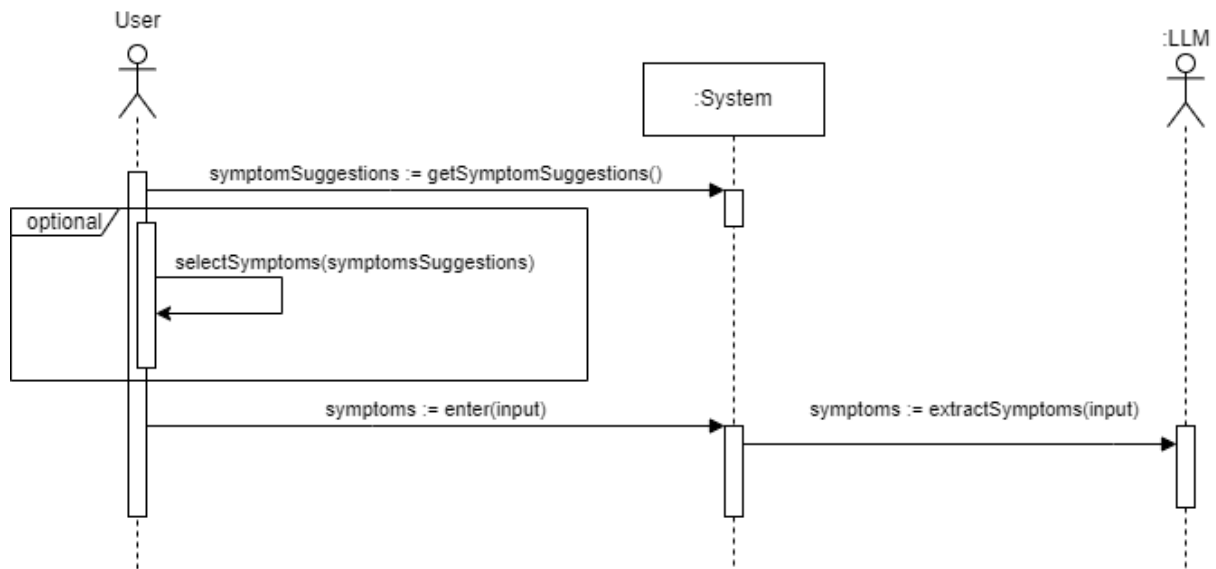
Use case	Update database
Main success scenario	<ol style="list-style-type: none"> 1. Administrator uploads dataset file to system 2. System parses dataset file to extract medicine data 3. System inserts medicine data into database
Extensions	<p>Dataset file is corrupt</p> <ol style="list-style-type: none"> 1. System rolls back results to before start of update process 2. System informs administrator that dataset file is corrupt and of corruption reason <p>Database is down or unresponsive</p> <ol style="list-style-type: none"> 1. System informs administrator that database is down or unresponsive 2. System waits for 5 minutes, periodically attempting to connect and resume process every 10 seconds

Use case	Filter suggested medicines
Preconditions	At least one result was found as a result of 'Get medicines for symptoms'
Main success scenario	<ol style="list-style-type: none"> 1. User chooses to filter the medicines by applying a set of constraints (name, category, price, dosage) 2. The system determines all medicines from the displayed set of drugs corresponding to the selected constraints 3. The system shows the filtered medicines with additional details
Extensions	<ol style="list-style-type: none"> 1. User chooses to filter the medicines by applying a set of constraints (name, category, price, dosage) 2. No medicines are found satisfying the selected constraint 3. The user is notified that no results are found 4. The system shows the medicines without filtering them

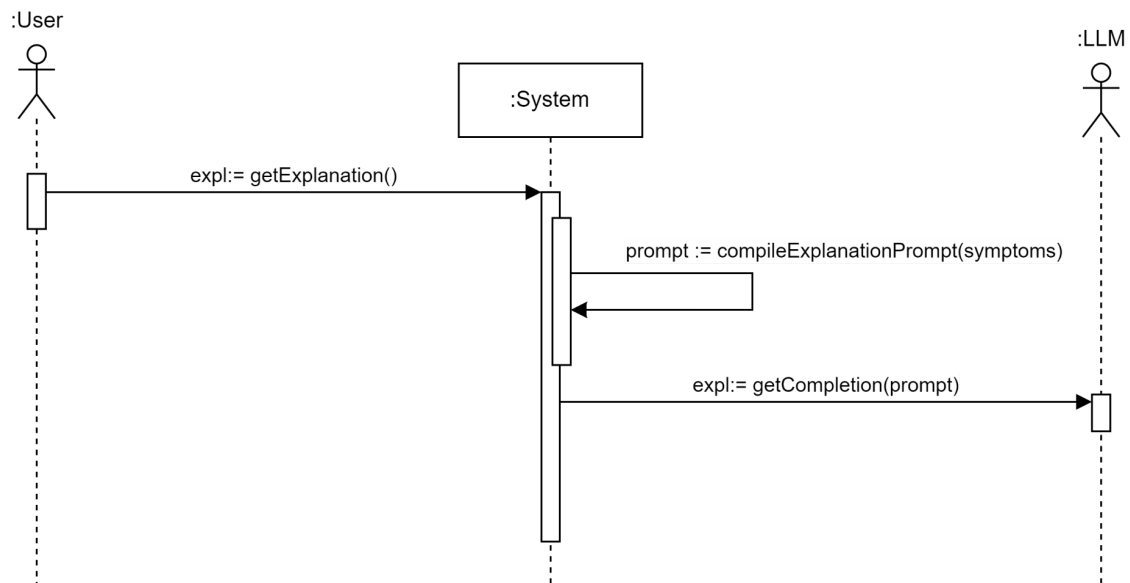
[1]: An LLM prompt is a text message to be sent to the LLM. The LLM will send back a text response ("completion") based on the prompt. The prompt should contain instructions for what the LLM should answer, as well as how that answer should look like textually. The LLM will ideally follow the instructions and produce a response as specified in the prompt.

2: System Sequence Diagrams

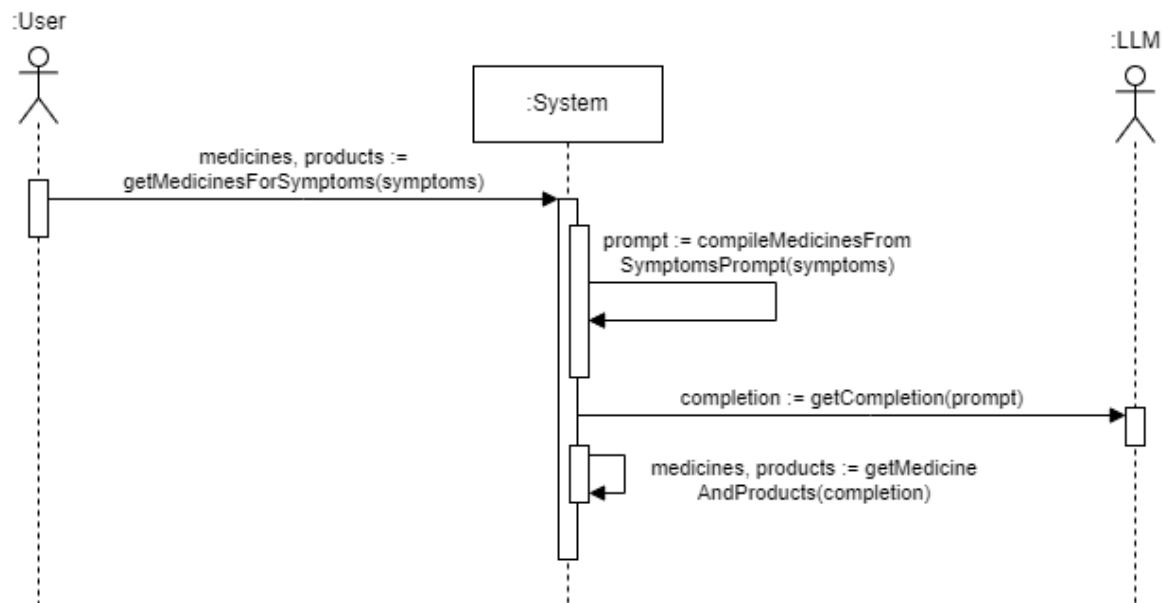
2.1: Enter symptoms



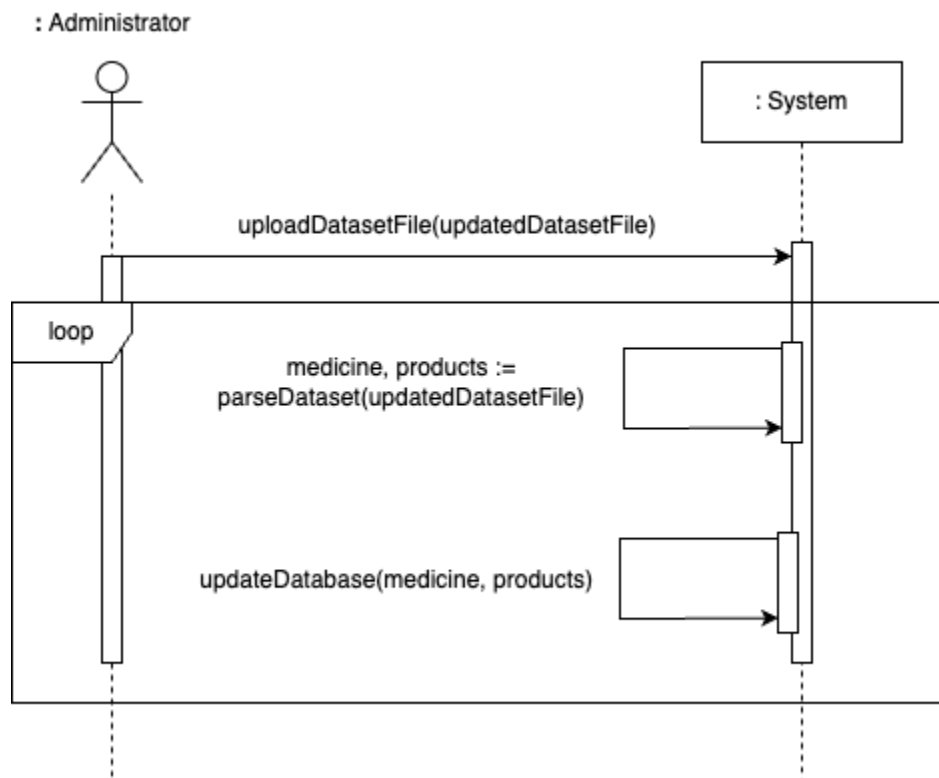
2.2: Get symptoms explanation



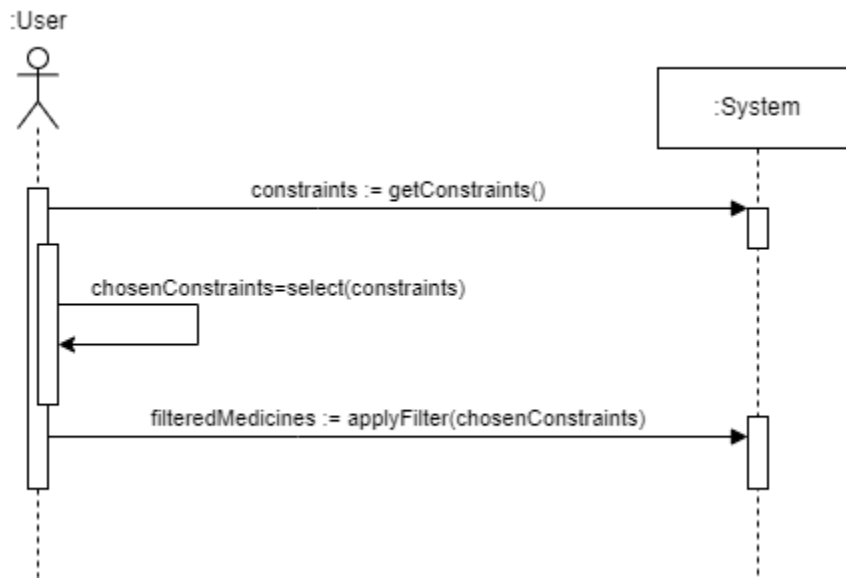
2.3: Get medicines and products for symptoms



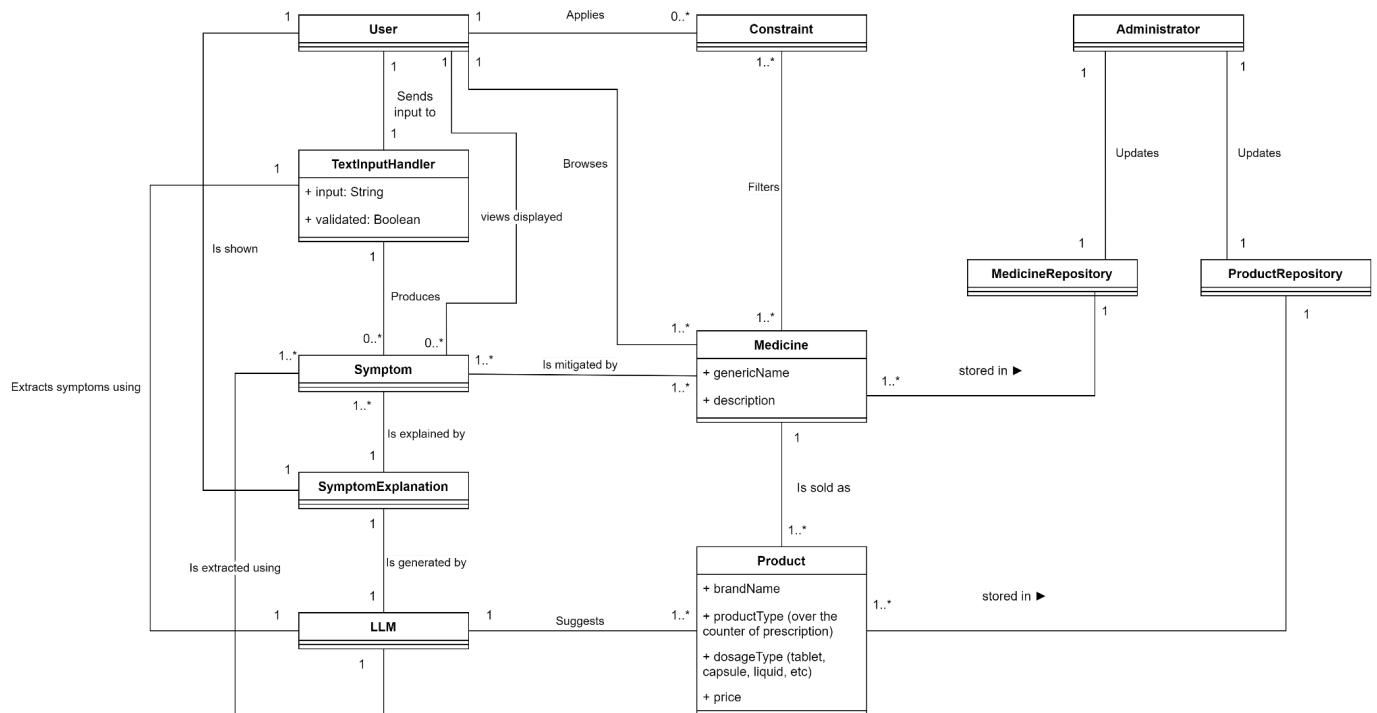
2.4: Update database



2.5: Filter suggested medicines



3: Domain Model



4: Operation Contracts

Name	extractSymptoms(input)
Responsibilities	Determines if <i>input</i> is legitimate and obtains a discrete list of <i>symptoms</i> from <i>User</i> 's natural language input
Pre-conditions	<i>User</i> has given input in text form
Post-conditions	<i>TextInputHandler</i> is associated with <i>User</i> <i>LLM</i> is associated with the <i>TextInputHandler</i> Multiple <i>Symptom</i> objects are created and associated with the <i>TextInputHandler</i>

Name	getMedicinesForSymptoms(symptoms)
Responsibilities	Find the medicines and products for the given symptoms
Pre-conditions	A list of Symptoms <i>symptoms</i> is created and associated with a <i>validated</i> <i>TextInput</i>
Post-conditions	The found <i>Products</i> are associated with the found <i>Medicines</i> The <i>Medicines</i> are associated with <i>User</i>

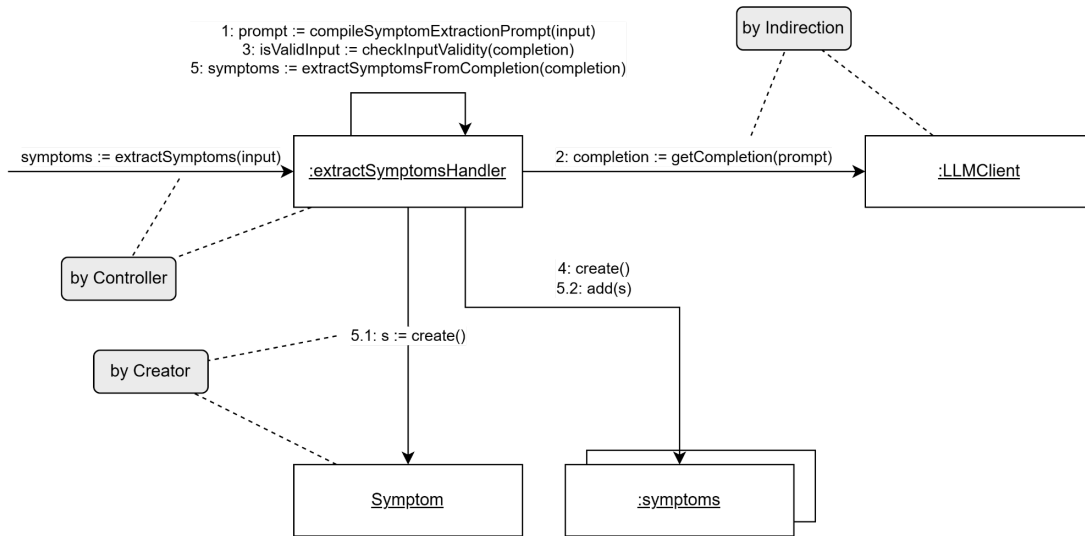
Name	getExplanation(symptoms)
Responsibilities	Obtains a brief description of the possible common causes for the given list of symptoms
Pre-conditions	A list of Symptoms <i>symptoms</i> is created and associated with a <i>validated</i> <i>TextInput</i>
Post-conditions	<i>SymptomsExplanation</i> is created <i>SymptomsExplanation</i> is associated with <i>User</i>

Name	parseDataset(dataset)
Responsibilities	Read the dataset file and create objects of Medicines and Products according to the newly uploaded data
Pre-conditions	The dataset is uploaded by <i>Administrator</i>
Post-conditions	Administrator is associated with <i>MedicineRepository</i> and <i>ProductRepository</i> Objects of type <i>Medicine</i> are created and associated with the <i>MedicineRepository</i> Objects of type <i>Product</i> are created and associated with the <i>ProductRepository</i>

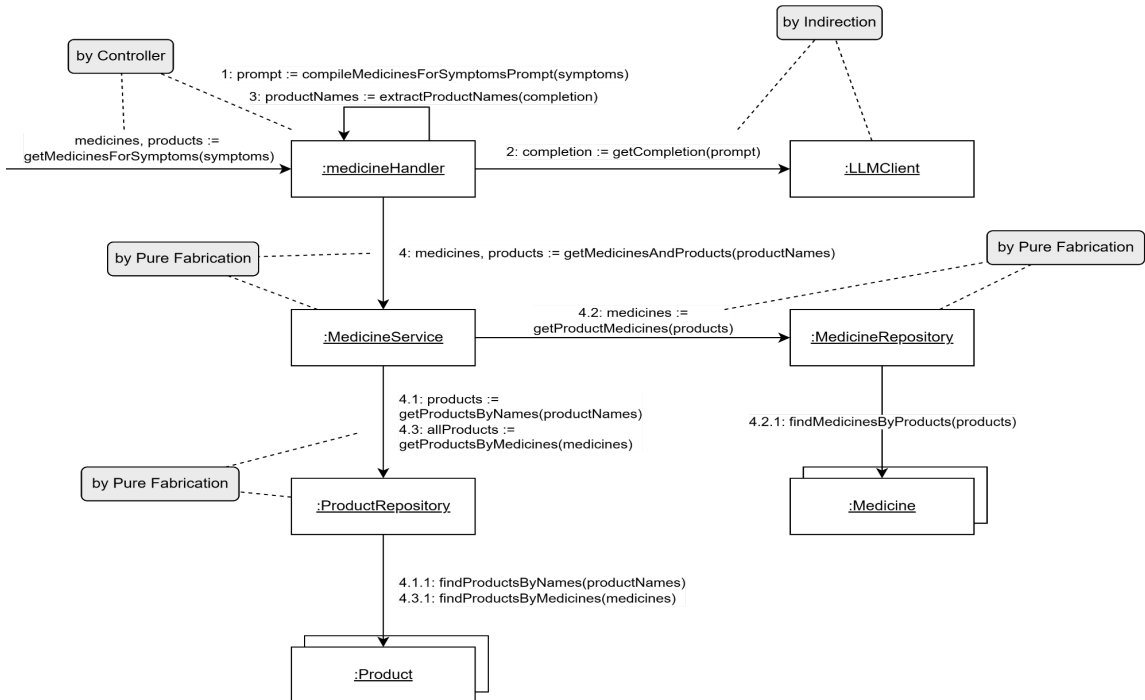
Name	applyFilter(chosenConstraints)
Responsibilities	Apply the <i>Constraints</i> selected by the <i>User</i> , and display <i>Medicines</i> and <i>Products</i> information that satisfy the selected <i>Constraints</i>
Pre-conditions	<i>User</i> has selected at least one <i>Constraint</i>
Post-conditions	An association is formed between selected <i>Constraints</i> and displayed <i>Medicines</i> An association is formed between selected <i>Constraints</i> and displayed <i>Products</i> An association is formed between the filtered <i>Medicines</i> and <i>User</i>

5: Interaction Diagrams

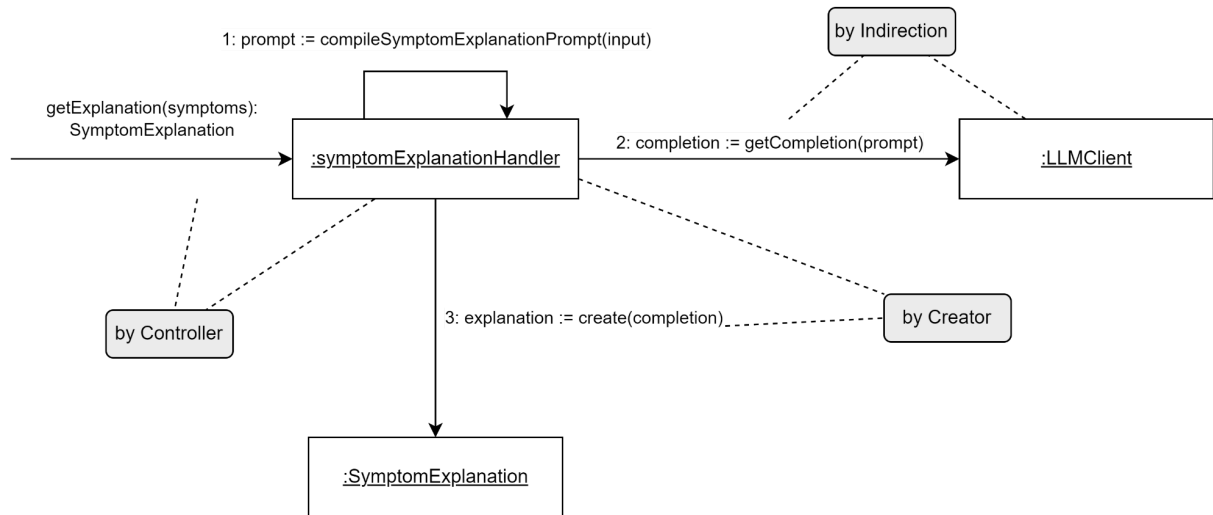
extractSymptoms(input)



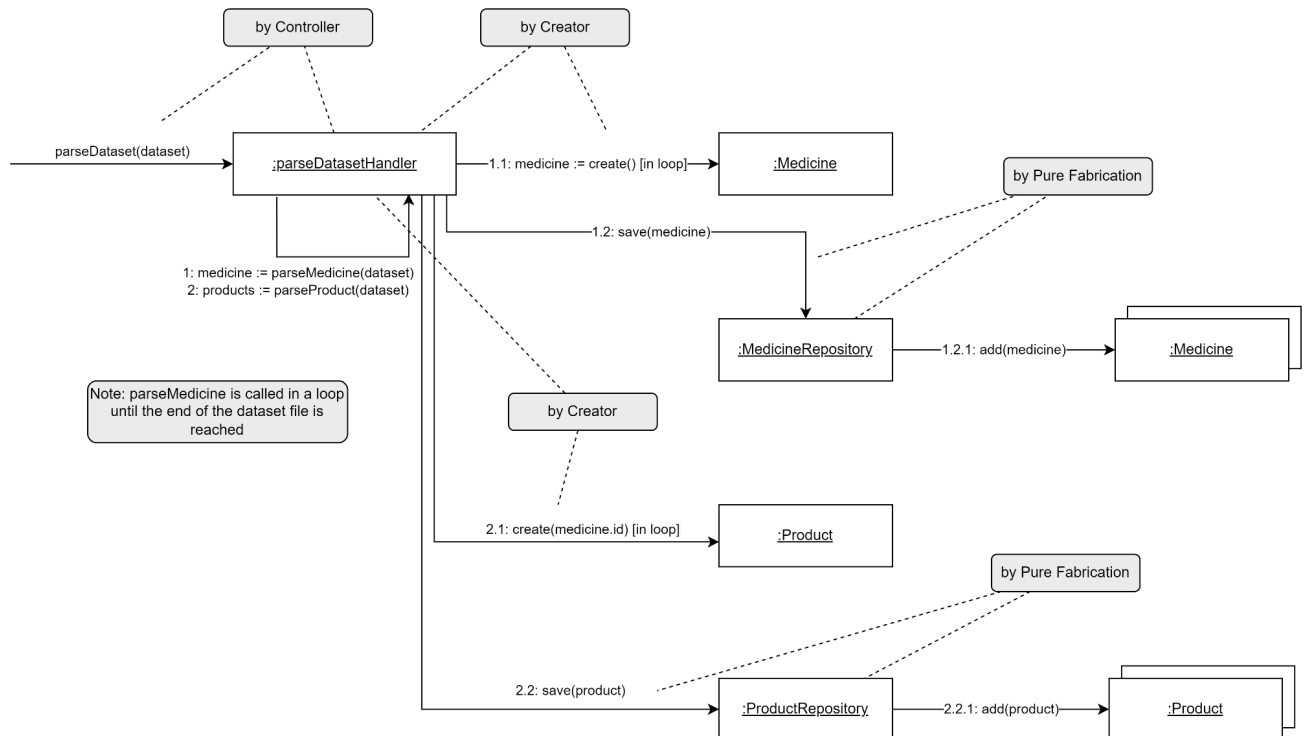
getMedicinesForSymptoms(symptoms)



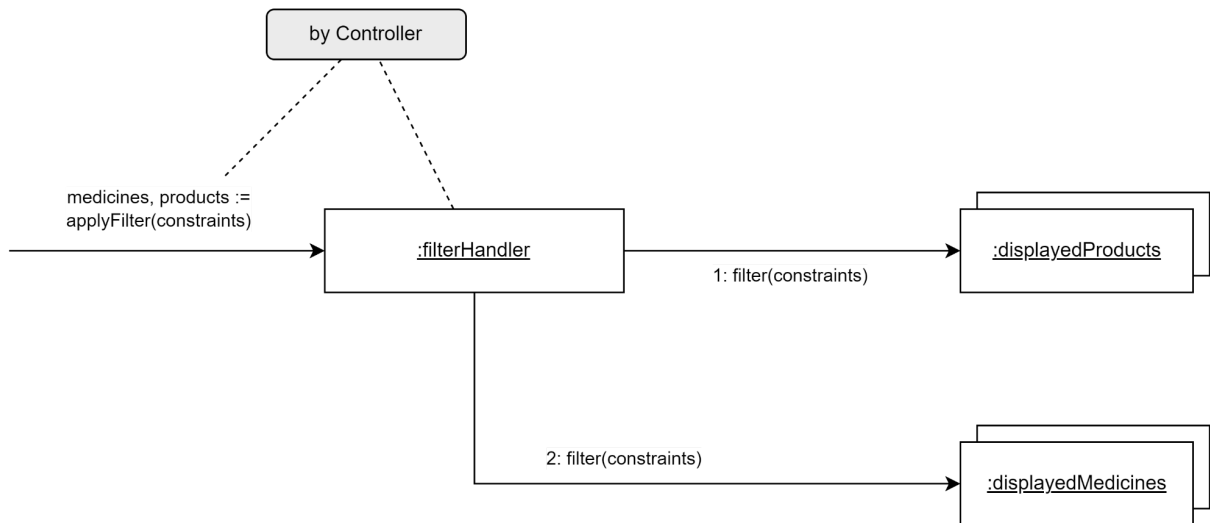
getExplanation(symptoms)



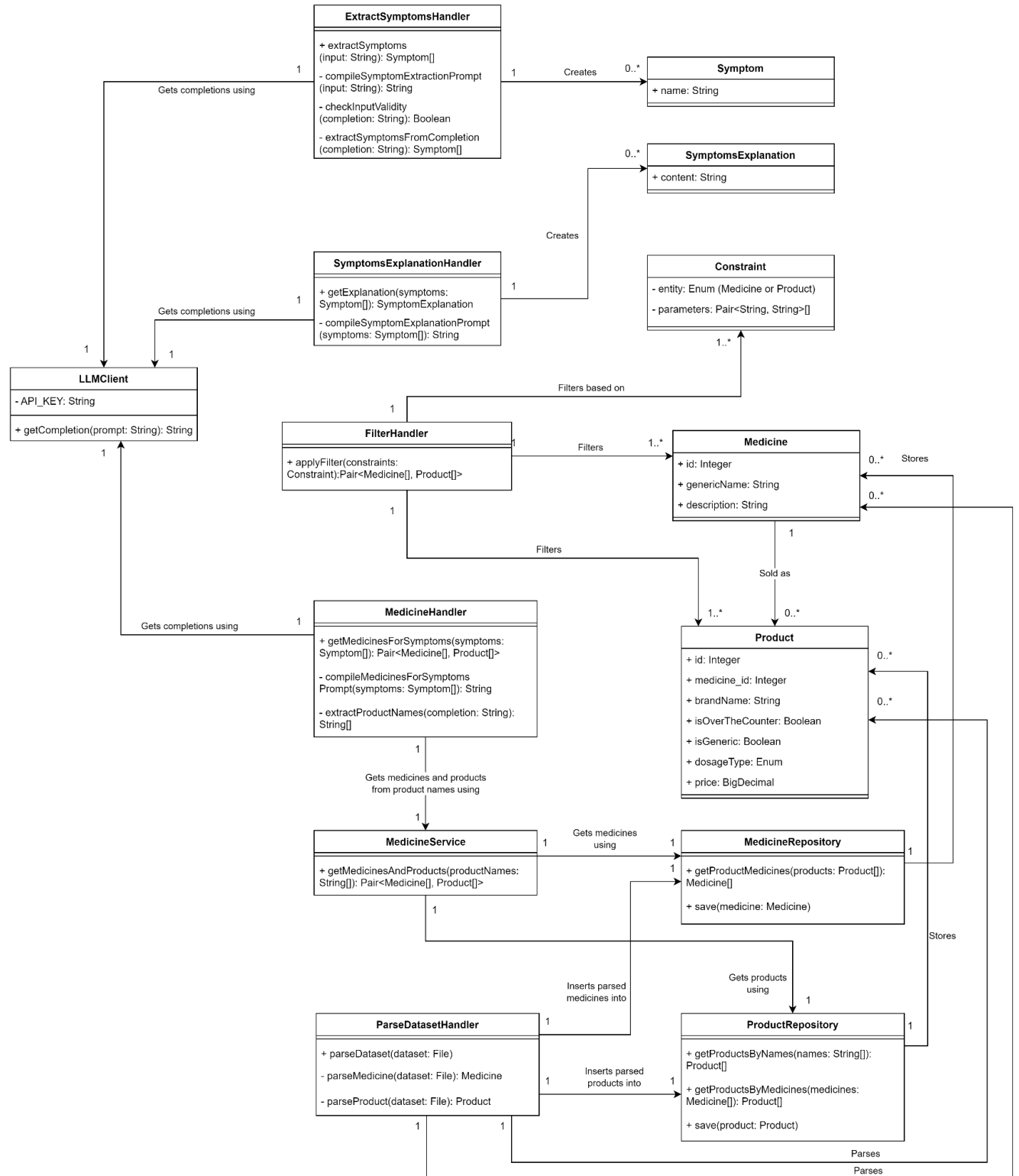
parseDataset(dataset)



applyFilter(constraints)



6. Class Diagram



Note: In the process of transforming the domain model into the class diagram through the various intermediate steps, we decided to exclude (and/or transform) some objects from the domain model into more mature and ready-to-be-coded classes. For example, the ‘TextInputHandler’ which matured into the ‘ExtractSymptomsHandler.’

7: User Interface Prototype

How are you feeling today?

Enter your symptoms here... Please be as detailed as possible

Examples: [My head hurts](#) [My stomach hurts](#) [I feel nauseous](#)

[Get help](#)

You feel: [symptom 1] [symptom 2] ... [symptom n]

A one-paragraph possible explanation for why those symptoms are being experienced. Possible non-medicine related advice could also go here. Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

Medicines that could help

[Medicine 1 official name] - [Type (over-the-counter or prescription)]

[One-paragraph description. What the medicine is typically used for]

- [Brand 1] [Price]

- [Brand 2] [Price]

[Medicine 2 official name] - [Type (over-the-counter or prescription)]

[One-paragraph description. What the medicine is typically used for]

- [Brand 1] [Price]

- [Brand 2] [Price]

Disclaimers

[Disclaimer 1]

[Disclaimer 2]

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[Filter Suggestions](#)