Testing Scenarios

This document provides full testing scenarios for 5 different types of health insurance fraud.

1- Duplicate Claims

This scenario assesses the LLM ability to detect duplicate services claims. We refer here to claim requests that are submitted for a service that has been performed multiple times for the same issue. For instance, a patient might visit two different doctors on the same day for the same medical issue and receive identical prescriptions. This type of fraud is typically perpetrated by the patient to obtain additional medication and exploit insurance coverage. Figures 1-3 demonstrate the LLM ability to successfully detect this fraud and identify the responsible entity.

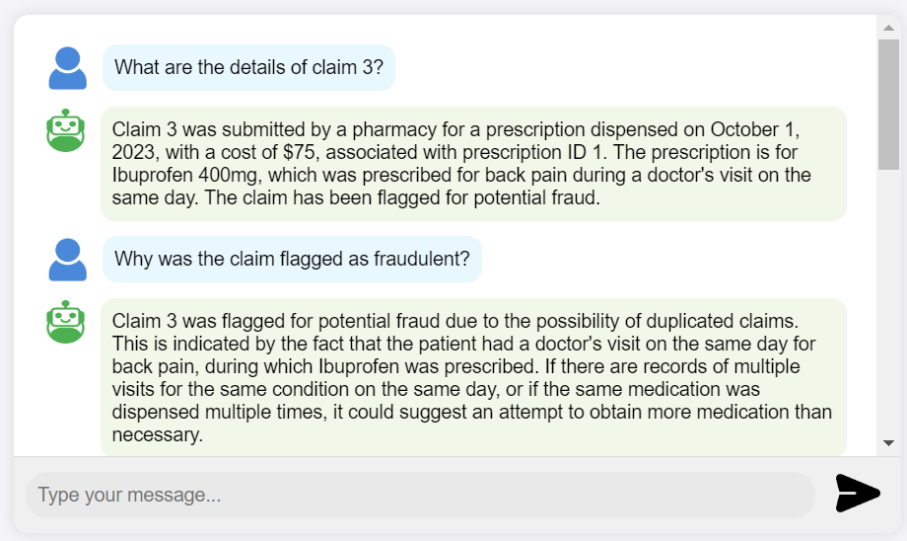

Figure 1: LLM detection of duplicate claims fraud

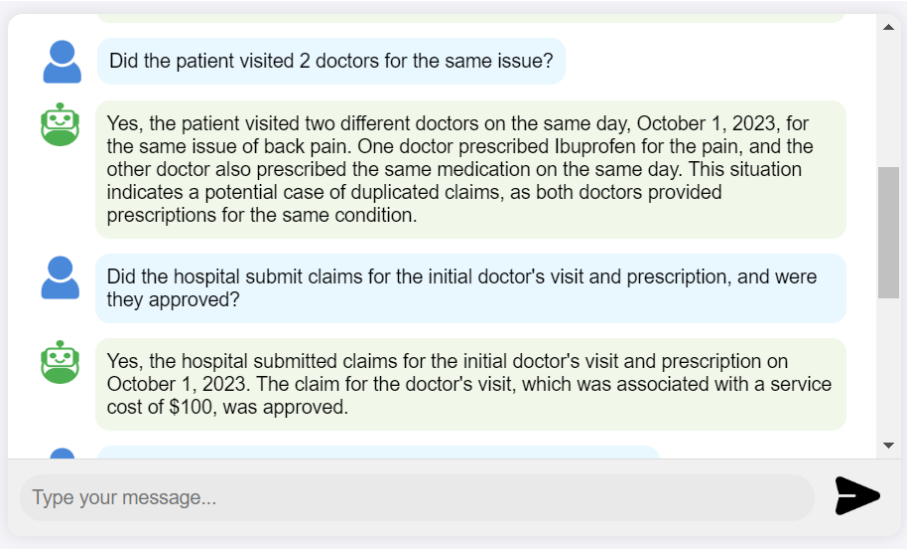

Figure 2: LLM responses concerning claim 3 details

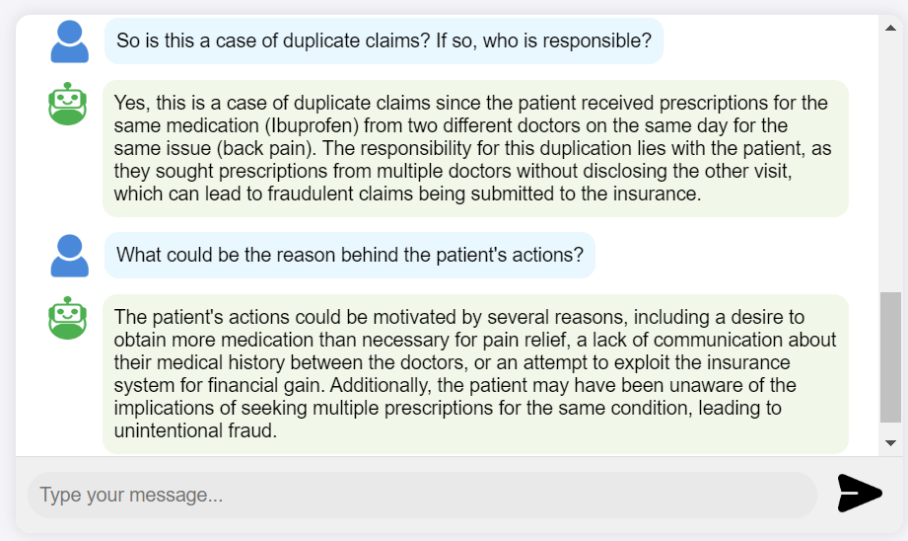

Figure 3: LLM identification of the responsible entity for the duplicate claim fraud

2- Inflated Claim Amount

An inflated claim amount fraud occurs when healthcare providers submit a claim request for a service with a claim amount that is significantly higher than the usual cost of that service. For this scenario, a service that typically costs \$200 is submitted with a claim amount of \$700, inflating the actual cost to defraud the insurance provider. Figures 4-6 confirm the LLM ability to successfully detect this type of fraud.

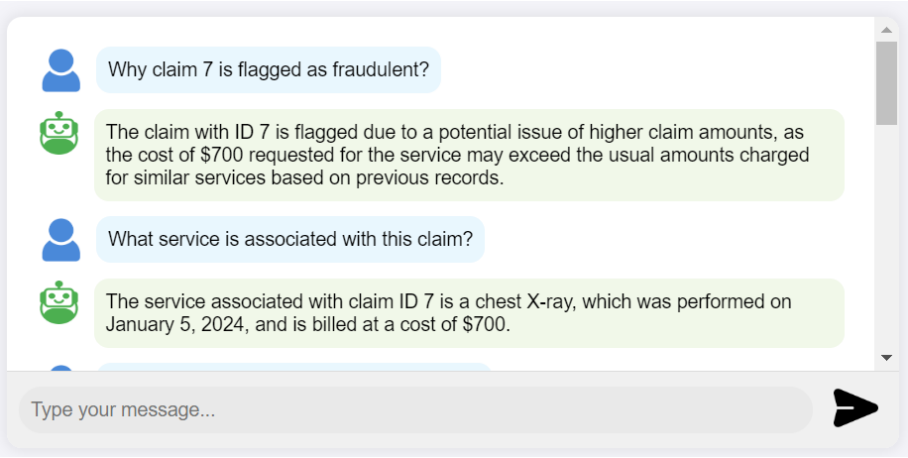

Figure 4: LLM detection of inflated claim amount fraud

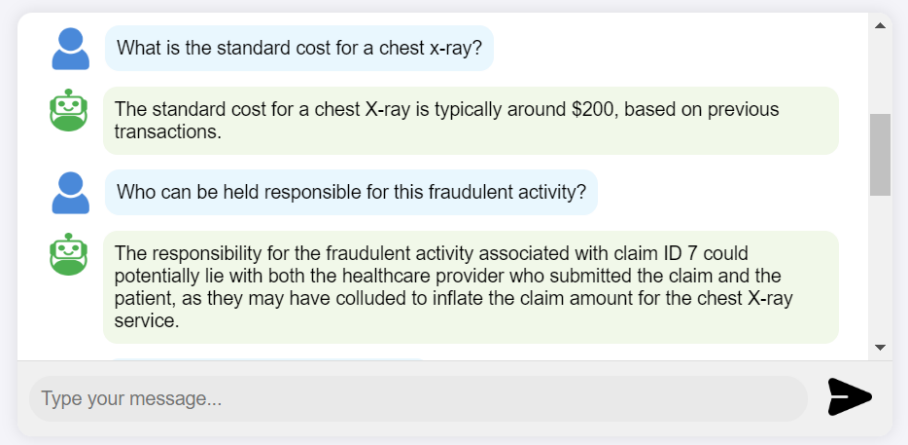

Figure 5: LLM identification of the responsible entity behind fraudulent claim 7

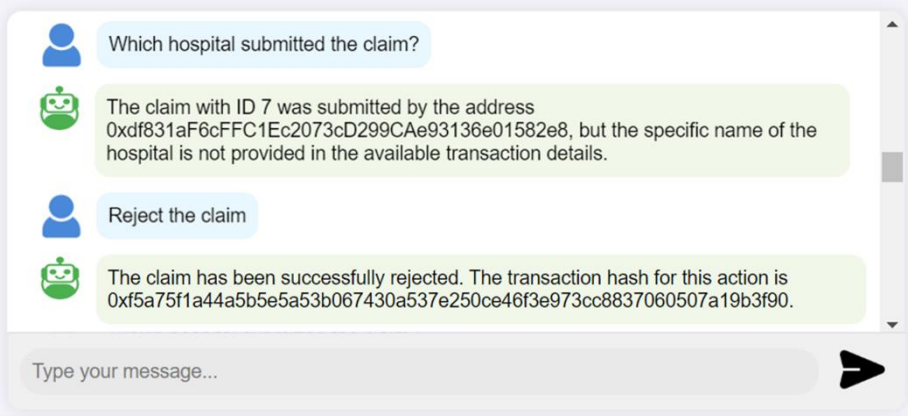

Figure 6: LLM calling SC function to reject claim 7

3- Patient-Paid Services

This type of fraud occurs when a service or prescription has been paid fully or partially by the patient. However, a claim request is submitted for the full amount or a higher amount than the remaining balance. In this scenario, a claim is submitted for a service that the patient partially paid for, but the claim represents the service as fully covered by insurance, seeking reimbursement for the entire amount. Figures 7 and 8 show the successful detection of this fraud by the LLM.

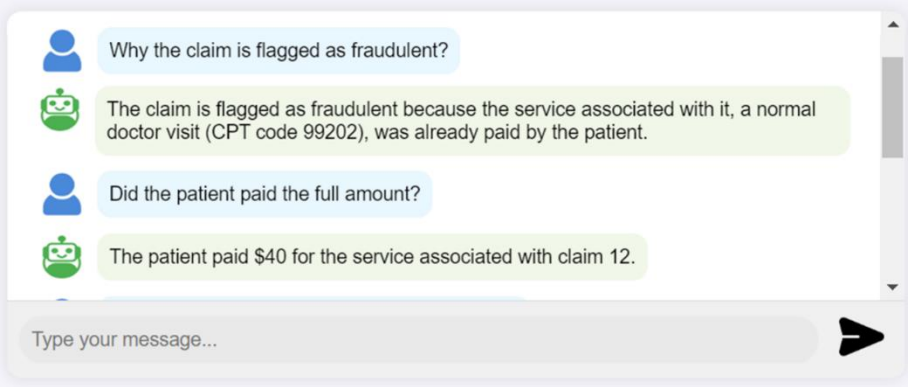

Figure 7: LLM detection of fraudulent claim for a partially patient-paid service

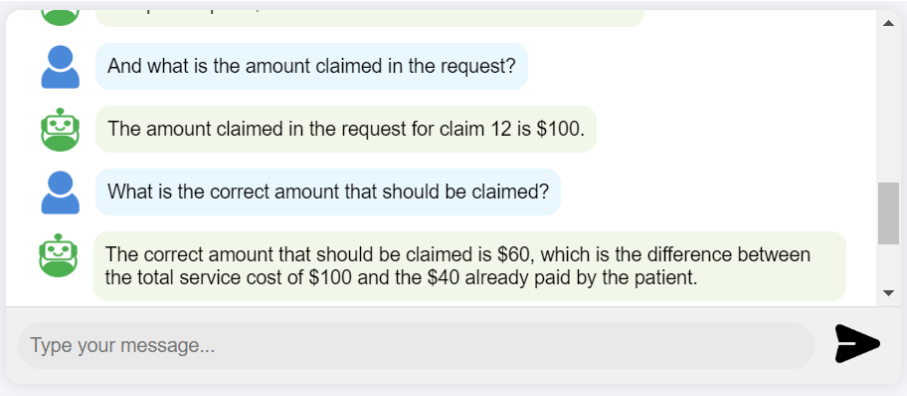

Figure 8: LLM identification of correct claim amount based on patient payment records

4- Unnecessary Services or Medications

This type of fraud is very common and difficult to detect. It occurs when a clinician requests tests or prescribes medications that are not necessary for the patient's condition, just to benefit from the insurance provider. Figures 9 and 10 illustrate the LLM ability to identify a fraud in which a non-diabetic patient was prescribed insulin, potentially for the purpose of obtaining the medication for someone else.

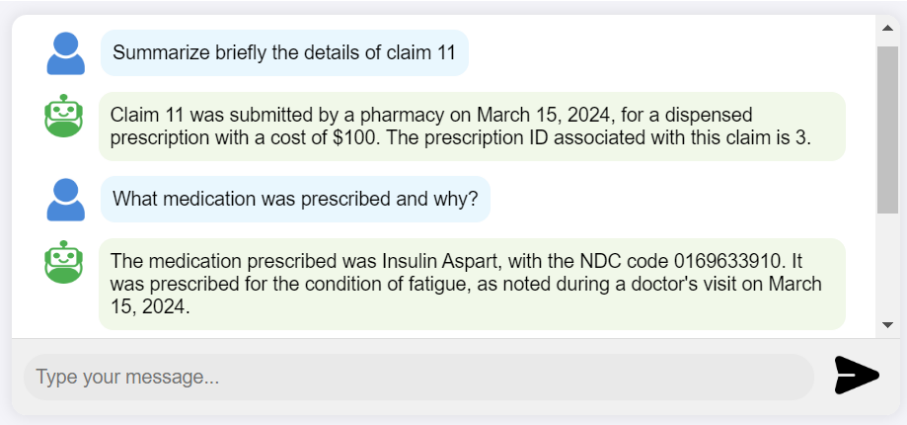

Figure 9: LLM summarization of claim 11 details

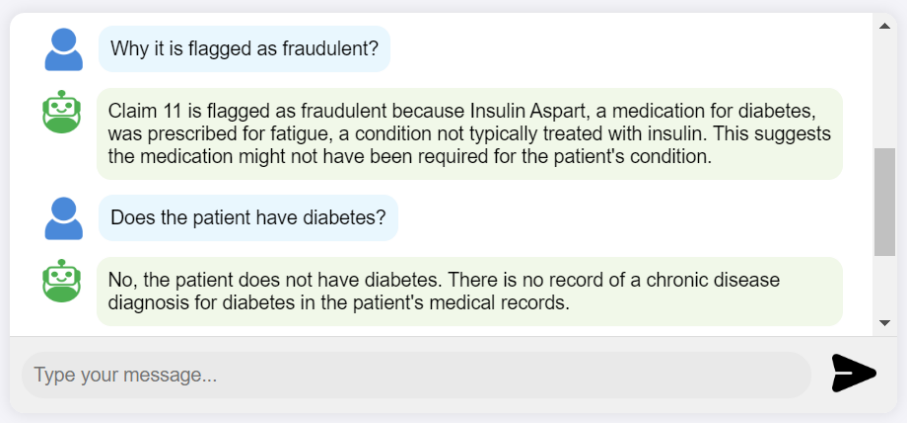

Figure 10: LLM detection of fraudulent claim for an unnecessary medication

Additionally, Figures 11 and 12 demonstrate the LLM capability to detect another type of fraudulent claim, where a patient exhibiting symptoms of a common cold was instructed to undergo a chest X-ray that was irrelevant to his condition.

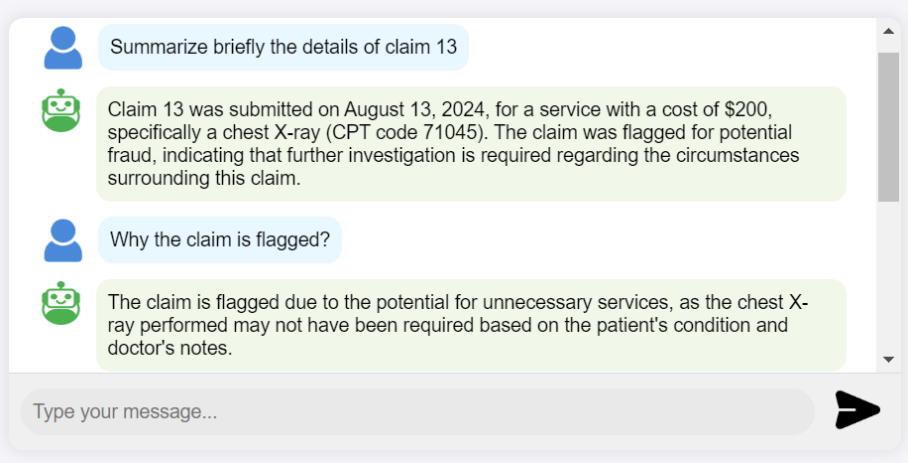

Figure 11: LLM detection of unnecessary test fraud

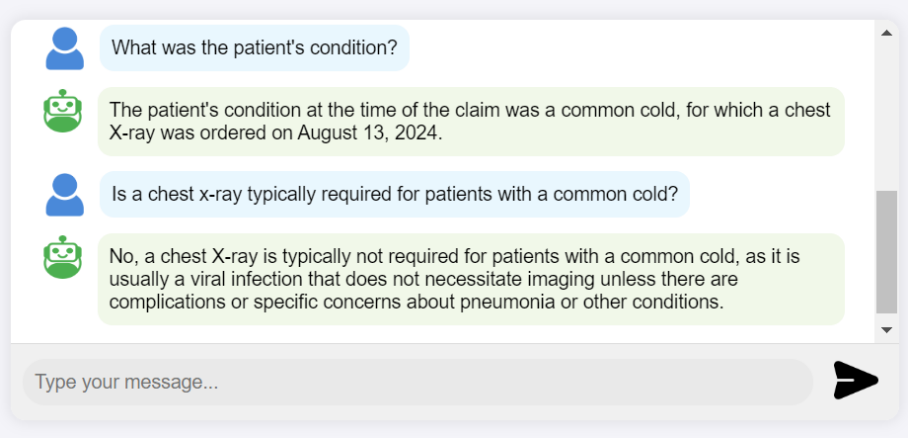

Figure 12: LLM explanation of claim 13 details and patient's condition

5- Services Not Rendered

This type of fraud can be detected by SCs if the service is not added at all. However, we are referring here to services that are added to the SC but for which no records indicate that they were actually performed. For example, a claim was submitted for an X-ray test that was never conducted on the patient, attempting to receive insurance reimbursement for a service that did not occur. Figures 13 and 14 show the LLM successfully detecting this fraud by verifying whether the test record was added to the patient's records. Moreover, Figure 15 shows the LLM ability to successfully identify the responsible entity behind this fraudulent claim.

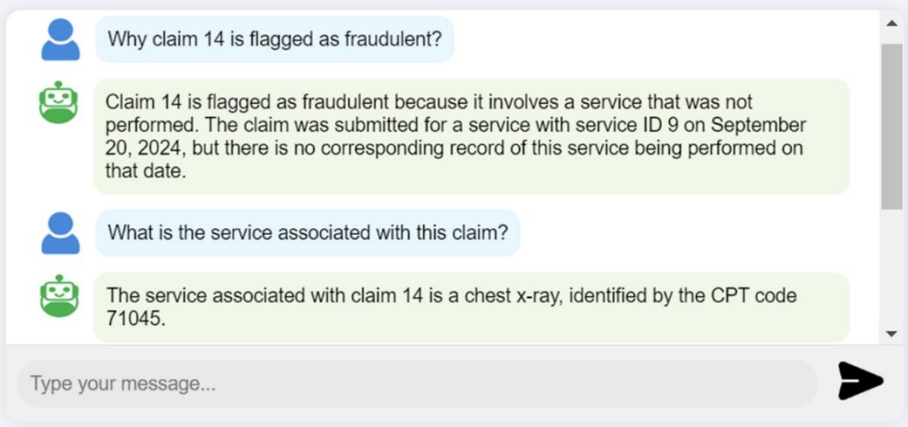

Figure 13: LLM detection of fraudulent claim for services not rendered

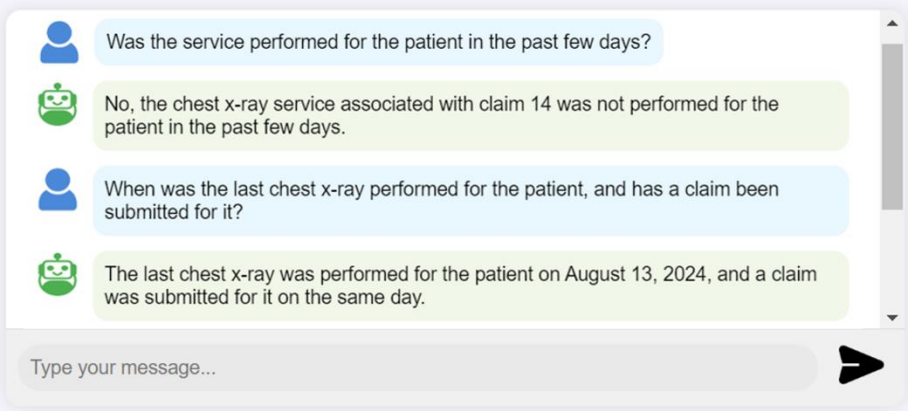

Figure 14: LLM responses concerning claim 14 details

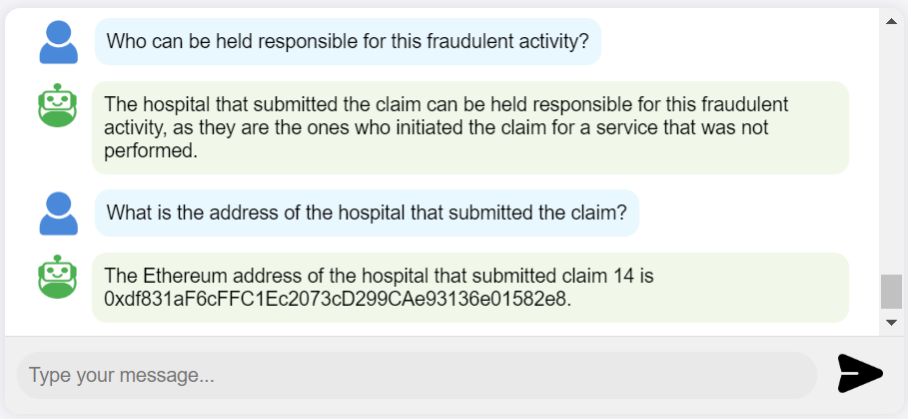

Figure 15: LLM identification of the responsible entity behind fraudulent Claim 14

6- Legitimate Claim Scenario

Here we demonstrate the LLM ability to correctly identify legitimate claims with no signs of fraud. Figure 16 illustrates the real-time identification of a legitimate claim, while Figures 17 and 18 display the LLM summarization and explanation of the claim details.

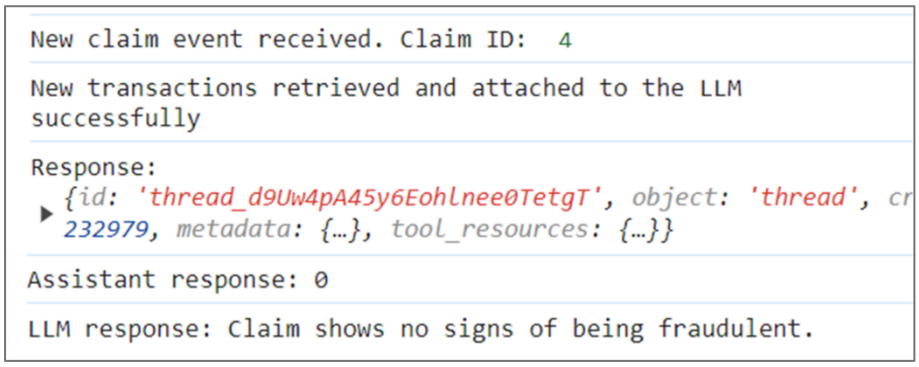

Figure 16: Real-time identification of a legitimate claim with no signs of fraud.

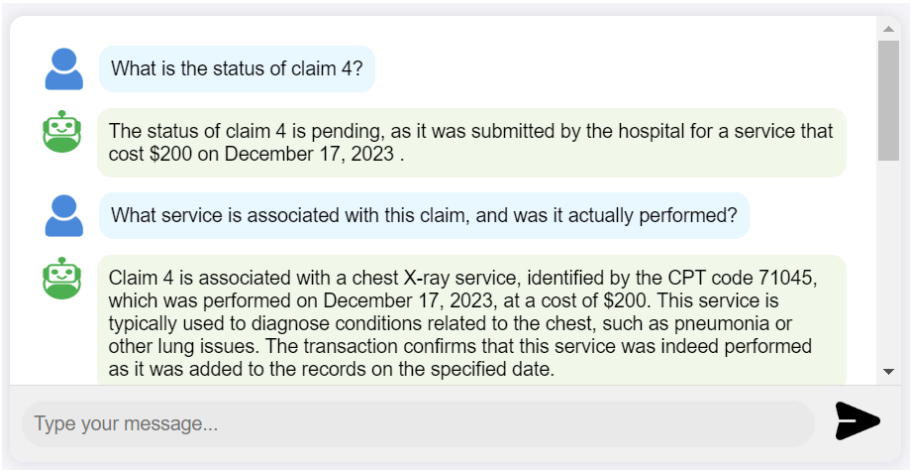

Figure 17: LLM summarization of the legitimate claim details

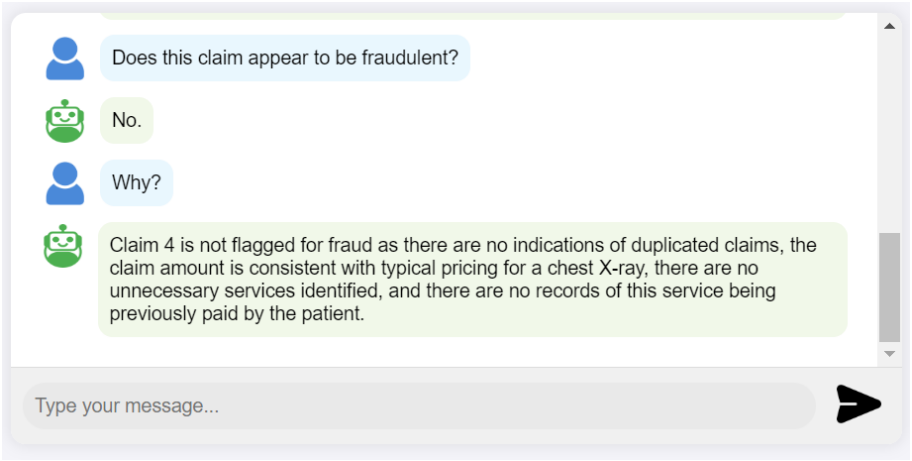

Figure 18: LLM explanation of the legitimate claim details