Assignment 4 Report

Expert System Mini Project
(Rule-Based Inference)

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Project overview

In this project, with the given code, I have to fill out the missing part of the code to make the laptop recommendation expert system that uses rule-based inference. It contains the knowledge-based IF THEN rules that use the preferences such as budget, portability, gaming, travel needs, creative work, battery life, and the types of OS preferences the user wants. To fully operate the functionality of the system, it collects user facts through questions and answers, then it uses a forward-chaining inference engine to match those facts against the rules that were placed in order. When all the rules all conditions are met, it then gives a conclusion which is a laptop recommendation or the type of specification, these are then added to the final results conclusion. The engine also keeps a trace of which rules are then fired.

Explanation Of the Process

For the missing part of the code, I have added code to main.py, engine.py, and laptop_rules.json. In engine.py, I implemented the reasoning system that applies the rules to the inference engine. In this, I have added a rule that can fire, which functions or runs forward chaining, also added new facts when the rules are fired. It also keeps track of which rules were used, then separates the recommendation and specification, which, as a whole, is the conclusion. In Laptop_rules.json, I implemented the IF THEN rules that were given in the Assignment 4_rules-1.docx. It contains rules that I make sure the system can recognize each of them, their conditions, and produce the correct recommendation and specification. In the main.py, which basically collects the facts that align with the rules as present in the JSON. I implemented that asked the user for input with their needs, such as budget(high, medium, low) , portability, gaming, travel needs, creative work, battery life, and the types of OS preferences the user wants. After collecting these facts from the user, the expert system used them to make decisions, which are reflected as output.