## 1. DJ Music Selection System

What the system does:  
This system helps DJs select songs based on event type, BPM, energy level, and smooth transitions.  
  
How it works using rules:  
- If the event is a wedding, the system prioritizes slow and romantic songs.  
- If the event is a club, the system selects high-energy dance tracks.  
- If the DJ prefers BPM sync, the system suggests songs within ±3 BPM of the current track.  
- The system adjusts based on crowd mood (e.g., increasing BPM when energy is low).

## 2. Rule-Based Customer Support Chatbot

What the system does:  
This chatbot answers frequently asked questions and provides customer support.  
How it works using rules:  
- If the user asks about password reset, the system provides step-by-step guidance.  
- If the user mentions a billing issue, the system directs them to payment support.  
- If the question contains a known keyword (e.g., 'shipping'), the system provides the relevant policy.

## 3. Medical Symptom Checker

What the system does:  
This system helps users determine potential illnesses based on their symptoms.  
  
How it works using rules:  
- If the user reports fever and cough, the system suggests the flu.  
- If the user has chest pain and shortness of breath, the system flags a possible emergency.  
- If symptoms match common allergies, the system suggests allergy relief measures.

# Selected Project: DJ Music Selection System

I chose the DJ Music Selection System because it provides an interactive and useful tool for DJs to seamlessly transition between songs based on predefined rules. The system adapts to different event types, BPM ranges, and crowd moods, making it highly relevant for live performances. Unlike other rule-based systems, this one incorporates both structured rules and real-time decision-making, which enhances its flexibility and usefulness in real-world applications.

# Rules and Logic for the DJ Music Selection System

1. If the event is a club, select high-energy tracks (120–140 BPM).  
2. If the event is a wedding, prioritize slow and romantic songs.  
3. If BPM sync is needed, suggest songs within ±3 BPM of the current song.  
4. If the crowd's energy is low, increase BPM in the next track.  
5. If key matching is enabled, suggest tracks in the same or a relative key.  
6. If the audience prefers throwbacks, prioritize classic hits.  
7. If the event is early in the night, start with mid-tempo, groovy songs.  
8. If the DJ frequently plays a track, increase its recommendation priority.

# Test Cases and Results

Test 1:  
User input: Event = 'Club', Genre = 'EDM', BPM = 128, Energy Level = 'High'  
Expected Output: A high-energy EDM track with BPM close to 128.  
Actual Output: 'Song A' (BPM 128, High Energy)

Test 2:  
User input: Event = 'Wedding', Genre = 'Pop', BPM = 100, Energy Level = 'Low'  
Expected Output: A romantic pop song with BPM close to 100.  
Actual Output: 'Song C' (BPM 98, Low Energy)

Test 3:  
User input: Event = 'House Party', Genre = 'Hip-Hop', BPM = 95, Energy Level = 'Medium'  
Expected Output: A mid-tempo hip-hop song around 95 BPM.  
Actual Output: 'Song B' (BPM 95, Medium Energy)

# Reflection

This rule-based DJ Music Selection System helps automate song choices based on predefined rules. The system uses conditional logic to filter tracks based on event type, BPM, energy, and transition preferences. The goal is to optimize song selection to match the DJ's needs and crowd dynamics.  
  
One challenge in developing this system was ensuring smooth transitions between songs. To solve this, I incorporated BPM sync and key matching rules. Another challenge was determining how to adjust for real-time crowd mood, which could be improved with machine learning in a future version. Overall, this project helped me understand the power of rule-based AI and how simple logic can create a dynamic, usable system.