## OVERVIEW

This system helps users (e.g., healthcare professionals) check for drug interactions in real time with condition-based severity adjustments. It provides:  
- Drug interaction alerts  
- Condition-aware severity levels  
- Clinical notes explaining flagged interactions  
- Suggested alternative drugs  
- Brand name and manufacturer details for Nigerian inclusivity  
- Symptom context for each condition

## DATABASE STRUCTURE

|  |  |
| --- | --- |
| Table Name | Purpose |
| Drug | Master list of drugs with names, classes, brands, and manufacturers |
| Interaction | Base interactions between two drugs with a general description |
| Condition | List of 10 predefined medical conditions |
| Condition\_Interaction | Adjusts interaction severity per condition (core to system’s uniqueness) |
| Symptom | List of symptoms tied to conditions |
| Condition\_Symptom\_Map | Links symptoms to their respective conditions |
| Clinical\_Note | Explanatory notes tied to each interaction |
| Alternative\_Drug | Alternatives for flagged drug combinations |

## FRONTEND FUNCTIONALITY

Here’s what the user interface should enable:  
  
1. User inputs two drugs (by either generic or brand name — both should return same results).  
2. System returns for both drugs their :  
 - Drug names  
 - Drug classes  
 - All available brand names  
 - Manufacturers  
 - Interaction type (e.g., Major 🟠) Also displayed with color coded severity flag   
 - Severity score (1–4)  
 - Clinical note (based on interaction)  
 - Alternative drug suggestion  
3. Condition awareness:  
 - User can select a condition along with drug interaction (e.g., Pregnancy, Liver Disease).  
 - System checks if the interaction severity should change based on this condition (using Condition\_Interaction table).  
 - Adjusted severity is displayed with appropriate urgency alert.  
4. Search by Brand Name and drug name  
 - Searching for “Zestril” will return info tied to “Lisinopril”.  
 - All brand and generic names are linked via the Drug table.  
5. Condition Explorer  
 - User can explore a condition and view its key symptoms (from Symptom and Condition\_Symptom\_Map).

## BACKEND LOGIC

- When a user searches for two drugs:  
 - Match them in the Drug table (generic or brand).  
 - Fetch any entry in Interaction where both drugs match.  
 - Get the interaction type, description, clinical note, and suggested alternative(s).  
- If a condition is selected:  
 - Look up Condition\_Interaction to find adjusted severity.  
 - Display new severity score and severity type.  
- When showing alternatives:  
 - Lookup Alternative\_Drug and display generic names of suggested replacements.  
- Store everything relationally via IDs but display full drug names and details to the user.

This system is a real-time drug safety tool that can eventually scale to more drugs, interactions, and conditions. For now, just ensure:  
- All tables are linked properly by ID  
- User can search by brand or generic  
- Condition severity overrides work  
- Clean UI with clear alerts, alternatives, and explanations

## 4. Drug Explorer & Severity Color Codes

The system includes a Drug Explorer that allows users to search by drug name or brand name, returning full details such as class, manufacturers, and potential interactions.

Severity Score Color Coding for Visual Alerts:  
• 4 → 🔴 Contraindicated  
• 3 → 🟠 Major  
• 2 → 🟡 Moderate  
• 1 → 🟢 Minor

## 5. Alert Logic and Real-Time Interaction Flagging

The system features Real-Time Clinical Alerts, which means it automatically checks and flags potential interactions as the user is selecting drugs, before submission is completed.  
 **Interaction Alert Logic:**• If no interaction is found → “No known interaction”  
• If condition-adjusted interaction is contraindicated → Alert appears in red and recommendation is blocked

Autocomplete functionality must also be implemented for drug and condition search fields, to improve speed and accuracy of user selection.