SHYAKA NOBLE DAVID AI CHOUCHAOUI MED EL BACHIR AI SAAD DAHLAB UNIVERSITY

DOCTOR WINTER

Introduction

Doctor Winter serves as a diagnostic tool specifically crafted for identifying common winter-related illnesses, vital during a season marked by increased respiratory problems. By utilizing Prolog, this expert system harnesses a symptom-based approach to deliver accurate diagnoses and recommended treatments.

System Overview

Doctor Winter's core functionality lies in its Prolog implementation, leveraging a database storing symptoms, associated illnesses, and recommended medications. The system operates on a rule-based diagnosis engine that factors in user-input symptoms, age, allergies, and medications to generate precise diagnoses and medication recommendations.

Implementation Details

The Prolog code encompasses

Database Structure: Defines illnesses, associated symptoms, and recommended medications.

Diagnosis Rules: Match user-input symptoms with illnesses and incorporate additional factors (age, allergies, medications) for accurate diagnosis and medication suggestions.

Input Processing: Gathers user information and triggers the diagnosis process.

Usage and Output Examples

Scenario 1: Flu Diagnosis (Age 65)

Input Symptoms: [fever, severecough, bodyaches, fatigue, respiratorysymptoms]

Age: 65

Output: Consider flu vaccine. Diagnosis: flu. Medication: [antivirals, painrelief, fluidsrest]

```
?- start_diagnosis.
Enter patient symptoms separated by commas:
|: [fever,severecough,bodyaches,fatigue,respiratorysymptoms].
Enter patient age:
|: 17.
Enter any allergies (or none):
|: none.
Enter current medications (or none):
|: none.
The available medication is intended for older individuals, please consult a Ped
iatrician before use.
Diagnosis: flu
Medication: [antivirals,painrelief,fluidsrest]
THANK YOU FOR USING DR. WINTER.
true.
```

Scenario 2: Flu Diagnosis (Age 17)

Input Symptoms: [fever, severecough, bodyaches, fatigue, respiratorysymptoms]

Age: 17

Output: The available medication is intended for older individuals, please consult a pediatrician before use.

Diagnosis: flu.

Medication: [antivirals, painrelief, fluidsrest]


```
?- start_diagnosis.
Enter patient symptoms separated by commas:
|: [fever,severecough,bodyaches,fatigue,respiratorysymptoms].
Enter patient age:
|: 17.
Enter any allergies (or none):
|: none.
Enter current medications (or none):
|: none.
The available medication is intended for older individuals, please consult a Ped
iatrician before use.
Diagnosis: flu
Medication: [antivirals,painrelief,fluidsrest]
THANK YOU FOR USING DR. WINTER.
true.
```


Scenario 3: Pneumonia Diagnosis (Allergy to Penicillin)

Input Symptoms: [highfever, severecough, chestpain, difficultybreathing]

Age: 23

Allergies: [allergy_to_penicillin]

Output: Avoid penicillin-based antibiotics.

Diagnosis: pneumonia.

Medication: [antibiotics, coughsuppressants, painrelief]

```
?- start_diagnosis.
Enter patient symptoms separated by commas:
|: [highfever,severecough,chestpain,difficultybreathing].
Enter patient age:
|: 23.
Enter any allergies (or none):
|: [allergy_to_penicillin].
Enter current medications (or none):
|: none.
Avoid penicillin-based antibiotics.
Diagnosis: pneumonia
Medication: [antibiotics,coughsuppressants,painrelief]
THANK YOU FOR USING DR. WINTER.
true.
```

Scenario 4: Flu Diagnosis (Age 23)

Input Symptoms: [fever, severecough, bodyaches, fatigue, respiratorysymptoms]

Age: 23

Output: Consult a doctor due to anticoagulants or asthma medication interactions.
Diagnosis: flu.

Medication: [antivirals, painrelief, fluidsrest]

```
?- start_diagnosis.
Enter patient symptoms separated by commas:
|: [fever,severecough,bodyaches,fatigue,respiratorysymptoms].
Enter patient age:
|: 23.
Enter any allergies (or none):
|: none.
Enter current medications (or none):
|: [anticoagulants].
Consult a doctor due to anticoagulants or asthma medication interactions.
Diagnosis: flu
Medication: [antivirals,painrelief,fluidsrest]
THANK YOU FOR USING DR. WINTER.
true.
```

Testing and Validation

Testing involved

Inputting various symptoms, ages, allergies, and medications.

Validating outputs against expected results based on medical knowledge and scenarios.

Future Enhancements

User Interface: Develop a user-friendly interface for easier interaction.

Expanded Database: Incorporate a wider range of illnesses and symptoms for more comprehensive diagnoses.

Conclusion:

Doctor Winter exhibits promising capabilities in identifying winter-related illnesses accurately. While effective, improvements in user interface and database expansion will elevate its usefulness and scope.