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| **AY -ODD 2024-25** | | | | | | | | | | | | | |
| **GUJARAT TECHNOLOGICAL UNIVERSITY** | | | | | | | | | | | | | |
| **SCHOOL OF ENGINEERING AND TECHNOLOGY** | | | | | | | | | | | | | |
| **PRACTICAL - 8** | | | | | | | | | | | | | |
| **Course Code & Name** | | | **ME01095021- Artificial Intelligence** | | | | | | | | | | |
| **Academic Term:** | | | **AY –ODD 2024-25** | | | | | **Semester** | | | | **I** | |
| **Student Enrollment No:** | | | **241370795004** | | | | | **Batch:** | | | |  | |
| **Student Name:** | | | **Dake Darsh Dhaneshkumar** | | | | | | | | | | |
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| **AIM/Objective:** | | | | | | | | | | | | | |
| 1 | | To make predicates and rules in prolog for diagnosis the childhood diseases. | | | | | | | | | | | |
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| **Expected Outcome:** | | | | | | | | | | **CO/PO/PSO** | | | |
| 1 | | Analyze the working methodology of different learning approaches. | | | | | | | | CO3 | | | |
|  | | **Experiment Result and Analysis**  **Resources and Software used:**   1. SWI-Prolog   **Code:**  % Define the symptoms symptom('Flu'). symptom('Yellowish eyes and skin'). symptom('Dark color urine'). symptom('Pale bowel movement'). symptom('Fatigue'). symptom('Vomiting'). symptom('Fever'). symptom('Pain in joints'). symptom('Weakness'). symptom('Stomach Pain').  % Define the treatments treatment('Flu', 'Drink hot water, avoid cold eatables.'). treatment('Yellowish eyes and skin', 'Put eye drops, have healthy sleep, do not strain your eyes.'). treatment('Dark color urine', 'Drink lots of water, juices, and eat fruits. Avoid alcohol consumption.'). treatment('Pale bowel movement', 'Drink lots of water and exercise regularly.'). treatment('Fatigue', 'Drink lots of water, juices, and eat fruits.'). treatment('Vomiting', 'Drink salt and water.'). treatment('Fever', 'Put a hot water cloth on head and take Crocin.'). treatment('Pain in joints', 'Apply pain killer and take Crocin.'). treatment('Weakness', 'Drink salt and water, eat fruits.'). treatment('Stomach Pain', 'Avoid outside food and eat fruits.').  % Define dynamic patient facts :- dynamic(patient/2).  % Main loop to ask questions ask\_symptom :- symptom(X), write('Does the patient have '), write(X), write('? (yes/no): '), read(Response), assert(patient(X, Response)), fail. % Continue asking questions  ask\_symptom :- nl, write('All symptoms recorded.'), nl.  % Disease diagnosis rules disease(hemochromatosis) :- patient('Stomach Pain', yes), patient('Pain in joints', yes), patient('Weakness', yes), patient('Dark color urine', yes), patient('Yellowish eyes and skin', yes).  disease(hepatitis\_c) :- not(disease(hemochromatosis)), patient('Pain in joints', yes), patient('Fever', yes), patient('Fatigue', yes), patient('Vomiting', yes), patient('Pale bowel movement', yes).  disease(hepatitis\_b) :- not(disease(hemochromatosis)), not(disease(hepatitis\_c)), patient('Pale bowel movement', yes), patient('Dark color urine', yes), patient('Yellowish eyes and skin', yes).  disease(hepatitis\_a) :- not(disease(hemochromatosis)), not(disease(hepatitis\_c)), not(disease(hepatitis\_b)), patient('Flu', yes), patient('Yellowish eyes and skin', yes).  disease(jaundice) :- not(disease(hepatitis\_c)), not(disease(hepatitis\_b)), not(disease(hepatitis\_a)), patient('Yellowish eyes and skin', yes).  disease(flu) :- not(disease(hemochromatosis)), not(disease(hepatitis\_c)), not(disease(hepatitis\_b)), not(disease(hepatitis\_a)), patient('Flu', yes).  % Output diagnosis and treatment output :- nl, write('Diagnosis:'), nl, possible\_diseases, nl, write('Treatment Advice:'), nl, advice.  possible\_diseases :- (disease(X), write('- The patient may suffer from '), write(X), nl, fail); true. % Ensure the rule succeeds even if no diseases are found.  advice :- (symptom(X), patient(X, yes), treatment(X, Y), write('- For '), write(X), write(': '), write(Y), nl, fail); true. % Ensure the rule succeeds even if no advice is found.  **Output:** | | | | | | | |  | | |  |
|  | | |  |  | | --- | --- | | **Conclusion** | | | 1 | This Prolog-based medical diagnosis system demonstrates the power of logical reasoning in artificial intelligence for healthcare applications. By defining symptoms, treatments, and rules for disease identification, the system effectively interacts with users, processes their responses, and provides a potential diagnosis along with relevant treatment advice. | | | | | | | | | | | | |
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| **Evaluation Rubrics** | | | | | **Marks** | | **Inadequate** | | **Good** | | **Excellent** | | |
| **0%** | | **50%** | | **100%** | | |
| 1 | The understanding of the Student regarding the objective of the given practical | | | | **2** | |  | |  | |  | | |
| 2 | Installation of Software or Hardware Setup level | | | | **2** | |  | |  | |  | | |
| 3 | Quality of the Analysis done | | | | **2** | |  | |  | |  | | |
| 4 | Quality of the report including concluding remarks and Findings | | | | **2** | |  | |  | |  | | |
| 5 | Question & Answer related to given practical & timely submission | | | | **2** | |  | |  | |  | | |
|  | | | | | **10** | |  | |  | |  | | |
| **Total Marks Obtained Out of 10** | | | | | | |  | | | | | | |
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|  | | **Date of Completion:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | |  | | **Course**  **Coordinator Sign:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | | | | |