Heritage Institute of Technology

Subject: Introduction to Artificial Intelligence Lab

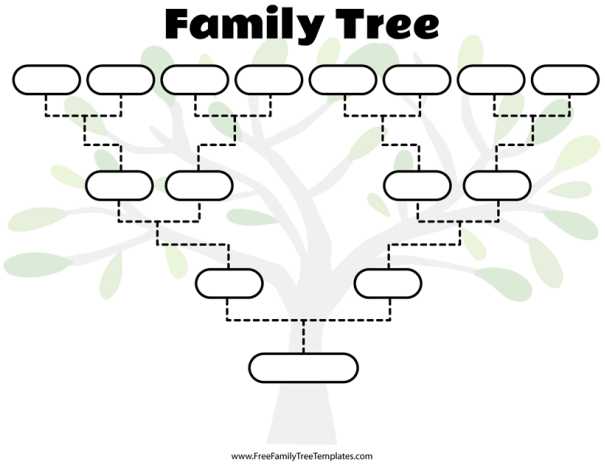
Session 2025

Subject Code: AML2251, Credit points: 1.5

In this laboratory students will be familiarized with PROLOG language.

Lab Assignment:

Day 1. Implement the family tree. Write predicates in Prolog to find out the following Relations to generate the correct Output. First fill up the template and write the Knowledge Base and Inference Rules .



1. mother
2. father
3. son ,daughter
4. uncle , Aunt
5. maternal_grandmother, maternal_grandfather
6. paternal_grandmother,paternal_grandfather.
7. siblings
8. wife
9. sonin_law
10. daughterin_law

Day 2. Formation of recursive definition:

a) Write a program in Prolog to find factorial of a number.
b) Write a program in Prolog to find GCD of Numbers.
Generate the PROLOG executes of the simple assignments

Day 3. How PROLOG deals with problems with numbers – integers, real; with some examples.

a)Use of operators for mathematical Operations .

b) Calculating with numbers and processing collection of objects.

Day 4. Introduction to LIST structure
a) Write a program in Prolog to find the number of elements of a list.
b)WAP in Prolog to find the k^{th} element of a list .
c) Check whether X is present in the list.
d) Check if elements are Vowels or Digits.

Day 5. Use of accumulators:
a)Lists operations ..
b) Define the behaviour of common logic gates: AND, OR, NOT, NAND, NOR, XOR, and XNOR. Simulate an Electronic Circuit.

Day 6. Introduction to CUT with simple assignments: Implement Bubble Sort

Day 7. Create Employee Database in Prolog with predicate name employee and 7 attributes as required.
a) Extract the records of Employee with EMPNAME= 'Lakshmi Shrivastava' , Employed in COMPANY='AMAZON'.
b) Retrieve names of employees, emplee_id, date of Joining, B.Tech /M.Tech from Institute.

Working in 'TCS', 'CTS' ,'AMAZON' from 'CSE' /'CSE-AIML'/'CSE-DS' from HIT.

Day 8. Implement Graph Search algorithms like DFS/ BFS.

Day 9. Implementation of puzzle:

a)8-queens problem b) Towers-of-Hanoi c) problem, Missionaries & Cannibals problem etc.

Day 10. Implementation of Expert System

a) Bird Recognition

b) Specific or Generic Disease Recognition System.

or

c) NLP tasks.

Introduction to NLP:

https://cs.union.edu/~striegnk/courses/nlp-with-prolog/html/

Textbooks

1. PROLOG Programming for Artificial Intelligence, Ivan Bratko, Pearson India.

Reference Books

Logic and Prolog Programming, SarojKaushik, New Age International Publishers.

Course Outcomes

After completion of the course, students will be able to

AML2251.1: Remember and understand the working principles of PROLOG/ LISP

AML2251.2: Apply LIST structure of PROLOG as and when required

AML2251.3: Make use of CUT to the programs as and when required

AML2251.4: Solve the problems by using accumulator

AML2251.5: Apply the principles of reasoning and inference to real world problems

AML2251.6: Design programs to solve various puzzles.

Note: Make a Practical File, Do the tasks on Regular basis and Get it Checked.

Marks Distribution:

4 Marks: Execution of Programs, 3 Marks: Assignment Submission,

2Marks: Lab M/c and chairs maintenance,

1Marks: Behaviour.
