**Prolog Programs**

**17. Sum from 1 to N**

sum(1, 1).

sum(N, Total) :- N > 1, N1 is N - 1, sum(N1, T1), Total is T1 + N.

**18. Database with Name, DOB**

dob(john, '2000-01-01').

dob(mary, '1999-12-31').

**19. Student-Teacher-Subject**

teaches(mr\_smith, math).

teaches(ms\_johnson, english).

student(john, math).

student(mary, english).

**20. Planets Database**

planet(earth, 1).

planet(mars, 2).

planet(jupiter, 79).

**21. Towers of Hanoi**

move(1, A, B, \_) :- write('Move top disk from '), write(A), write(' to '), write(B), nl.

move(N, A, B, C) :- N>1,

N1 is N-1,

move(N1, A, C, B),

move(1, A, B, \_),

move(N1, C, B, A).

**22. Bird Can Fly**

bird(sparrow).

bird(penguin).

cannot\_fly(penguin).

can\_fly(X) :- bird(X), \+ cannot\_fly(X).

**23. Family Tree**

parent(john, mary).

parent(john, tom).

parent(mary, alice).

male(john).

female(mary).

female(alice).

male(tom).

**24. Diet Based on Disease**

diet(diabetes, low\_sugar).

diet(bp, low\_salt).

diet(obesity, low\_fat).

**25. Monkey-Banana Problem**

at(monkey, door).

at(banana, ceiling).

has(monkey, nothing).

can\_reach :- at(monkey, box), at(box, banana).

**26. Fruit and Color with Backtracking**

fruit(apple, red).

fruit(banana, yellow).

fruit(grape, green).

**27. Best First Search**

% Not a built-in; simulate with heuristic

edge(a, b, 1).

edge(a, c, 2).

edge(b, d, 4).

edge(c, d, 1).

h(d, 0). h(b, 4). h(c, 1). h(a, 3).

**28. Medical Diagnosis**

symptom(john, fever).

symptom(john, cough).

disease(john, flu) :- symptom(john, fever), symptom(john, cough).

**29. Forward Chaining**

fact(a).

rule(b) :- a.

**30. Backward Chaining**

goal(X) :- condition1(X), condition2(X).

**31. Web Blog in WordPress**

Use the WordPress editor to insert:

* Anchor Tag: <a href="https://example.com">Visit Site</a>
* Title Tag: In HTML header or <title>My Blog</title>

**32. Pattern Matching**

match([H|\_], H).

**33. Count Vowels**

**vowel(a). vowel(e). vowel(i). vowel(o). vowel(u).**

**count\_vowels([], 0).**

**count\_vowels([H|T], Count) :-**

**count\_vowels(T, Rest),**

**(vowel(H) -> Count is Rest + 1; Count is Rest).**