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% Q17: Prolog Program to Sum the Integers from 1 to N

% ----------------------------------------

% sum\_to\_n(N, Sum): Sum is 1 + 2 + ... + N, for N >= 0.

% Base case: sum of numbers up to 0 is 0

sum\_to\_n(0, 0).

% Recursive case: sum up to N = sum up to (N-1) + N

sum\_to\_n(N, Sum) :-

N > 0,

N1 is N - 1,

sum\_to\_n(N1, S1),

Sum is S1 + N.

% ----------------------------------------

% Run automatically when file is loaded

% ----------------------------------------

:- initialization(main).

main :-

% Example: calculate sum up to 5

sum\_to\_n(5, S),

format('Sum of numbers from 1 to 5 is ~w~n', [S]),

% Example: calculate sum up to 10

sum\_to\_n(10, S2),

format('Sum of numbers from 1 to 10 is ~w~n', [S2]),

halt.