

Report on : AI LAB (CS-793C)

Assignment-9

1. Write a program in prolog to find the Factorial of a given number 'N'.

Knowledge Representation

factorial(0,1).

factorial(N,F):-

N>0,

N1 is N-1,

factorial(N1,F1),

F is N*F1.

Query and Output :-

factorial(5,W),write(W).

120

W = 120 .

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2. Write a program in prolog for finding Fibonacci series of nth number.

Knowledge Representation

fib(0, 0).

fib(X, Y):- X > 0, fib(X, Y, _).

fib(1, 1, 0).

fib(X, Y1, Y2) :- X > 1,

X1 is X - 1,

fib(X1, Y2, Y3),

Y1 is Y2 + Y3.

Query and Output

?- fib(8,21).

true .

?- fib(8,Y).

Y = 21 .

Yes.

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3. Write a program in prolog for the membership.

Knowledge Representation

member(X,[X|R]).

member(X,[Y|R]) :- member(X,R).

Query and Output :-

member(a,[b,a,c,d]).

true .

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4. Write a program in prolog to find the reverse of a list.

Knowledge Representation

reverse([X | Y],Z,W):-reverse(Y,[X | Z],W).

reverse([],X,X).

Query and Output

?- reverse([9,8,3],A).

A = [3, 8, 9].

Yes.

5. Write a program in prolog to find whether a given word is palindrome or not.

Knowledge Representation

palindrome(L):- reverse(L,L).

my_reverse([],[]).

my_reverse([H|T],R):- my_reverse(T,T1),append(T1,[H],R).

Query and Output

?- palindrome([d,a,d]).

Yes.

?- palindrome([d,a,d,d,y]).

false.

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6. Write a program in prolog to find the sum of two numbers.

Knowledge Representation

sum(X,Y):-

S is X+Y,

write(S).

Query and Output

?- sum(5,5).

10

true.

?- sum(-3,5).

2

true.

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7. Write a program in prolog to find the subtraction of two numbers.

Knowledge Representation

sub(X,Y):-

S is X-Y,

write(S).

Query and Output

?- sub(-3,5).

-8

true.

?- sub(-2,-2).

0

true.

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8. Write a program in prolog to find the product of two numbers.

Knowledge Representation

mul(X,Y):-

M is X*Y,

write(M).

Query and Output

?-mul(-2,-2).

4

true.

9. Write a program in prolog to find the result after division of two numbers.

Knowledge Representation

div(X,Y):-

D is X/Y,

write(D).

Query and Output

?- div(5,2).

2.5

true.

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10. Write a program in prolog to find the summation of arithmetic progression.

Knowledge Representation

start:-ap.

ap:-write('N='),read(N),

write('A='),read(A),

write('D='),read(D),

S is $((N/2)*(A+((N-1)*D)))$,

write('A.P. sum is '),write(S).

Query and Output

?- start.

N=4.

A=|: 2.

D=|: 2.

A.P. sum is 16

true.

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11. Write a program in prolog to create a loop for n numbers.

Knowledge Representation

loop(0).

loop(N):-N>0,write(' The value is: '),write(N),nl,M is N-1,loop(M)

Query and Output

?- loop(6).

The value is: 6

The value is: 5

The value is: 4

The value is: 3

The value is: 2

The value is: 1

true

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12. Write a program in prolog to find the length of a list.

Knowledge Representation

length([], 0).

length([_|Xs], L) :- list_length(Xs, N), L is N+1.

Query and Output

?- length([4,5,8,9,1], X).

X = 5.

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13. Write a program in prolog to implement BLOCK AND TABLE.

Knowledge Representation

block(block1).

block(block2).

block(block3).

block(block4).

table(table1).

on(block1,block2).

on(block2,table1).

on(block3,block4).

on(block4,table1).

above(X,Y):-block(X),block(Y),on(X,Y).

above(X,Y):-block(X),table(Y),on(X,Y).

above(X,Y):-block(X),block(Z),on(X,Z),above(Z,Y).

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Query and Output

1 ?- on(block1, table1).

No

2 ?- above(block1, table1).

Yes

3 ?- above(block1, block2).

Yes

4 ?- above(block2, X).

X = table1

Yes

5 ?- above(block3, X).

X = block4

Yes

6 ?- above(X, table1).

X = block2

Yes

7 ?- above(X, Y).

X = block1

Y = block2

Yes

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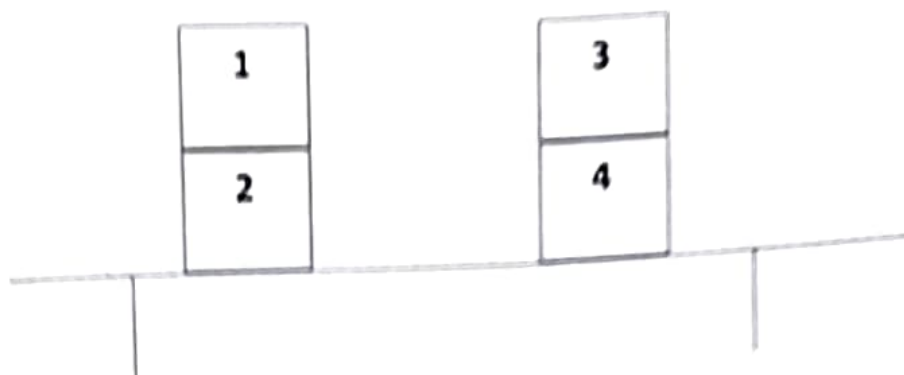
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Figure of BLOCK AND TABLE Problem



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