TUGAS UTS ADVANCE AI

ZEBRA PUZZLE LOGIC PROGRAM

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Solusi 1

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| % Helper  next\_to(A, B, List) :- nextto(A, B, List); nextto(B, A, List).  right\_of(A, B, List) :- append(\_, [B,A|\_], List).  % Solusi utama (lebih efisien)  solution(Houses) :-  % Struktur 5 rumah  Houses = [  [N1,C1,D1,F1,P1],  [N2,C2,D2,F2,P2],  [N3,C3,D3,F3,P3],  [N4,C4,D4,F4,P4],  [N5,C5,D5,F5,P5]  ],  N1 = norwegian,  C2 = blue,  D3 = milk,  right\_of([\_, green, \_, \_, \_], [\_, ivory, \_, \_, \_], Houses),  member([\_, green, coffee, \_, \_], Houses), % green -> coffee  % Domain unik  permutation([englishman, spaniard, norwegian, ukrainian, japanese],  [N1,N2,N3,N4,N5]),  permutation([red, green, ivory, blue, yellow],  [C1,C2,C3,C4,C5]),  permutation([coffee, milk, orange\_juice, tea, water],  [D1,D2,D3,D4,D5]),  permutation([hershey, kitkat, smarties, snickers, milky\_ways],  [F1,F2,F3,F4,F5]),  permutation([dog, snails, fox, horse, zebra],  [P1,P2,P3,P4,P5]),  % Tambahkan constraint sisanya  member([englishman, red, \_, \_, \_], Houses),  member([spaniard, \_, \_, \_, dog], Houses),  next\_to([\_, \_, \_, hershey, \_], [\_, \_, \_, \_, fox], Houses),  member([\_, yellow, \_, kitkat, \_], Houses),  member([\_, \_, \_, smarties, snails], Houses),  member([\_, \_, orange\_juice, snickers, \_], Houses),  member([ukrainian, \_, tea, \_, \_], Houses),  member([japanese, \_, \_, milky\_ways, \_], Houses),  next\_to([\_, \_, \_, kitkat, \_], [\_, \_, \_, \_, horse], Houses). |

Solusi 2

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| :- use\_module(library(clpfd)).  zebra\_clpfd(Houses) :-  % Setiap variabel = posisi rumah (1..5)  Vars = [  Eng, Spa, Nor, Ukr, Jap, % nationality  Red, Green, Ivory, Blue, Yellow, % color  Coffee, Milk, OJ, Tea, Water, % drink  Hershey, KitKat, Smarties, Snickers, Milky, % food  Dog, Snails, Fox, Horse, Zebra % pet  ],  Vars ins 1..5,  % Unik per kategori  all\_different([Eng,Spa,Nor,Ukr,Jap]),  all\_different([Red,Green,Ivory,Blue,Yellow]),  all\_different([Coffee,Milk,OJ,Tea,Water]),  all\_different([Hershey,KitKat,Smarties,Snickers,Milky]),  all\_different([Dog,Snails,Fox,Horse,Zebra]),  % Aturan puzzle:  Eng #= Red, % Englishman di rumah merah  Spa #= Dog, % Spaniard punya dog  Nor #= 1, % Norwegian di rumah 1 (paling kiri)  Green #= Ivory + 1, % Green tepat di kanan Ivory  abs(Hershey - Fox) #= 1, % Hershey bertetangga dengan Fox  KitKat #= Yellow, % KitKat dimakan di rumah Yellow  abs(Nor - Blue) #= 1, % Norwegian bertetangga dengan Blue  Smarties #= Snails, % Smarties -> Snails  Snickers #= OJ, % Snickers -> Orange Juice  Ukr #= Tea, % Ukrainian -> Tea  Jap #= Milky, % Japanese -> Milky Ways  abs(KitKat - Horse) #= 1, % KitKat bertetangga dengan Horse  Coffee #= Green, % Coffee diminum di Green  Milk #= 3, % Milk di rumah tengah (3)  % Labeling  labeling([ffc, bisect, up],  [Green,Ivory,Red,Blue,Yellow,  Coffee,Milk,OJ,Tea,Water,  Eng,Spa,Nor,Ukr,Jap,  Hershey,KitKat,Smarties,Snickers,Milky,  Dog,Snails,Fox,Horse,Zebra]),  % Susun output: list 5 rumah, tiap rumah = [Nationality, Color, Drink, Food, Pet]  pairs\_keys\_values(NatPairs,  [englishman,spaniard,norwegian,ukrainian,japanese],  [Eng,Spa,Nor,Ukr,Jap]),  pairs\_keys\_values(ColPairs,  [red,green,ivory,blue,yellow],  [Red,Green,Ivory,Blue,Yellow]),  pairs\_keys\_values(DrinkPairs,  [coffee,milk,orange\_juice,tea,water],  [Coffee,Milk,OJ,Tea,Water]),  pairs\_keys\_values(FoodPairs,  [hershey,kitkat,smarties,snickers,milky\_ways],  [Hershey,KitKat,Smarties,Snickers,Milky]),  pairs\_keys\_values(PetPairs,  [dog,snails,fox,horse,zebra],  [Dog,Snails,Fox,Horse,Zebra]),  findall([N,C,D,F,P],  ( between(1,5,Pos),  member(N-Pos, NatPairs),  member(C-Pos, ColPairs),  member(D-Pos, DrinkPairs),  member(F-Pos, FoodPairs),  member(P-Pos, PetPairs)  ),  Houses). |