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CS 370

Assignment 2 Written

1. Problem 1:
   1. Part A:

Best neighbor of of state {A,E}:

A: Value=10, Weight=8

E: Value=4, Weight=1

Total Value of {A,E} = 14

Total Weight of {A,E} = 9

T=20, M=10

Error of {A,E} = max(9-10, 0) + max(20-14, 0)

⇒ 0 + 6 = 6

Best Neighbor = {B,D}

Value=14, Weight=7

Error=max(7-10, 0) + max(20-11=4, 0)=9

* 1. Part B:

Size of State Space: O(2^n) or O((n)\*(capacity)) or O(capacity)

Size:

10

Max Number of Neighbors of any State:

4 is the max number of neighbors

* 1. Part C

1. Problem 2:

A (9)

B(7) C(9)

D(7) E(8) F(9) G(12)

H(7) I(2) J(8) K(3) L(4) M(9) N(6) O(12) P(2)

8 7 9 2 11 8 10 3 12 4 6 9 6 14 12 20 10 2

1. Problem 3: (I had to pull out my whiteboard for these)
   1. Part A: =
   2. Part B: =
   3. Part C: =
   4. Part D: =
   5. Part E =
   6. Part F: =

Steps:

Step 1: Push negation into formula

Step 2: distribute disjunctions over conjunctions

(Essentially, an AND of ORs)

1. Problem 4: (I should have used paper instead of a whiteboard)
   1. Part A: =
      1. Used DeMorgan’s Law, Absorption Law, Distributive Laws,
   2. Part B: =
      1. Used DeMorgan’s Law, Absorption Law, Distributive Laws,
   3. Part C: =
      1. Used DeMorgan’s Law, Absorption Law, Distributive Laws,
   4. Part D: =
      1. Used DeMorgan’s Law, Absorption Law, Distributive Laws,
   5. Part E =
      1. Used DeMorgan’s Law, Absorption Law, Distributive Laws,
   6. Part F: =
      1. Used DeMorgan’s Law, Absorption Law, Distributive Laws,