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Homework 6 404491375

1a. {x/A, y/B, z/C}
1b. no general unifier
1c. {x/A, y/A}
1d. {x/John, y/John}
1e. no general unifier

2a. (in order of bullet points)
(A x) (Food(x) => Likes(John, x))
Food(Apples)
Food(Chicken)
(A x, E y) (Eats(y, x) & ~Killed(x, y) => Food(x))
(E x, A y) (Killed(x, y) => ~Alive(y))
Eats(Bill, Peanuts) & Alive(Bill)
(A x) (Eats(Bill, x) => Eats(Sue, x))

2b. This is thus our KB (knowledge base):

1. ~Food(x) | Likes(John, x)
2. Food(Apples)
3. Food(Chicken)
4. ~Eats(y, x) | Killed(x, y) | Food(x)
5. ~Killed(x, y) | ~Alive(y)
6. Eats(Bill, peanuts)
7. Alive(Bill)
8. ~Eats(Bill, x) | Eats(Sue, x)

2c.

9.	Killed(peanuts, Bill) | Food(peanuts)	(4, 6) with unifier {x/peanuts, y/Bill}
10.	~Killed(peanuts, Bill)	(5, 7)
11.	Food(peanuts)	(9, 10)
12.	Likes(John, peanuts)	(1, 11)

Thus, John likes peanuts.

2d.

13.	Eats(Sue, peanuts)	(6, 8) with unifier {x/peanuts}

Thus, Sue eats peanuts.

2e. First-order (in order of bullet points):
(A x, E y) (~Eats(y, x) => Die(y))
(A y) (Die(y) => ~Alive(y))
Alive(Bill)

Converting to CNF to create our modified (6, 7, 8) KB:

1. ~Food(x) | Likes(John, x)
2. Food(Apples)
3. Food(Chicken)
4. ~Eats(y, x) | Killed(x, y) | Food(x)
5. ~Killed(x, y) | ~Alive(y)
6. **Eats(y, x) | Die(y)**
7. **~Die(y) | ~Alive(y)**
8. **Alive(Bill)**
9. ~Eats(Bill, x) | Eats(Sue, x)

Resolution:

10. ~Die(Bill) (7, 8) with unifier {y/Bill}
11. Eats(Bill, x) (6, 10) with unifier {y/Bill}
12. Eats(Sue, x) (9, 11)

Because there is no value for x in the unifier, we can't conclude anything about what Sue eats.