

CS 411 - Artificial Intelligence I  
Fall 2024  
Assignment 7  
Department of Computer Science, University of Illinois at Chicago

Total Points: 25

1. Suppose a knowledge base has the following sentences (10)

Sam plays baseball or Paul plays baseball  
Sam plays baseball or Ryan doesn't play baseball

Represent the knowledge base as a Boolean expression using propositional symbols and logical connectives (2)

Does this knowledge-base entail the following? If yes provide the reason why and if not provide a counterexample that there exists a model where KB is true but the sentence is false

- A. Sam and Ryan both play baseball (1 + 3)  
B. At least one among Sam, Paul and Ryan play baseball (1 + 3)

2. Translate the following into propositional logic (5 x 1 = 5)

- a. If Ana eats, Bret eats
- b. Charles eats and Derek doesn't eat
- c. Bret doesn't eat
- d. If Derek doesn't eat at least one among Ana, Earl, and Fred eats
- e. If at least one of Charles and Gary eats, Earl doesn't eat

3. Using the premises in Q2, show that Fred eats (10)

NOTE: Due date for Assignment 7 is on 10/25/2024 at 9:00am.