UNIVERSITY OF ASIA PACIFIC

Department of Computer Science & Engineering

Course Title – Artificial INtelligence and Expert Systems.

Course Code – CSE-403.

Topic – Knowledge Representation & Reasoning(KRR): First order Predicate Logic(FOPL)

SUBMITTED BY

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SectSection – A

SUBMITTED TO

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Date of Submission – 24–10–2022

Problem Statement:

Represent the following knowledge using Predicate Logic:

1. David, William and Tana are members of CSE cultural club. Every member of cultural club who is not a dancer is a singer. Singer likes music, and everyone who does not like music is not a dancer. David dislikes whatever Tana likes and likes whatever Tana dislikes. William likes music and rain. Is there any member of the cultural club who is a singer but not a dancer? [5]

Solution:

Note: Cultural Club - cc
Dancer - d
Singer - s
Music - m
Rain - r
Likes - l

1. David, William & Tanah are members of Cultural Club(CC)
   Representation:
   cc(David);
   cc(William);
   cc(Tanah)
2. Every member of Cultural club who is not a dancer, is a sinder
   Representation:

   $\forall\ n\ (\ cc(x) \wedge \sim d(n)\ ) \Rightarrow s(n)$
3. Singer likes music, and everyone who does not like music is not a dancer
   Representation:
   $\forall\ n\ (\ s(n) \Rightarrow c(n, music) \wedge \forall\ n\ (\ \sim l\ (n, music) \Rightarrow \sim d(n)\ )\ )$
4. David dislike Whatever Tanah likes and likes whatever Tanah dislikes
   Representation:
   $\forall\ n\ (\ l\ (Tanah, n) \Rightarrow \sim l(David, n) \wedge \forall\ n(\sim l\ (Tanah, n\ ) \Rightarrow l(David, n)\ )$
5. William likes music and rain
   Representation:
   l (Willam, m);
   L (William, r)
6. Is there any member of the Cultural Club who is a singer but not a Dancer?
   $\exists\ n\ (\ cc\ (n) \wedge s(n) \wedge \sim d(n))$