Department of Computer Engineering,

Faculty of Engineering, University of Jaffna

EC9640: Artificial Intelligence

Lab 02

Date: 2025/01/02

Duration: 3 hours

Task 01: A Crypt-arithmetic puzzle, also known as a cryptogram.
The rules for a Crypt-arithmetic puzzle are as follows −

- We can use digits from 0 to 9 only to represent a unique alphabetical letter in the puzzle.
- The same digit cannot be assigned to different letters in the whole equation.
- The resulting equation formed by replacing letters with digits should be mathematically correct.

Write a program in python and test with different examples.

Task 02: You are given a program to work on FOL to clausal form conversion.
Revise your program to handle the following conversion.

man(Marcus)

Pompeian (Marcus)

∀x: Pompeian(x) → Roman(x)

ruler (Caesar)

∀x: Roman(x) → loyalto(x,Caesar) \/ hate(x,Caesar)

∀x ∃y: loyalto(x,y)

∀x ∀y: person(x) /\ ruler(y) /\ tryassassinate(x,y) → ~loyalto(x,y)

tryassassinate(Marcus,Caesar)

∀x: man(x) → person(x)

prove that Marcus hates Caesar.

Task 03: Write the clausal form conversion program in Prolog and get answer for the same FOL given in Task 02.

Due: 2 days