

# WORKSHOP 9

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Solving Logic Problems in Prolog

CSX3004 Programming Languages

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# ACTIVITY: SOLVING LOGIC PROBLEMS IN PROLOG

**Time Limit:** 90 minutes

**Individual work**

# TASK 1: RIVER CROSSING











A farmer is travelling with a fox, a goose, and a bag of beans. During his journey, he comes across a river with a boat to cross it. The farmer can only fit only one thing in the boat with him at a time. If left alone together, the fox will eat the goose or the goose will eat the beans.

Write a prolog program to determine how the farmer can get everything across the river safely.

**Hint:** Refer to the classic riddle mentioned in Chapter 19.

**Submit task1.pl**

## TASK 2: TARSKI WORLD

**Submit task2.pl**

Define facts (and rules) to represent the given board using the following predicates.

- $\text{color}(x, c)$  means  $x$  is of color  $c$
- $\text{shape}(x, s)$  means  $x$  is of shape  $s$
- $\text{rightOf}(x, y)$  means  $x$  is to the right of  $y$  (they could be on different rows)

Write queries to answer the following questions.

- Are all circles black?
- What are the colors of circle?
- Which shapes are to the right of the shape **a** ?
- Are there any grey squares on the board?

## TASK 3: ENHANCE THE ADVENTURE GAME

Refer to the adventure game discussed in Chapter 20.

1. Design an extended map.
2. Draw your map on paper.
3. Represent your map in Prolog.
4. Add more obstacles to the game.
5. Test your game.

**Challenge:** Randomize the character and obstacle locations before each game start.

**Submit task3.pl**

## TASK 4: PUZZLE

Three instructors (Chayapol, Paitoon and Thanachai) are teaching courses in different classroom (VMES1002, VMES1003, VMES1004).

Each of them specializes in different areas (Network, UI/UX, Web Development)

**Clues:**

- A. Chayapol is not teaching in VMES1002.
- The instructor in VMES1004 is teaching Web Development.
- A. Paitoon teaches Network.

**Question:** Who is teaching UI/UX and in which room?

Model this problem and solve it with Prolog.

**Submit task4.pl**