

# Programming languages (TC-2006)

## Homework 17

In this homework, you will practice what you know of the Prolog language to solve logic puzzles. Please consider that the purpose of this homework is to allow you to practice and identify strengths and weaknesses. Please note that the answer to these puzzles is irrelevant, but the idea of writing the corresponding program in Prolog to obtain such an answer.

### 1 `travelTime` (10%)

Raul travels between cities A, B, and C. A is 4 hours away from Raul's house. To get to B, Raul takes twice the time it takes to go and return from C. C is only one hour away less than A. How long does it take to go and return from B?

### 2 `cellGame` (10%)

The Z warriors are queuing to fight Cell. Vegeta will fight Cell only if Gohan is defeated but Goku will have the opportunity to fight Cell before Gohan. In what order will these heroes fight Cell?



### 3 `ages` (15%)

John, Lucy, and Fernando are three friends. These friends all have different ages, and all of them are older than 12. At this moment, their ages sum up 46 years old. In how many years will their ages sum up 85 years old, and Fernando's age will double John's age at this moment? The ages (in years) are always natural numbers.

### 4 `gardeningContest` (20%)

The world-famous "Thanos Gardening Championship" was held this week. Using only the clues below, match each gardener to her rose and determine the final placement for each.

- Brooke's flower finished behind the vanity and the gold blush.
- The quietness was the flower that won third place.
- The vanity was Virginia's.
- The gold blush was Tricia's.
- The flower that won second place was Tricia's flower.

## 5 tournament (20%)

Rayados, Cruz Azul, Tigres, Chivas and America were part of the Mexican super saiyan Soccer Tournament 2019. Chivas has more points than Rayados and Tigres, but less points than America. Cruz Azul is the champion of the tournament, with 28 points and has exactly five more points than Chivas. The difference in points between America and Cruz Azul is twice the difference between Rayados and Tigres. Tigres obtained the last place in the tournament with 20 points. Write a program in Prolog that finds the correct order of these teams in the tournament ranking.

## 6 zebra (25%)

There are five colored houses in a row, each having an owner, which has an animal, a favorite cigarette, a favorite drink.

- The English lives in the red house.
- The Spanish has a dog.
- They drink coffee in the green house.
- The Ukrainian drinks tea.
- The green house is next to the white house.
- The Winston smoker has a serpent.
- In the yellow house they smoke Kool.
- In the middle house they drink milk.
- The Norwegian lives in the first house from the left.
- The Chesterfield smoker lives near the man with the fox.
- In the house near the house with the horse they smoke Kool.
- The Lucky Strike smoker drinks juice.
- The Japanese smokes Kent.
- The Norwegian lives near the blue house.

By using Prolog, answer the questions:

- Who has a zebra?
- Who drinks water?

## Deliverables



Prepare a PL file that contains the functions requested (in its corresponding module) and submit it to Canvas. **Please, do not submit other formats but PL.** To prepare your PL file, use the code template distributed along with this document. The template contains some test cases for each program to help you verify that your codes work as requested.



**I promise to apply my knowledge, strive for its development, and not use unauthorized or illegal means to complete this activity, following the Tecnológico de Monterrey Student Code of Honor.**