Programming languages (TC-2006)

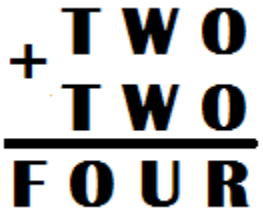
Extra points challenge 10 (+15 stars)

Name: _____

Date: November 24, 2020

1 `cryptarithmetic`

(+3 ⭐) For this exercise, you will solve the following cryptarithmetic puzzle:



As in other cryptarithmetic puzzles, each letter must be given a value between 0 and 9, and no repeated values are allowed for two or more different letters. Please have in mind that, for solving this problem, you must also consider the carriers of the sum.

2 `oldest`

(+3 ⭐) Julio was born before Gloria and Pablo. Miguel is younger than Silvia and Pablo. Miguel is also older than Gloria. Julio is younger than Silvia. Who is the oldest of the group? **Please note that just providing the answer without code will not count for grading.**

3 `farthest`

(+3 ⭐) Mova is further from Mote than Taci. Dape is closer than Liru, but Liru is closer than Taci. Write a program in Prolog that finds the exact order of the cities, based on their distance from Mote. **Please note that just providing the answer without code will not count for grading.**

4 `familyIssues`

(+3 ⭐) A long time ago in a galaxy far, far away. . . a family from needs to take places around a circular table. Unfortunately, this family has serious issues and has some specific requests about whom they want to be sitting next to:

- Ben wants to sit next to Rey but not next to Luke.
- Luke wants to sit next to Leia and Han, but not next to Palpatine.
- Palpatine and Anakin want to sit next to each other.
- Palpatine does not want to sit next to Leia.
- Anakin wants to sit next to Ben.

Please consider that, in this problem, 'next' means exactly one seat on the right or the left of one particular family member.

5 `eightTowers` (20%)

(+3 ⭐) Write a program in Prolog that solves the eight towers puzzle. The problem consists of eight towers that must be placed on a chessboard in such a way that no towers can be attacked in such an arrangement. Remember that towers move in horizontal and vertical lines.