CENG 461 Artificial Intelligence
Homework 1

Due date: 12.11.2022

Implementation:
You are expected to write a Python program which calculates the solution for the following Constraint Satisfaction Problem:

A bunch of her friends threw Macy a surprise party this evening. Using only the clues below, determine what each friend brought and what time they arrived.

1. Of Brian and the party-goer who arrived at 4:40 pm, one brought the hummus and the other brought the fries.
2. Amber arrived 5 minutes before Brian.
3. Chris, the participant who brought the gingerbread and the friend who arrived at 4:40 pm are all different people.
4. Diane arrived 5 minutes after the friend who brought the hummus.

Your program should have a function, ***apply_arc_consistency,*** to apply arc-consistency to a domain, based on a list of constraints (ignore the n-ary constraints where n>2).

Your program should have a function, ***find_var_mrv,*** to select a variable using Minimum Remaining Values approach where alphanumerical order is used in case of a tie.

Your program should have a function, ***find_val_lcv,*** to select a value for a variable using Least Constraining Value where alphanumerical order is used in case of a tie.

Your program should start by applying arc consistency and this should be repeated after each variable-value assignment. It should check if a solution is reached after each arc-consistency application and each variable-value assignment.

Your program should print out the domains after arc-consistency checks and variables and values after assignments.

Your implementation should be generalizable to other similar problems.

TIP :
You can formulate the problem using 8 variables (not mandatory). Using this approach, it takes 5 variable-value assignment to reach the solution if arc-consistency is checked. Otherwise, it takes 8.