

Assignment Sheet
EVEN Semester 2021
B.Tech CSE 6th Semester

Course: Artificial Intelligence Lab
CourseCode: 15B17CI574

Instructions:

- Students have to do a mini project apart from the Lab Assignments.
 - The evaluative lab assignments must be submitted as per the given deadline.
 - The total weightage of all day-to-day work is 60 Marks.
 - There will be two lab tests of 20 marks each.
 - Absence in LabTest-2 means Fail in the lab course.
 - All students are required to attend atleast 80% labs. 15 marks are reserved for attendance.
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Week-6 March 8-13, 2021

EXERCISE

Ques 1: Cryptarithmic Puzzle: It is a puzzle involving decoding of digit represented by a character. It is in the form of some arithmetic equation where digits are distinctly represented by some characters. The problem requires finding of the digit represented by each character. One such problem is shown below:

$$\begin{array}{r} \text{R I N G} \\ + \text{D O O R} \\ \hline \text{B E L L} \end{array}$$

A cryptarithmic problem

These types of problems require constraint satisfaction. Constraints are that all the laws of arithmetic must hold good and any letter should represent same digit wherever it comes in the puzzle. Also, no two different letters can be represented by same digit. For example, in the puzzle shown above, the laws of summation of two given numbers must hold good and digit R, which comes at two different places must be represented by same digit. Similarly, letter O and L must be represented by same digit, however, R, O and L, together with other letters, must be represented by different digits.

Ques 2: You are a recruiter for a software firm and the task of hiring technical staff for the upcoming project is assigned to you. Project requirements are mentioned as below:

2 C# Programmers
2 Flash Designers
1 Photoshop Expert,
1 Database Admin
1 Systems Engineer.

You have selected the following people for the interview:

- Palak C# and Flash
- Jayant Photoshop and Flash
- Jaideep Flash and Systems
- Jaya C# and Database
- Madhav Photoshop and Flash
- Bhawna Systems and C#
- Chandni Photoshop and Flash

Note that:

- If a person knows two languages/software, he or she can take on two roles in the company.
- You have already hired Anmol who knows C#.
- You can now hire only three more people to fulfill all the requirements of the project.

Model this problem as a constraint satisfaction problem.

Ques 3: You are designing a menu for a special event. There are several choices, each represented as a variable:

(A)ppetizer, (B)everage, main (C)ourse, and (D)essert.

The domains of the variables are as follows:

A: (v)eggies, (e)scargot

B: (w)ater, (s)oda, (m)ilk

C: (f)ish, (b)eef, (p)asta

D: (a)pple pie, (i)ce cream, (ch)eeese

Because all of your guests get the same menu, it must obey the following dietary constraints:

- (i) Vegetarian options: The appetizer must be veggies or the main course must be pasta or ch (or both).
- (ii) Total budget: If you serve the escargot, you cannot afford any beverage other than water.
- (iii) Calcium requirement: You must serve at least one of milk, ice cream, or cheese.

Give a solution for this CSP or state that none exists Assuming, we first assign A=e.