Intelligent Systems

CS3612

CSP: Timetabling

Reg. No : 190023G

1. Explain how you would model this as a constraint satisfaction problem.

   Constrains

   - A given subjects can be assigned only to one of the possible time slots given for that subject.
   - Two compulsory subjects cannot be in the same time slot
   - Two subjects cannot be assigned to the same room if they are assigned to the same time slot

   backtracking algorithm is used to implement the solution. Backtracking is a general algorithmic strategy for solving computing problems that takes into consideration looking through all possible combinations.

   The backtracking algorithm would be used to describe this problem as a CSP in order to find a solution that takes the constraints into consideration. As a result, each subject is given a time slot and a place.
   Variables: Compulsory, Optional
   Domain: Available rooms & Time slots

   According to constrains two compulsory(“c”) subjects cannot be assigned in the same time slot. Therefore, we needed to assign the subject in an available time slot and a room. If the final solution cannot be found after assigning the slot and room, we needed use the backtracking method recursively to achieve that.

   According to the constrain, Two optional(“o”) subjects may or may not in the same time slot. Once a time slot has been assigned for a compulsory subject, look for other time slots that are free to assign. If the time slot is reserved for another compulsory subject and there isn't any other time slot left, we must select another branch from where the conflict started; but, if there is a time slot left, we must reserve it for that compulsory subject. If the available slot has not already been given to another module, follow the same steps as for the compulsory module.