National University of Computer and Emerging Sciences

Artificial Intelligence

“Assignment 3-4”

STUDENTS NAME: Hassan Mahmood (i170272)

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Overview:

So the problem we were faced with this assignment is to make a Time Table schedule using Generic Algorithm. So jumping write into it, I have used static data declared on top but that does not mean that solution run only on this dataset, it is made generic regardless of any dataset.

So coming towards the implementation part

- **Population**
  Population is maintained through crossover and all genomes are assigned chromosomes randomly
- **Crossover**
  Genomes are generated and assigned chromosomes randomly
- **Selection**

  Roulettle-Wheel Selection is used for this purpose.

- **Fitness**
  This function helps us in finding and solving hard and soft constrainst
- **Mutation**
  Mutation has been used randomly

Classes And Functions

- **Class - Chromosomes:**
  Class which keep information related to time table and below it we have used functions which helps us in finding constraint free timetable and in the end PrintSchedule function is used to print the table.

- **Class – Genome:**
  Our Genome class holds information related to timetable, constraints,
  Ie hard constraints, soft constraints, fitness score and it has several member functions, each function dealing with each constraint regardless of hard and soft constraint. In short for solving each constraint regardless of hard or soft, I have made function with proper naming convention, some of these functions are
  FindSectionClashes , FacultyClash , LabClash , TimingClash and so on

- **Main:**
  In the end, we have main function ,since I have used Object oriented approach so main function was necessary and here I have also declared the iteration on which the no of times executes along with mutation rate.