



National University
of computer and emerging sciences

AI Project 1 Report

CS461 Artificial Intelligence

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Section D

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DATASET

Total Courses: 13

Math, PF, History, Science, Drawing, CS, Islamiat, OOP, English, CG, Physics, Physics2, Physics3

Students: 203 (200 from the provided dataset + 3 own)

Teachers: 63 (provided dataset)

ClassRooms: 10 (C-01, C-02, C-03, ... , C-10)

Math: 200 Students each

History: 100 Students

PF: 199 Students

Science/Drawing/CS: 99 Students each

Islamiat/OOP/English/CG: 49 Students each

Physics/Physics2/Physics3: 3 Students each

Note: 1 Student has been provided with only 2 courses to test the minimum course requirement

OUTPUT

```
BEST SOLUTION AFTER 950 ITERATIONS: 99989
Remaining Exams: 0
Total Days: 4
HARD CONSTRAINTS
{'Students Overlap': 'Not Violated', 'Teachers Overlap': 'Not Violated', 'Consecutive Teachers': 'Not Violated', 'Duplicate Course': 'Not Violated', 'Weekend': 'Not Violated', 'All Courses': 'Not Violated'}
SOFT CONSTRAINTS
{'Break on Friday': 'Not Violated', 'Consecutive Exam': 'Violated', 'MG before CS': 'Violated', 'Faculty Meeting': 'Not Violated'}
Day 1...
Session 1:
['EEScience', 'MGIslamiat']
['Rohail Gulbaz', 'Umair Arshad']
Student_Overlap: 0
Session 2:
['CSPF', 'Physics3']
['Muhammad bin Qasim', 'Subhan Ullah']
Student_Overlap: 0
Day 2...
Session 1:
['CSMath', 'Physics']
['Muhammad Usman', 'Sajid Khan']
Student_Overlap: 0
Session 2:
['Physics2', 'CSOOP']
['Gul e Aisha', 'Adnan Tariq']
Student_Overlap: 0
Day 3...
Session 1:
['MGDrawing', 'CS']
['Noor ul Ain', 'Zohaib Iqbal']
Student_Overlap: 0
Session 2:
['SSHISTORY', 'MGEnglish']
['Farah Naz', 'Sadia Nauman']
Student_Overlap: 0
Day 4...
Session 1:
['CSCG']
['Arshad Islam']
Student_Overlap: 0
Session 2:
[]
Student_Overlap: 0
Courses Remaining: set()
Best Courses: ['CS', 'CSCG', 'CSMath', 'CSOOP', 'CSPF', 'EEScience', 'MGDrawing', 'MGEnglish', 'MGIslamiat', 'Physics', 'Physics2', 'Physics3', 'SSHISTORY']
Total: 13
```

After 950 Iterations with a population of 100 Chromosomes, we get a schedule of 4 days with all hard constraints met and 2 soft constraints violated. Each hard constraint carries 20 weight compared to 3-7 for soft constraints. Total Fitness in the beginning is set to 10000 and conflicts of both hard and soft violations are subtracted from it. In this solution we get Fitness value: 99989.