Software Engineering I

Practical Exercise

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1 Statement

The department of Computer Science of the University of Yaounde I wants to develop a software system that automatically generates time tables for her classes. For any time table generated by this software we want it to adhere to the following specifications;

1. No class of the department can be scheduled in two or more different classrooms, to take two or more different courses, given by two or more different teachers at the same period on the same day
2. All the courses taken by a class should be scheduled exactly once per week.
3. A class should not be scheduled to take a course that is not of her curriculum.
4. The timetable should maximize the number schedules before noon.

Given that there are 6 days and 5 periods i.e. p_1 7:00am - 9:55am, p_2 10:05am - 12:55pm, p_3 1:05pm - 3:55pm, p_4 4:05pm - 6:55pm, and p_5 7:05pm - 9:55pm, with each period p having a weight w_p such that $w_5 > w_4 > \ldots > w_1 > 0$, and that all the classrooms used for time table scheduling are owned by the department, Formulate a mathematical model that will effectively generate time tables for this situation, taking into consideration all the specifications stated and hence provide an implementation of your model with Google OR tools, in any programming language of your choice. Use the JSON data provided to you along with this document. This exercise should be attempted by **EVERYBODY** for the purpose of the class we will be having on Wednesday. Use Google OR tools provide examples for implementing scheduling problems.