STUDY CASE 2: TIMETABLING SYSTEM

Maseno University has numerous course offered across multiple departments. The mode of teaching is largely face-to-face, where a lecturer gets into a specific lecture room and teaches interactively. Each course has an average of 8 units and each course has students in Years 1 to Years 4 of study. Some units are lab based (offered in both lecture room and the laboratory) while other units are theoretical (offered in lecture rooms). The number of available lecture rooms is limited and therefore there is need schedule classes in a way that enables efficient utilization of the available resources. Owing to the many course units, limited number of rooms, the need to combine some classes, the process of time tabling is complex and hence the need to introduce technology.

Note: Take the School of Computing and Informatics your case where the following data is given:

- Available lecture rooms and capacity are as follows: TB1 (60), TB2 (150), TB3(60), TB4(60), TB5 (60)
- Laboratories and capacities: Lab 1 (55), Lab 2(55), Lab 3(55) Lab4 (55), Lab 5 (140)
- Classes happen from Monday to Fridays
- I lecture = 2 Hours, I laboratory Session = 3 hours
- Classes start at 8:00am and end at 5:00pm
- Units offered per semester
  - ✓ BSc IS Year 1 (No of student 45, 8 units, with 3 lab-based units)
  - ✓ BSc IS Year 2 (No of students 55, 8 units, with 4 lab-based units)
  - ✓ BSc IS Year 3 (Number of student 28, 10 units, includes elective units)
  - ✓ BSc IS Year 4 (No of student 18, 10 units, includes elective units)
  - ✓ BSc IT Year 1 (No of student 60, 8 units, with 3 units being lab-based)
  - ✓ BSc IT Year 2 (No of student 50, 8 units, with 3 units being lab-based)
  - ✓ BSc IT Year 3 (No of student 43, 10 units, includes 3 elective units, 4 lab based units)
  - ✓ BSc IT Year 4 (No of student 32, 10 units, includes 4 elective units and 3 lab based units)
  - ✓ BSc ICTM Year 1 (No of student 70, 8 units, with 2 lab-based units)
  - ✓ BSc ICTM Year 2 (No of student 56, 8 units, with 3 lab-based units)
  - ✓ BSc ICTM Year 3 (No of student 44, 10 units, includes elective units)
  - ✓ BSc ICTM Year 4 (number of students 32, 10 units, includes elective units)
  - ✓ BSc CS Year 1 (Number of students 70, 8 units, with 3 lab units)
  - ✓ BSc CS Year 2 (No of students 56, 8 units, with 3 lab units)
  - ✓ BSc CS Year 3 (No of students 45, 11 units, includes 3 elective units, 4 lab based units)
  - ✓ BSc CS Year 4 (No of student 66, 11 units, includes 3 elective units, 3 lab based units)
  - ✓ BSc CT Year 1 (No of student 72, 8 units, with 3 lab units)
  - ✓ BSc CT Year 2 (No of students 45, 8 units, with 3 lab units)
  - ✓ BSc CT Year 3 (No of student 60, 11 units, includes 3 elective units, 4 lab based units)

✓ BSc CT Year 4 (Number of student 50, 11 units, includes 4 elective units, 3 lab based units)

REQUIRED

- Duration: 2 months
- Design, develop and evaluate an application that captures units to be offered, available rooms, lecture timeslots, laboratory session time slots and produces a timetable without clashing of rooms or units.
- The allocated units should much the room capacity and the same applies to scenarios where common units are offered