

CSE341
HW4
REPORT
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PART 1

```
% rooms

% id-capacity-equipment-availability
room(room1, 10, whiteboard,8,12).
room(room2, 20, whiteboard,9,15).
room(room3, 30, smartboard,12,17).

% courses

% id-instructor-capacity-availability-equipment-room

course(course1, instructor1, 10, 9,10,whiteboard,room1).
course(course2, instructor2, 20, 9,15,projector,room2).
course(course3, instructor3, 30, 12,17,smartboard,room3).

% instructors

% id-courses-equipment

instructor(instructor1, course1, whiteboard).
instructor(instructor2, course2, projector).
instructor(instructor3, course3, smartboard).

% students

% id-courses-handicapped

student(student1, [course1,course3], false).
student(student2, [course2,course3], true).
student(student3, [course3], false).
```

Rooms, courses, instructors and students are defined.

```

% add a course
% add_course(+Course, +Instructor, +Capacity, +Start, +End, +Equipment, +Room)
add_course(Course, Instructor, Capacity, Start, End, Equipment, Room) :-
    assert(course(Course, Instructor, Capacity, Start, End, Equipment, Room)).

% add a room
% add_room(+Room, +Capacity, +Equipment, +Start, +End)
add_room(Room, Capacity, Equipment, Start, End) :-
    assert(room(Room, Capacity, Equipment, Start, End)).

% add a student
% add_student(+Student, +Courses, +Handicapped)
add_student(Student, Courses, Handicapped) :-
    assert(student(Student, Courses, Handicapped)).

% add an instructor
% add_instructor(+Instructor, +Courses, +Equipment)
add_instructor(Instructor, Courses, Equipment) :-
    assert(instructor(Instructor, Courses, Equipment)).

```

These are add functions

Test Cases

- Check whether there is any scheduling conflict.

```

?- add_course(oop,ysa,10,9,12,whiteboard,z06).
true.

?- add_course(pl,yakup,10,9,12,whiteboard,z06).
true.

?- part_1(oop,pl).
Course oop and course pl conflict
true.

?- 

```

Oop and pl are conflicted because they have same room and hours.

This part check two courses for hours, and rooms.

```
?- add_course(c,yakup,10,13,16,whiteboard,z06).
true.

?- part_1(c,pl).
false.

?- 
```

C and pl are not conflicted. Hours are different.

- Check which room can be assigned to a given class.

```
Warning: Singleton variables: [Handicapped]
true.

?- add_room(z06,20,whiteboard,8,12).
true.

?- add_course(data,erdogan,10,9,10,whiteboard,z06).
true.

?- part_2(z06,data).
Room z06 is available for course data
true.

?- 
```

```
?- add_course(cpp,coskun,10,9,10,smartboard,z06).
true.

?- part_2(z06,cpp).
false.

?- 
```

It is false because cpp needed smartboard. Z06 has no smartboard.

This part check a room and a course for capacity, equipment and hours

- Check which room can be assigned to which classes.

```
?- part_3(data,Rooms).  
Room room1 is available for course data  
Room room2 is available for course data  
Room z06 is available for course data  
Rooms = [room1, room2, z06].  
  
?- 
```

This part check a room and all course for capacity, equipment and hours.

- Check whether a student can be enrolled to a given class.

```
|  
|    add_student(atakan,p1,false).  
true.  
  
?- add_student(ahmet,oop,true).  
true.
```

```
?- part_4(ahmet,room1).  
false.  
  
?- part_4(ahmet,room2).  
false.  
  
?- part_4(ahmet,room3).  
Student ahmet can be assigned to room room3  
true 
```

Room1 and room2 has no smartboard or projector. Ahmet is handicapped.

```
?- part_4(atakan,room3).  
Student atakan can be assigned to room room3  
true.  
  
?- part_4(atakan,room1).  
Student atakan can be assigned to room room1  
true.  
  
?- part_4(atakan,room2).  
Student atakan can be assigned to room room2  
true.  
  
?- 
```

Atakan is not handicapped.

**This part check a room and student for handicapped.
Handicapped student can not assign whiteboard room.**

- Check which classes a student can be assigned.

```
?- part_5(atakan,Rooms).  
Student atakan can be assigned to room room1  
Student atakan can be assigned to room room2  
Student atakan can be assigned to room room3  
Student atakan can be assigned to room z06  
Rooms = [room1, room2, room3, z06].  
  
?- part_5(ahmet,Rooms).  
Student ahmet can be assigned to room room3  
Rooms = [room3].  
  
?- 
```

**This part check all rooms and student for handicapped.
Handicapped student can not assign whiteboard room.**

PART 2

```
1 % Knowledge Base
2
3 schedule(canakkale, erzincan, 6).
4 schedule(erzincan, antalya, 3).
5 schedule(antalya, diyarbakir, 4).
6 schedule(antalya, izmir, 2).
7 schedule(diyarbakir, ankara, 8).
8 schedule(van, gaziantep, 3).
9 schedule(rize, ankara, 5).
10 schedule(corum, ankara, 2).
11 schedule(izmir, ankara, 6).
12 schedule(izmir, istanbul, 2).
13 schedule(ankara, istanbul, 1).
14 schedule(ankara, rize, 5).
15 schedule(ankara, van, 4).
16 schedule(istanbul, rize, 4).
17 schedule(yozgat, corum, 2).
```

‘Corum’ and ‘Yozgat’ are added.

```
?- connection(canakkale,X,C).
X = erzincan,
C = 6 ;
X = antalya,
C = 9 ;
X = diyarbakir,
C = 13 ;
X = izmir,
C = 11 ;
X = ankara,
C = 17 ;
X = istanbul,
C = 13 ;
X = van,
C = 21 ;
X = gaziantep,
C = 24 ;
X = rize,
C = 17 ;
false.
```

```
?- connection(antalya,ankara,C).
```

```
C = 8 .
```

```
?- 
```