

CSE341 - Programming Languages

Homework #4

Şiyar Tarık Özcaner

200104004021

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PART 1:

Students:

```
%student(id, [taken courses], Handicapped).  
student(s1, [course1], no).  
student(s2, [course2], yes).  
student(s3, [course2, course3], no).  
student(s4, [course3, course2], yes).  
student(s5, [course4, course5], no).  
student(s6, [course5, course4], yes).  
student(s7, [course3, course5], no).  
student(s8, [course3, course4], no).
```

Instructors:

```
%instructor(id, [given courses], [preferences]).  
instructor(i1, [course1], [projector]).  
instructor(i2, [course2], [projector, smart_board]).  
instructor(i3, [course3, course5], [projector, smart_board]).  
instructor(i4, [course4], [smart_board]).
```

Courses:

```
%course(id, capacity, instructorID, [requirements]).  
course(course1, 10, i1, [yes]).  
course(course2, 7, i2, [yes, projector]).  
course(course3, 10, i3, [projector]).  
course(course4, 13, i4, [smart_board, projector]).  
course(course5, 22, i4, [smart_board]).
```

Classes:

```
%class(id, capacity, [equipment]).  
class(class1, 20, [smart_board, no]).  
class(class2, 20, [projector, yes, no]).  
class(class3, 10, [projector, smart_board, yes, no]).  
class(class4, 40, [projector, no]).
```

Occupancies:

```
%occupancy(course, class, start)  
occupancy(course1, class1, 10).  
occupancy(course1, class1, 11).  
occupancy(course2, class4, 10).  
occupancy(course2, class4, 11).  
occupancy(course2, class4, 12).  
occupancy(course3, class3, 12).  
occupancy(course3, class3, 13).  
occupancy(course3, class3, 14).  
occupancy(course4, class2, 11).  
occupancy(course4, class2, 12).  
occupancy(course4, class2, 13).  
occupancy(course5, class5, 13).  
occupancy(course5, class5, 14).  
occupancy(course5, class5, 15).
```

addStudent:

```
?- addStudent(s23, [course1], yes).  
true.  
  
?- student(s23, Lectures, Handicapped).  
Lectures = [course1],  
Handicapped = yes.
```

addClass:

```
?- addClass(class33, 33, [no]).  
true.  
  
?- class(class33, Capacity, Equipment).  
Capacity = 33,  
Equipment = [no].
```

addCourse:

```
?- addCourse(course33, 33, i1, [yes]).  
true.  
  
?- course(course33, Capacity, InstructorID, Requirements).  
Capacity = 33,  
InstructorID = i1,  
Requirements = [yes].
```

Yes stands for handicapped and no for when student is not handicapped.

checkConflict:

```
?- checkConflict(course1, course5).  
true .  
  
?- checkConflict(course1, course4).  
false.
```

Class vs Course eligibility:

```
?- courseNclass(course2, Class).  
Class = class2 ;  
Class = class3 .  
  
?- courseNclass(Course, class2).  
Course = course1 ;  
Course = course2 ;  
Course = course3 .
```

Student vs class eligibility:

```
?- studentNclass(s2, Class).  
Class = class2 ;  
Class = class3 .  
  
?- studentNclass(Student, class4).  
Student = s1 ;  
Student = s3 ;  
Student = s5 ;  
Student = s7 ;  
Student = s8 .
```

PART 2:

```
?- route(van, X, C).  
X = gaziantep,  
C = 3 ;  
X = istanbul,  
C = 8 ;  
X = ankara,  
C = 4 ;  
X = van,  
C = 6 ;  
X = rize,  
C = 12 ;  
X = izmir,  
C = 10 .
```

```
?- route(van, istanbul, C).  
C = 8 ;  
C = 5 ;  
C = 13 ;  
C = 22 ;  
C = 20 .
```

```
?- route(X, antalya, C).  
X = erzincan,  
C = 3 ;  
X = izmir,  
C = 2 ;  
X = diyarbakir,  
C = 4 ;  
X = istanbul,  
C = 6 ;  
X = canakkale,  
C = 9 ;  
X = antalya,  
C = 4 .
```