CSE 341 – Programming Languages

Assignment - 3

Test Report

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Author

Gökbey Gazi KESKİN

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Note: SWI Prolog had built-in keyword member to check if the element exists in the list and I used it. I don't know if this keyword exists in other distributions such as GNU Prolog and Assignment PDF didn't specify which one to use. So, if the route query on the second part doesn't work as expected on other distributions, this two lines should be added to part2.pl:

```
member(X, [X|_]).
member(X, [_|T]):-member(X,T).
```

member keyword already exists on SWI Prolog so it won't let you redefine it.

Part 1

Test Case 1: Check whether there is any scheduling conflict.

```
?- conflict(101,102).
false.
```

101 and 102 are at different classes and times.

```
?- conflict(101,241).
false.
```

101 and 241 are at the same time but different classes.

```
?- conflict(101,341).
true.
```

101 and 341 are at the same time and class.

241 and 343 are at the same class but different times.

```
?- conflict(241,343).
false.
```

Test Case 2: Check which room can be assigned to a given class.

```
?- assignRoom(101,X).
X = z23 ;
false.
```

Course 101 can only be assigned to room z23 because:

Course needs projector, mg (instructor of 101) needs both projector and smart board, capacity of the lesson is 80 and only z23 can hold this many people.

```
?- assignRoom(102,X).
X = z23 ;
false.
```

Course 102 can only be assigned to room z23 because:

Course needs smart board, yg (instructor of 102) needs projector, capacity of the lesson is 70 and other room which can hold 70 people (z11) doesn't have projector.

```
?- assignRoom(241,X).
X = z23 ;
false.
```

Course 241 can only be assigned to z23 because:

Course needs both projector and smart board and only class which has both is z23.

```
?- assignRoom(341,X).
X = z06 ;
X = z23 ;
false.
```

Course 341 can be assigned to 2 rooms because:

It doesn't have a special need, it's instructor yg needs a projector and it has 40 students enrolled so every class can hold this number. Classes with projectors are z06 and z23

```
?- assignRoom(343,X).
X = z06 ;
X = z11 ;
X = z23.
```

Course 343 can be assigned to any class because:

It doesn't have any special needs, it's instructor hk doesn't need anything and it has a capacity of 50 people and the smallest room z06 can hold up to 50 people.

Test Case 3: Check which room can be assigned to which classes.

```
?- assignRoom(X,Y).
X = 341,
Y = z06 ;
X = 343,
Y = z06 ;
X = 343,
Y = z11 ;
X = 101,
Y = z23 ;
X = 102,
Y = z23 ;
X = 241,
Y = z23 ;
X = 341,
Y = z23 ;
X = 343,
Y = z23.
```

Test Case 4: Check whether a student can be enrolled to a given class.

```
?- enroll(student1,101).
true.
```

Student1 is handicapped and course 101 is at room Z06 which is a handicapped friendly room.

```
?- enroll(student1,102).
false.
```

Student1 is handicapped and course 102 is at room Z1 which is not a handicapped friendly room.

```
?- enroll(student2,101).
true .
```

Student2 is not handicapped so he/she can attend to all courses

```
?- enroll(student2,102).
true
```

Test Case 5: Check which classes a student can be assigned.

```
?- enroll(student1,X).
X = 101 ;
X = 241 ;
X = 341 ;
X = 343.
```

Student1 is handicapped so he/she can attend courses which takes place at handicapped friendly rooms (Z06 and Z23).

```
?- enroll(student2,X).
true ;
```

Student2 can attend all courses.

Part 2

Test Case 1: Different path costs between two cities

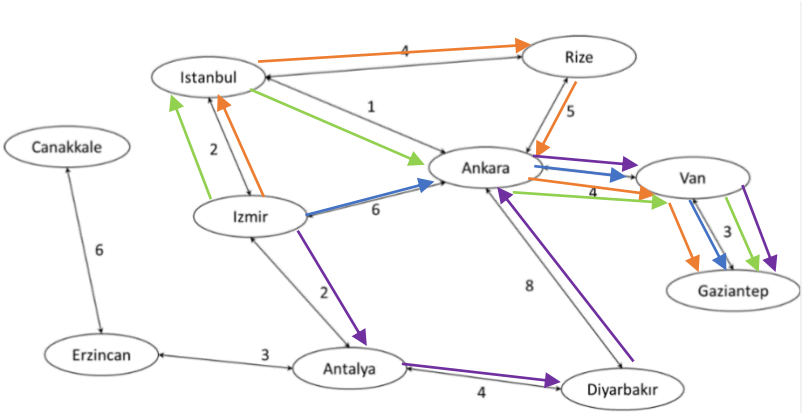
```
?- route(izmir,gaziantep,X).
X = 21 ;
X = 10 ;
X = 18 ;
X = 13 ;
false.
```

Purple Path

Green path

Orange path

Blue path



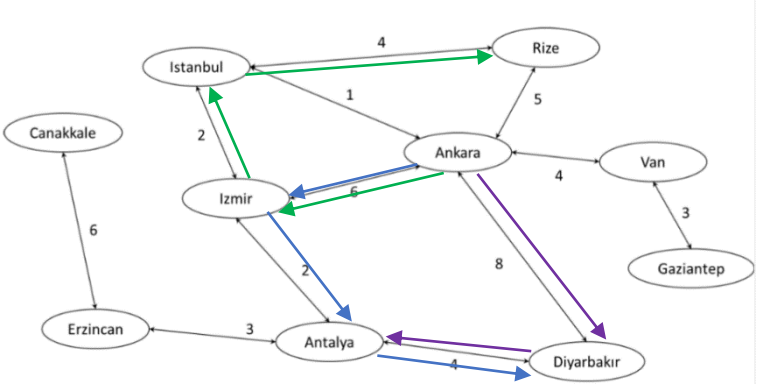
Test Case 2: All the different routes from a city to other cities with cost 12

```
?- route(ankara,X,12).
X = diyarbakir
X = rize ;
X = antalya ;
false.
```

Blue Path

Green Path

Purple Path



Test Case 3: All the different routes from a city to other cities

```
?- route(ankara,X,C).
X = izmir,
C = 6 ;
X = istanbul,
C = 1 ;
X = rize,
C = 5 ;
X = van,
C = 4 ;
X = diyarbakir,
C = 8 ;
X = antalya,
C = 8 ;
X = istanbul,
C = 8 ;
X = diyarbakir,
C = 12 ;
X = erzincan,
C = 11 ;
X = canakkale,
C = 17 ;
X = rize,
C = 12 ;
X = izmir,
C = 3 ;
X = rize,
C = 5 ;
X = antalya,
C = 5 ;
X = diyarbakir,
C = 9 ;
X = erzincan,
C = 8 ;
X = canakkale,
C = 14 ;
X = istanbul,
C = 9 ;
X = izmir,
C = 11 ;
X = antalya,
C = 13 ;
X = diyarbakir,
C = 17 ;
X = erzincan,
C = 16 ;
X = canakkale,
C = 22 ;
X = gaziantep,
C = 7 ;
X = antalya,
C = 12 ;
X = izmir,
C = 14 ;
X = erzincan,
C = 15 ;
X = istanbul,
C = 16 ;
X = rize,
C = 20 ;
X = canakkale,
C = 21 ;
```