

MAP EXERCISE

Implement a class named Database that includes the following instance variable:

```
Map<String, ArrayList<String>> courses;
```

The variable **courses** maps a student's name to a list of courses he/she is taking. (Notice that "Map" is an interface, not a class.)

As you complete each step below, test your work by writing a main method that instantiates a Database and tests out the methods you are writing.

1. Using the HashMap class, instantiate an appropriate object for "courses".
2. Define a method that adds a course to the list of courses associated with a student (so two parameters, the course and the student). If there is no list of courses associated with the student, one should be created and inserted in the map.
3. Define a method that prints, for each student in the map, the set of courses the student is taking.
4. Define a method that removes a course from a particular student's list.
5. Define a method that removes a course from all students' lists.
6. Define a method that determines whether a particular course is being taken by a particular student.
7. Define a method that determines whether a particular course is being taken by ANY student.
8. The most popular course is defined as the one with the largest number of students. Define a method that determines the most popular course (for simplicity you can assume there is only one).