Practice Exercise #44: School Admin

http://www.comp.nus.edu.sg/~cs1020/4_misc/practice.html

Objectives:

- Familiarizing with OOP style
- Problem solving

Task Statement:

The NUS modular system combines the rigor and depth of the British university system with the flexibility and breadth of the American system. Under this system, workloads are expressed in terms of Modular Credits (MCs), and academic performance is measured by grade points on a 5-point scale.

Each module of study has a unique module code and a modular credit. The MC-value of a module is derived by dividing the estimated total number of workload hours per week for that module by the credit factor of 2.5 (i.e. one MC is equivalent to 2.5 hours of study and preparation per week).

At the end of each semester, students will receive letter grades for each module taken, except for the cases listed below. Each grade corresponds to a grade point as shown below:

Grade	A+	A	A-	B+	B	B-	C+	C	D+	D	F
Grade point	5.0		4.5	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0

Academic progress is tracked by the CAP, which is the weighted average grade point of all modules taken by a student. Therefore, a student's CAP is the sum of the module grade points multiplied by the number of MCs for the corresponding module, divided by the total number of MCs. This is represented as follows:

$$\text{CAP} = \frac{\text{sum (module grade point x MCs assigned to module)}}{\text{sum (MCs assigned to all modules used in calculating the numerator)}}$$

You are to complete the program **SchoolAdmin.java** to:

1. Read in a list of modules with their corresponding MCs. This list ends with -1.
2. Read in an integer indicating number of student's information to be entered.
3. For each student, read in: matriculation number, name and a list of modules he has enrolled in with their corresponding grades. This list of modules ends with -1.
4. Calculate total MCs enrolled and CAP (round to 2 decimal places) for each student.
5. Print result for each student. (See sample output below.)

Note: You may assume all the inputs are valid.

Sample Input

```
CS1020 4
CS1101S 5
CS1231 4
CS2010 4
CS2010R 1
CS2100 4
CS2101 4
CS2102 4
CS2103T 4
CS2105 4
LAG1201 4
LAG2201 4
MA1101R 4
MA1102R 4
MA2101 4
PC1325 4
PC1431 4
PC1432 4
ST1131 4
ST2131 4
-1
2
A0123456X
Wang Fei
CS1101S B+
CS1231 A
MA1102R B
ST1131 A-
PC1432 A-
CS1020 A+
MA1101R B+
PC1431 A
ST2131 A-
CS2100 A
CS2101 B+
CS2102 A-
CS2103T B+
CS2105 A-
CS2010 A+
CS2010R A+
-1
A6543210N
Qwerty
CS1231 A
MA1102R B
LAG1201 B
MA1101R B+
ST2131 A-
PC1325 A
LAG2201 B
MA2101 B+
-1
```

Sample Output

```
Wang Fei with matric number A0123456X has enrolled in 62MC courses and has a CAP of 4.47
Qwerty with matric number A6543210N has enrolled in 32MC courses and has a CAP of 4.13
```