Problem Set 4 Exercise #30: Class Roster

Reference: Lecture 10 OOP Unit 3 notes

Learning objectives: Object-oriented programming; Sorting objects

Estimated completion time: 50 minutes

Problem statement:

CS1010X maintains a class roster for all students. Essential information of a student includes (this is a simplified version):

- Student number (a single word string, e.g. "A0083070W")
- Major of a student (a string, e.g. "Information Systems").

Create a **`Student`** class with above two attributes and the following operations:

- **`Student(String stuNumber, String major)`**
- **`getStuNumber()`**
- **`toString()  // format: "[A0083070W, Information Systems]"`**

Write a user program **PS4_Ex30_Roster.java** to read student information, create an array of **`Student`** objects and sort the array in ascending order of student numbers. Finally print out the array, one student per row.

The user program should contain the following two static methods in addition to the main method:

- **`readRoster()`** that creates an array of **Student** objects, reads information into it and returns it.
- **`sortRoster()`** that sorts the array in ascending order of student numbers of **Student** objects.

Sample run #1:

```
Enter the number of students in class: 2
Enter student number and major of 2 students:
A0097754M Computer Engineering
A0097379H Information Systems
Sorted list:
[A0097379H, Information Systems]
[A0097754M, Computer Engineering]
```

Sample run #2:

```
Enter the number of students in class: 4
Enter student number and major of 4 students:
U096906Y ECE
A0092061K Accounting
A0093344J Chemistry
A0092515W Dentistry
Sorted list:
[A0092061K, Accounting]
[A0092515W, Dentistry]
[A0093344J, Chemistry]
[U096906Y, ECE]
```

Useful tips:

Explore the **`trim()`** and **`compareTo()`** methods of the Java **`String`** class.