Exercise 4 (10 points) – can be done individually or in pair

- The first lines of all source files must be comment containing names & IDs of all members. Also create file readme.txt containing names & IDs of all members.
- Put all files (source, input, output) in folder Ex4_xxx where xxx = your full ID. That is, your source files must be in package Ex4_xxx and input/output files (if there is any) must be read from/write to this folder. From now on, you'll get point deduction for wrong package & folder structure.
- The group representative zips Ex4_xxx & submits it to Google Classroom. The other members submit only readme.txt. Email submission is not accepted.
- The exercise is graded only once, and after graded, members can't be added.

==========

Keep your source code for Exercise 5.

1. Copy class Airline to your source file. Complete this class to make it concrete. Add variables & methods as needed, but don't change the visibility of the given members.

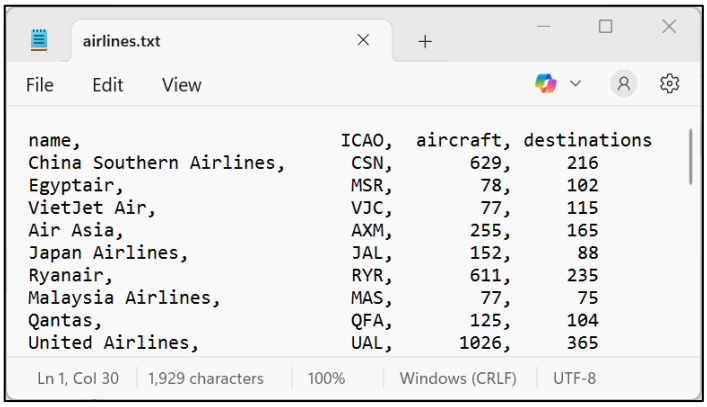
```
class Airline implements Comparable<Airline> {
  private String name, code;
  private int    aircraft, destinations;

  public int compareTo(Airline other)      { /* add your code (see 2.2) */ }
  public boolean equals(Object param)      { /* add your code (see 2.4) */ }
}
```

2. Write another class as the main class.

   2.1 Create an ArrayList of Airline. Read each line of input file into an Airline object & add this object to the ArrayList.

   The first line = column names. Don't remove this line from input file, but make your program skip it.



Note – Read the whole line into a String (e.g. line) and split it at comma. Trim spaces before converting String to number; otherwise, you'll get runtime exception.

```
String line   = scan.nextLine();
String []cols = line.split(",");
int aircraft  = Integer.parseInt( cols[2].trim() );
```

   2.2 Sort ArrayList of airlines and print the output.
   - Sort airlines in decreasing order of aircraft.
   - If aircrafts are equal, sort them in decreasing order of destinations.
   - If aircrafts & destinations are equal, sort them by alphabetical order of names.

Note – Class String in Java already implements compareTo and compareToIgnoreCase

```
String s1 = "Air Asia";
String s2 = "Air China";
int x1 = s1.compareToIgnoreCase(s2);    //x1 = -2  i.e. Air Asia  comes first (A-C = -2)
int x2 = s2.compareToIgnoreCase(s1);    //x2 =  2  i.e. Air China comes later (C-A =  2)
```

   2.3 Keep asking user to choose between searching, filtering, or quitting the program.

2.4 For searching: get ICAO code from user. If the code is found, print airline data. Otherwise, report that the code is not found.

Note – Create a dummy Airline object and use ArrayList's indexOf for quick searching

```
Airline key = new Airline("", "THA", 0, 0);
int index   = allAirlines.indexOf(key);
```

2.5 For filtering: get minimum aircraft threshold from user. Print the sorted airlines from 2.2, but choose only airlines whose aircraft >= threshold.

```
--- exec:3.1.0:exec (default-cli) @ solutions ---
```

Sort

Airline		Aircraft	Destinations
United Airlines	(UAL)	1,026	365
American Airlines	(AAL)	985	353
Delta Air Lines	(DAL)	982	311
China Southern Airlines	(CSN)	629	216
Ryanair	(RYR)	611	235
China Eastern Airlines	(CES)	588	248
Air China	(CCA)	456	201
EasyJet	(EZY)	347	157
Lufthansa	(DLH)	274	229
Air Asia	(AXM)	255	165
All Nippon Airways	(ANA)	255	97
Qatar Airways	(QTR)	252	198
Emirates Airlines	(UAE)	252	157
British Airways	(BAW)	244	206
Air France	(AFR)	226	184
Singapore Airlines	(SIA)	159	137
Korean Air	(KAL)	159	121
Cathay Pacific	(CPA)	152	88
Japan Airlines	(JAL)	152	88
Ethiopian Airlines	(ETH)	146	155
Garuda Indonesia	(GIA)	134	90
Qantas	(QFA)	125	104
Etihad Airways	(ETD)	103	81
Flydubai	(FDB)	87	127
EVA Air	(EVA)	87	62
Asiana Airlines	(AAR)	83	90
Finnair	(FIN)	80	104
Thai Airways International	(THA)	79	65
Egyptair	(MSR)	78	102
VietJet Air	(VJC)	77	115
Malaysia Airlines	(MAS)	77	75
Philippine Airlines	(PAL)	77	75
Cebu Pacific	(CEB)	52	62
Bangkok Airways	(BKP)	35	30

```
Enter s/S to search airlines; f/F to filter airlines; else to quit
```

```
Enter s/S to search airlines; f/F to filter airlines; else to quit
s
Enter airline code =
TG
Code TG not found

Enter s/S to search airlines; f/F to filter airlines; else to quit
s
Enter airline code =
THA
```

Search

Airline		Aircraft	Destinations
Thai Airways International	(THA)	79	65

```
Enter s/S to search airlines; f/F to filter airlines; else to quit
f
Enter min aircraft threshold =
274
```

Filter

Airline		Aircraft	Destinations
United Airlines	(UAL)	1,026	365
American Airlines	(AAL)	985	353
Delta Air Lines	(DAL)	982	311
China Southern Airlines	(CSN)	629	216
Ryanair	(RYR)	611	235
China Eastern Airlines	(CES)	588	248
Air China	(CCA)	456	201
EasyJet	(EZY)	347	157
Lufthansa	(DLH)	274	229

```
Enter s/S to search airlines; f/F to filter airlines; else to quit
z
------------------------------------------------------------------------
BUILD SUCCESS
------------------------------------------------------------------------
```