Gebze Technical University
Department of Computer Engineering
CSE 241/505
Object Oriented Programming
Fall 2021
Homework # 7
Due date Jan 6th 2022

DayofYearSet is a Java class to represent a set of **DayOfYear** objects (in Turkish DayOfYear kümesi). This class has the following methods and features as well as any other methods that you think are necessary (setters, getters, etc.)

- **DayofYear** is a static inner class with all its public and private members.
- **DayofYearSet** class keeps its elements using a **DayofYear[]** data member.
- Has at least one constructor that takes a **ArrayList** of **DayOfYear** objects.
- Overridden **ToString** method to print **DayofYearSet** details.
- Overridden **equals** method comparing **DayofYearSet** objects. Two sets are equal if their elements are equal regardless of the keeping order.
- Method **add** adds an element to the set. Please note that no duplicates are allowed in a set.
- Method **remove** removes an element from the set.
- Method **size** returns the number of elements.
- Methods for set union, set difference, set intersection, and set complement. Note that there are only 365 days in a year for the complement calculation.
- Uses keyword **var** in its implementation.
- The class will have a static method that returns the total number of **DayOfYear** objects alive in all the sets. Be careful here because there could be more than one set alive at the same time.

Your class uses a package and nicely provides javadoc comments.

Your driver code will be in a separate class. It will do the following

- Test each method at least 2 times and printing the results. Do not forget to test the constructors.
- Test the De Morgan rule for sets with at least 5 different set pairs. Note that for sets **s1** and **s2**, De Morgan says that **!(s1 + s2) == !s1 ^ !s2**
- Writes some sets to text files. Do not forget to include your saved files.

Notes:
- Do not use any Java Collection classes as your class fields.
- Do not use anything that we did not learn in the lectures unless asked.
- Check the validity of the user input.
- You should submit your work to the Teams page.
- You should also submit your PDF documentation produced by Javadoc utility.