

Quiz 4-Generic Collections

Due Date: 24.05.2020/ 14.59

Goal: Learn how to use various Java Generic Collections APIs

Tasks: Read contact information from input file **contacts.txt** and store it to various data structures using java **Collection** classes, then store back to a file following the directions below. Element of each data structure must be stored as an object of class **Contact** that has the following four String type instance variables:

```
public class Contact implements Comparable<Contact> {  
    private String socialSecurityNumber;  
    private String firstName;  
    private String lastName;  
    private String phoneNumber;  
}
```

1-Store contacts to an *ArrayList*, then write the contacts to file *contactsArrayList.txt* iterating the *ArrayList*

2-Create class *LastNameComparator* that implements *Comparator* to sort contacts by last name. Use class *LastNameComparator* to sort *ArrayList* using *Collections.sort*. Then write the contacts to file *contactsArrayListOrderByLastName.txt*.

3-Store contacts to a *HashSet*, then write the contacts to file *contactsHashSet.txt* iterating the *HashSet*

4-Store contacts to a *TreeSet*, then write the contacts to file *contactsTreeSet.txt* iterating the *TreeSet*.

5-Use class *LastNameComparator* to store contacts in the order of last name with *TreeSet*. Then write the contacts to file *contactsTreeSetOrderByLastName.txt*.

6-Store contacts to a *HashMap* using a phone number as a key and a *Contact* object as a value. Then write the contacts to file.txt iterating the *HashMap*.

- Your class must implement interface *Comparable* for class *Contact* to provide natural order for *TreeSet*. Please use phone number as a sort key for natural order.
- You are expected to produce the output for each store type as specified above, separately.
- You must submit your work with the file hierarchy as stated below:

→<studentid.zip>
-Main. java , *.java

Execution and Test

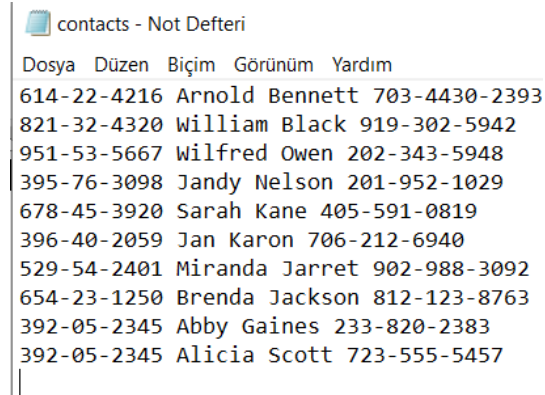
The input file is going to be given as program argument. In order to test your program, you should follow the following steps:

- Upload your java files to your server account (dev.cs.hacettepe.edu.tr)
- Compile your code (javac Main.java or javac *.java)
- Run your program (java Main contacts.txt)
- Control your output data and format.

Input and output format

```
Phone number [space] name [space] surname [space] social security number [newline]
Phone number [space] name [space] surname [space] social security number [newline]
Phone number [space] name [space] surname [space] social security number [newline]
....
```




Example input file



```
contacts - Not Defteri
Dosya Düzen Biçim Görünüm Yardım
614-22-4216 Arnold Bennett 703-4430-2393
821-32-4320 William Black 919-302-5942
951-53-5667 Wilfred Owen 202-343-5948
395-76-3098 Jandy Nelson 201-952-1029
678-45-3920 Sarah Kane 405-591-0819
396-40-2059 Jan Karon 706-212-6940
529-54-2401 Miranda Jarret 902-988-3092
654-23-1250 Brenda Jackson 812-123-8763
392-05-2345 Abby Gaines 233-820-2383
392-05-2345 Alicia Scott 723-555-5457
```

Example Output file

 <pre>contactsArrayList - Not Defteri Dosya Düzen Biçim Görünüm Yardım 614-22-4216 Arnold Bennett 703-4430-2393 821-32-4320 William Black 919-302-5942 951-53-5667 Wilfred Owen 202-343-5948 395-76-3098 Jandy Nelson 201-952-1029 678-45-3920 Sarah Kane 405-591-0819 396-40-2059 Jan Karon 706-212-6940 529-54-2401 Miranda Jarret 902-988-3092 654-23-1250 Brenda Jackson 812-123-8763 392-05-2345 Abby Gaines 233-820-2383 392-05-2345 Alicia Scott 723-555-5457</pre>	 <pre>contactsArrayListOrderByLastName - Not Defteri Dosya Düzen Biçim Görünüm Yardım 614-22-4216 Arnold Bennett 703-4430-2393 821-32-4320 William Black 919-302-5942 392-05-2345 Abby Gaines 233-820-2383 654-23-1250 Brenda Jackson 812-123-8763 529-54-2401 Miranda Jarret 902-988-3092 678-45-3920 Sarah Kane 405-591-0819 396-40-2059 Jan Karon 706-212-6940 395-76-3098 Jandy Nelson 201-952-1029 951-53-5667 Wilfred Owen 202-343-5948 392-05-2345 Alicia Scott 723-555-5457</pre>
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<div data-bbox="212 201 560 233">  contactsHashMap - Not Defteri </div> <div data-bbox="206 249 633 279"> Dosya Düzen Biçim Görünüm Yardım </div> <div data-bbox="206 285 802 573"> 678-45-3920 Sarah Kane 405-591-0819 395-76-3098 Jandy Nelson 201-952-1029 392-05-2345 Alicia Scott 723-555-5457 614-22-4216 Arnold Bennett 703-4430-2393 821-32-4320 William Black 919-302-5942 396-40-2059 Jan Karon 706-212-6940 529-54-2401 Miranda Jarret 902-988-3092 951-53-5667 Wilfred Owen 202-343-5948 654-23-1250 Brenda Jackson 812-123-8763 </div>	<div data-bbox="850 201 1166 233">  contactsHashSet - Not Defteri </div> <div data-bbox="844 249 1247 279"> Dosya Düzen Biçim Görünüm Yardım </div> <div data-bbox="844 285 1408 548"> 678-45-3920 Sarah Kane 405-591-0819 395-76-3098 Jandy Nelson 201-952-1029 392-05-2345 Abby Gaines 233-820-2383 614-22-4216 Arnold Bennett 703-4430-2393 821-32-4320 William Black 919-302-5942 396-40-2059 Jan Karon 706-212-6940 529-54-2401 Miranda Jarret 902-988-3092 951-53-5667 Wilfred Owen 202-343-5948 654-23-1250 Brenda Jackson 812-123-8763 </div>
<div data-bbox="206 636 526 667">  contactsTreeSet - Not Defteri </div> <div data-bbox="201 682 617 711"> Dosya Düzen Biçim Görünüm Yardım </div> <div data-bbox="201 718 781 997"> 392-05-2345 Abby Gaines 233-820-2383 395-76-3098 Jandy Nelson 201-952-1029 396-40-2059 Jan Karon 706-212-6940 529-54-2401 Miranda Jarret 902-988-3092 614-22-4216 Arnold Bennett 703-4430-2393 654-23-1250 Brenda Jackson 812-123-8763 678-45-3920 Sarah Kane 405-591-0819 821-32-4320 William Black 919-302-5942 951-53-5667 Wilfred Owen 202-343-5948 </div>	<div data-bbox="850 636 1312 667">  contactsTreeSetOrderByLastName - Not Defteri </div> <div data-bbox="844 682 1235 711"> Dosya Düzen Biçim Görünüm Yardım </div> <div data-bbox="844 718 1391 1001"> 614-22-4216 Arnold Bennett 703-4430-2393 821-32-4320 William Black 919-302-5942 392-05-2345 Abby Gaines 233-820-2383 654-23-1250 Brenda Jackson 812-123-8763 529-54-2401 Miranda Jarret 902-988-3092 678-45-3920 Sarah Kane 405-591-0819 396-40-2059 Jan Karon 706-212-6940 395-76-3098 Jandy Nelson 201-952-1029 951-53-5667 Wilfred Owen 202-343-5948 392-05-2345 Alicia Scott 723-555-5457 </div>