

QUIZ 4

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Due Date : 10.04.2022 (23:59:59)

Generic Collections

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  
  - <src>  
    - Main.java, *.java
```

Execution and Test

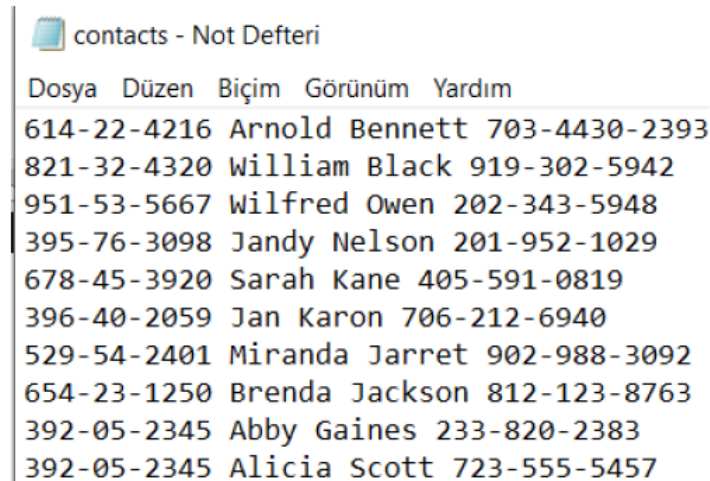
The input file is going to be given as program argument. In order to test your program, you should follow the following steps:

- 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

 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	 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
 contactsHashMap - Not Defteri Dosya Düzen Biçim Görünüm Yardım 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	 contactsHashSet - Not Defteri Dosya Düzen Biçim Görünüm Yardım 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
 contactsTreeSet - Not Defteri Dosya Düzen Biçim Görünüm Yardım 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	 contactsTreeSetOrderByLastName - 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

Important Notes

- Do not miss the submission deadline.
- Compile your code on dev.cs.hacettepe.edu.tr before submitting your work to make sure it compiles without any problems on our server.
- Save all your work until the assignment is graded.
- The assignment must be original, individual work. Duplicate or very similar assignments are both going to be considered as cheating. You can ask your questions via Piazza and you are supposed to be aware of everything discussed on Piazza. You cannot share algorithms or source code. All work must be individual! Assignments will be checked for similarity, and there will be serious consequences if plagiarism is detected.