

## Quiz 4-Generic Collections

Due Date: 01.12.2023/ 23.59

**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

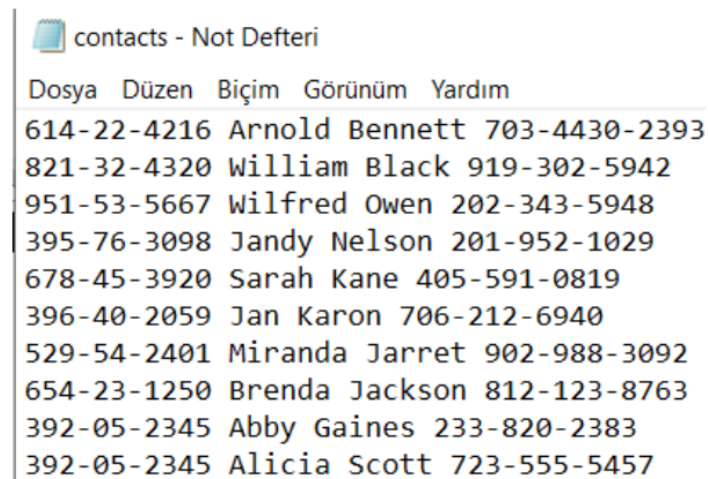
The input file is going to be given as program argument. In order to test your program, you should follow the following steps:

- Upload your java files to your server account
- 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

|   |  |
|---|--|
|  |  |
|---|--|

### 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  
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