<u>Assignment 4: Lab assignment Java Collection and Threads</u>

Q1. create a file story.txt and put some text into it. read that file and find the frequency of each word in the file in the and print it
Ex:
story.txt
life is full of fun life is full of fun life is full of fun life

O/P:
life appear 4 times is appear 3 times
.....
......

Q2. Create a class BookCollection which contains:
   1. the owner's name and an array of books that the owner has,
   2. toString() that outputs all the books in the BookCollection in a nice format.
   3. a method hasBook(Book b) which checks if the book b is contained in the array (we consider two books the same if they have the same title and author).
   4. a method sort() that sorts the books in the array by the lexicographical order of the book title, and author.
Create your own BookCollection and check if you own a particular book:"Java in depth". Sort the BookCollection
and output the BookCollection.

Q3. Consider file data:
97.59780253225763
23.705044359023198
72.97025259152822
18.986484094410137
77.56528079180427
88.5456385076513
59.09494795452861
72.71304984780839
80.0202893029642
29.58427968260707
74.66713563267237
27.40345943374961
15.990164966686493
58.852582668688534
45.58743329596889
77.2227556103568
53.49035808405568
93.5583604428736
35.09314691785803
9.81205984779046
51.438605600928376
6.081908597641594
2.604194278086147
99.43752090812772

20.355993598952395
Put data into a file named data.txt, Read from data.txt all the doubles (edited by a user) and display the biggest one.

Q4. Create a program to create PriorityQueque to store product information
Product class : consist of fields: productId, productName, productPrice. Create and store 5 product into PriorityQueque
You need to use Comparator for custom priority (as per productPrice)

Q5. Filedownloader use threads for better cpu utilization, we need to create an application to simulate processing of filedownloader consider we have some photos on dropbox (Refer lab 7)

https://www.dropbox.com/photo1.jpg
https://www.dropbox.com/photo2.jpg
...
...
https://www.dropbox.com/photo25.jpg

Modifify the code to use threads so that performance of application can be improved

Q6. Q5. Synchronizing a method,In this lab we will learn how to use synchronization in Java, that is, the use of the synchronized keyword to control the concurrent access to a method. Only one execution thread will access one of the methods of an object declared with
the synchronized keyword. If another thread tries to access any method declared with the
synchronized keyword of the same object, it will be suspended until the first thread finishes
the execution of the method.

```
public class Account {
     private double balance;
     //getter setter
     public  void addAmount(double amount) {
          //
     }
     public  void subtractAmount(double amount) {
          //
     }
}
```

Now same account object is used by Bank and Company class, bank trying to subtract Rs 1000 , 100 time and
Company trying to deposit Rs 1000, 100 time(refer lab code)

Now we need to ensure that total amount must be consistent (Apply synchronization method and block)