

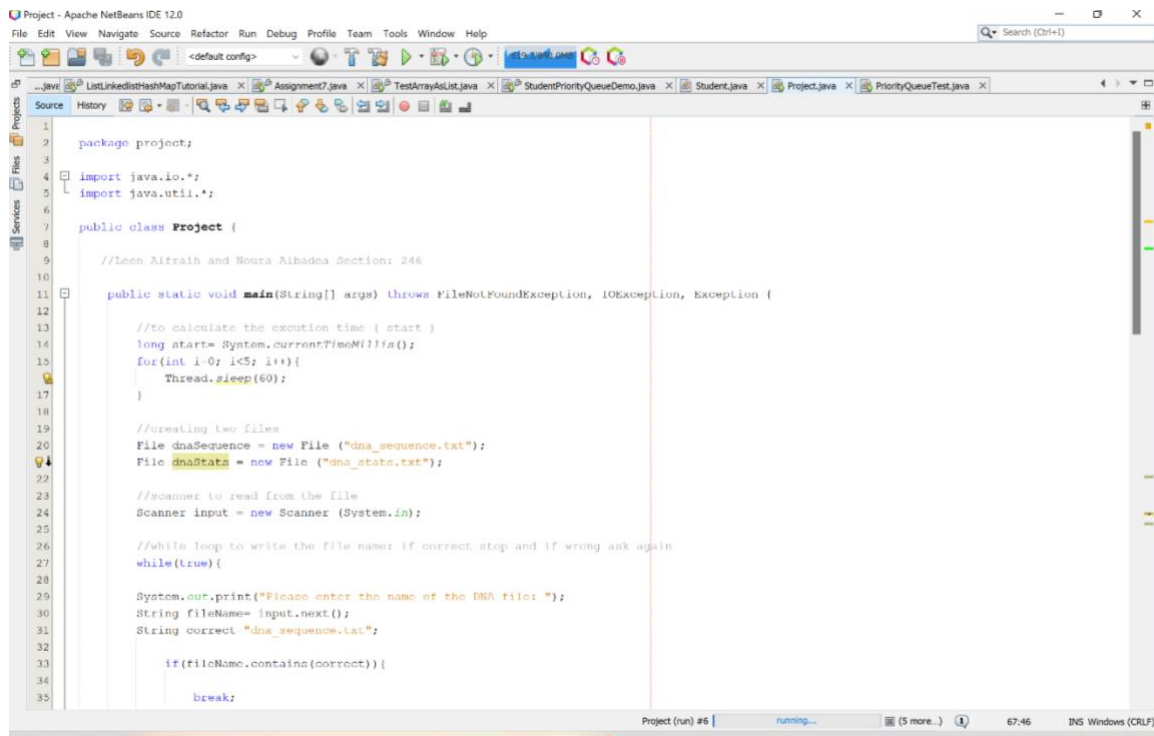
CS102 Course Project

Leen Alfraih

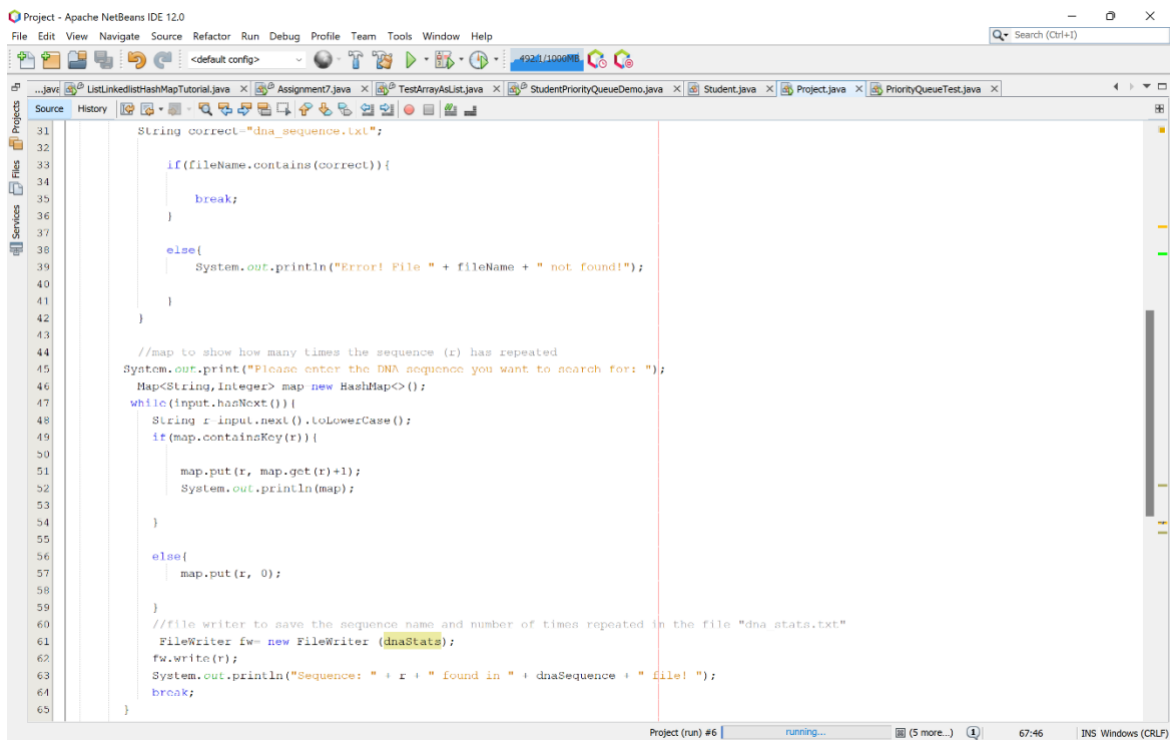
Noura Albadea

Section: 246

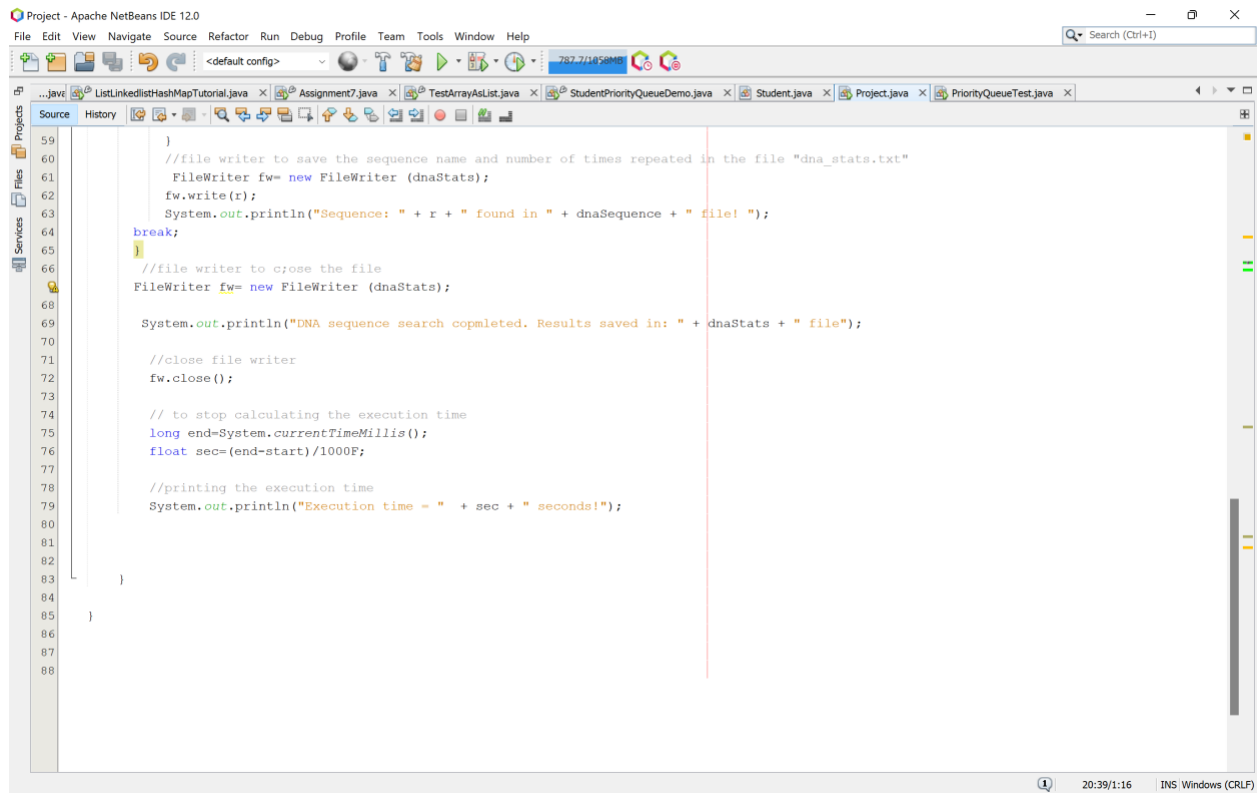
Code 1 : (without counting the number of times the sequence is repeated in the DNA file.)



```
1 package project;
2
3
4 import java.io.*;
5 import java.util.*;
6
7 public class Project {
8
9     //Leen Altraih and Noura Albadea Section: 246
10
11     public static void main(String[] args) throws FileNotFoundException, IOException, Exception {
12
13         //to calculate the execution time ( start )
14         long start= System.currentTimeMillis();
15         for(int i=0; i<5; i++){
16             Thread.sleep(60);
17         }
18
19         //creating two files
20         File dnaSequence = new File ("dna_sequence.txt");
21         File dnaStats = new File ("dna_stats.txt");
22
23         //scanner to read from the file
24         Scanner input = new Scanner (System.in);
25
26         //while loop to write the File name: if correct stop and if wrong ask again
27         while(true){
28
29             System.out.print("Please enter the name of the DNA file: ");
30             String fileName= input.next();
31             String correct "dna_sequence.txt";
32
33             if(fileName.contains(correct)){
34
35                 break;
36             }
37         }
38     }
39 }
```

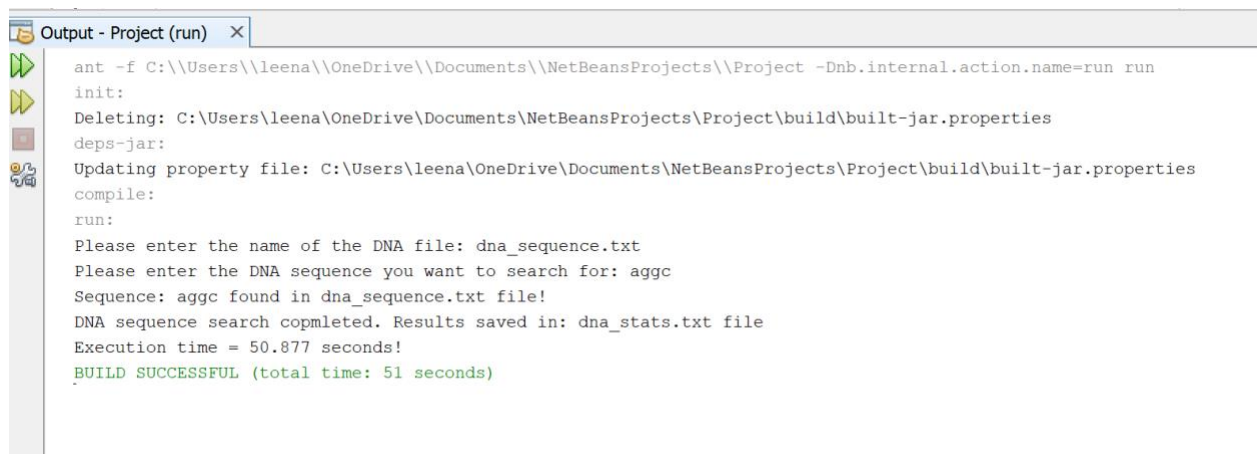


```
31 String correct="dna_sequence.txt";
32
33 if(fileName.contains(correct)){
34     break;
35 }
36
37 else{
38     System.out.println("Error! File " + fileName + " not found!");
39 }
40
41 }
42
43
44 //map to show how many times the sequence (r) has repeated
45 System.out.print("Please enter the DNA sequence you want to search for: ");
46 Map<String,Integer> map= new HashMap<>();
47 while(input.hasNext()){
48     String r= input.next().toLowerCase();
49     if(map.containsKey(r)){
50         map.put(r, map.get(r)+1);
51         System.out.println(map);
52     }
53 }
54
55 else{
56     map.put(r, 0);
57 }
58
59 //file writer to save the sequence name and number of times repeated in the file "dna_stats.txt"
60 FileWriter fw= new FileWriter (dnaStats);
61 fw.write(r);
62 System.out.println("Sequence: " + r + " found in " + dnaSequence + " file! ");
63 break;
64 }
65 }
```



Possible Outcomes:

1)



2)

```
Output - Project (run) #3 x
ant -f C:\Users\leena\OneDrive\Documents\NetBeansProjects\Project -Dnb.internal.action.name=run run
init:
Deleting: C:\Users\leena\OneDrive\Documents\NetBeansProjects\Project\build\build-jar.properties
deps-jar:
Updating property file: C:\Users\leena\OneDrive\Documents\NetBeansProjects\Project\build\build-jar.properties
compile:
run:
Please enter the name of the DNA file: dna_stats.txt
Error! File dna_stats.txt not found!
Please enter the name of the DNA file: dna_sequence.txt
Please enter the DNA sequence you want to search for: aggc
Sequence: aggc found in dna_sequence.txt file!
DNA sequence search completed. Results saved in: dna_stats.txt file
Execution time = 20.071 seconds!
BUILD SUCCESSFUL (total time: 20 seconds)
```

Code 2: (the whole code is the same except the while loop for the map has changed)

(the output shows that the searches sequence is not found in the DNA file)

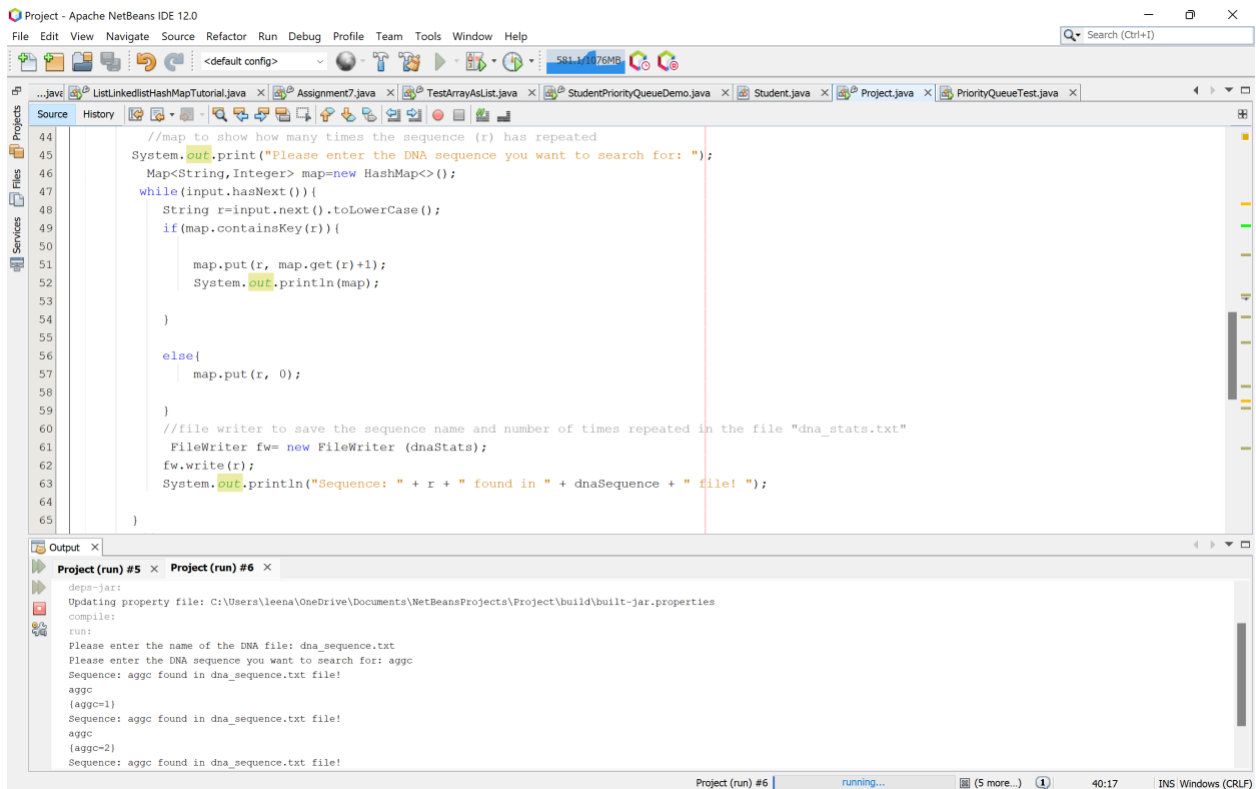
```
Project - Apache NetBeans IDE 12.0
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Search (Ctrl+I)

Source History
ListLinkedListHashMapTutorial.java x Assignment7.java x TestArrayAsList.java x StudentPriorityQueueDemo.java x Student.java x Project.java x PriorityQueueTest.java x
44 //map to show how many times the sequence (r) has repeated
45 System.out.print("Please enter the DNA sequence you want to search for: ");
46 Map<String,Integer> map=new HashMap<>();
47 while(input.hasNext()){
48     String r=input.next().toLowerCase();
49     if(map.containsKey(r)){
50
51         map.put(r, map.get(r)+1);
52         System.out.println(map);
53     }
54 }
55
56 else{
57     map.put(r, 0);
58     System.out.println("Sequence: " + r + " not found in " + dnaSequence + " file! ");
59 }
60 //file writer to save the sequence name and number of times repeated in the file "dna_stats.txt"
61 FileWriter fw= new FileWriter (dnaStats);
62 fw.write(r);
63 break;
64
65 }

Output - Project (run) #5 x
ant -f C:\Users\leena\OneDrive\Documents\NetBeansProjects\Project -Dnb.internal.action.name=run run
init:
Deleting: C:\Users\leena\OneDrive\Documents\NetBeansProjects\Project\build\build-jar.properties
deps-jar:
Updating property file: C:\Users\leena\OneDrive\Documents\NetBeansProjects\Project\build\build-jar.properties
Compiling 1 source file to C:\Users\leena\OneDrive\Documents\NetBeansProjects\Project\build\classes
compile:
run:
Please enter the name of the DNA file: dna_sequence.txt
Please enter the DNA sequence you want to search for: XaxX
Sequence: xaxx not found in dna_sequence.txt file!
DNA sequence search completed. Results saved in: dna_stats.txt file
Execution time = 12.204 seconds!
BUILD SUCCESSFUL (total time: 13 seconds)
```

Code 3: (the whole code is the same except the while loop for the map has changed)

(the output shows with counting the number of times the sequence is repeated in the DNA file)



The screenshot displays the Apache NetBeans IDE interface. The main editor window shows a Java file named `Project.java` with the following code:

```
44 //map to show how many times the sequence (r) has repeated
45 System.out.print("Please enter the DNA sequence you want to search for: ");
46 Map<String,Integer> map=new HashMap<>();
47 while(input.hasNext()){
48     String r=input.next().toLowerCase();
49     if(map.containsKey(r)){
50
51         map.put(r, map.get(r)+1);
52         System.out.println(map);
53     }
54 }
55 else{
56     map.put(r, 0);
57 }
58 }
59 //file writer to save the sequence name and number of times repeated in the file "dna_stats.txt"
60 FileWriter fw= new FileWriter (dnaStats);
61 fw.write(r);
62 System.out.println("Sequence: " + r + " found in " + dnaSequence + " file! ");
63 }
64 }
65 }
```

The Output window at the bottom shows the execution results for `Project (run) #6`:

```
Project (run) #6
Updating property file: C:\Users\leena\OneDrive\Documents\NetBeansProjects\Project\build\build-jar.properties
compile:
run:
Please enter the name of the DNA file: dna_sequence.txt
Please enter the DNA sequence you want to search for: aggc
Sequence: aggc found in dna_sequence.txt file!
aggc
{aggc=1}
Sequence: aggc found in dna_sequence.txt file!
aggc
{aggc=2}
Sequence: aggc found in dna_sequence.txt file!
```

The status bar at the bottom indicates the project is running, with a memory usage of 581.1/1076MB and a system clock of 40:17.