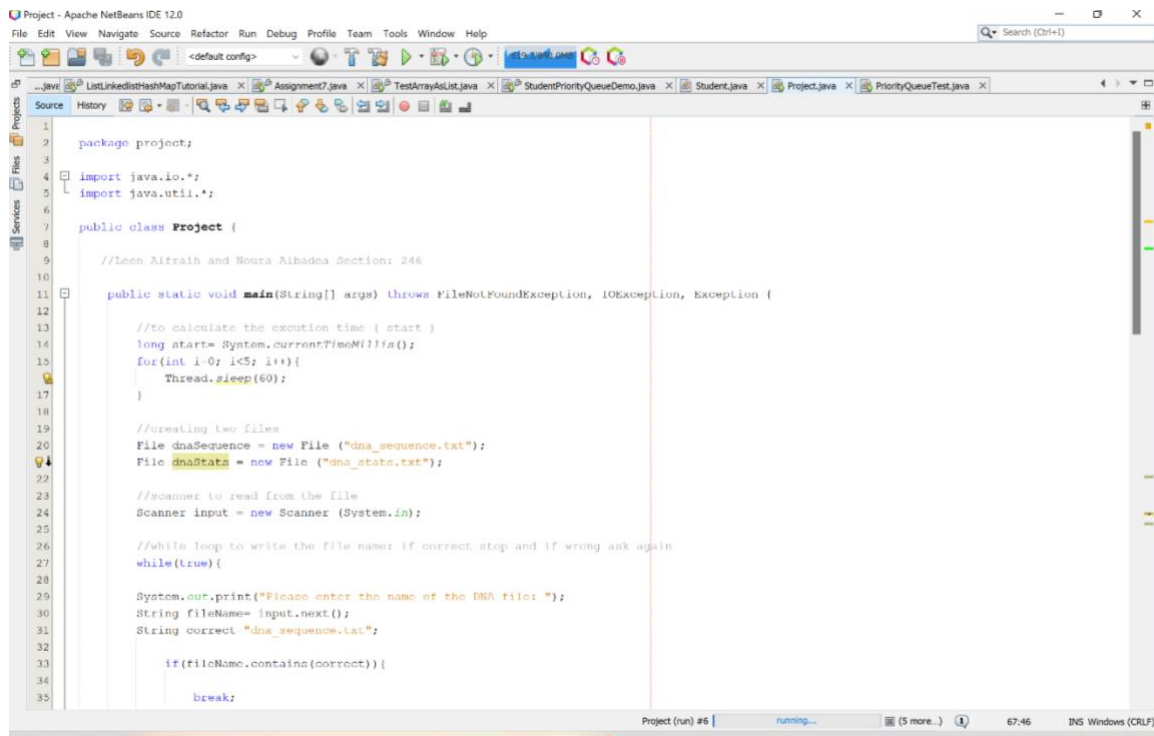CS102 Course Project

Leen Alfraih
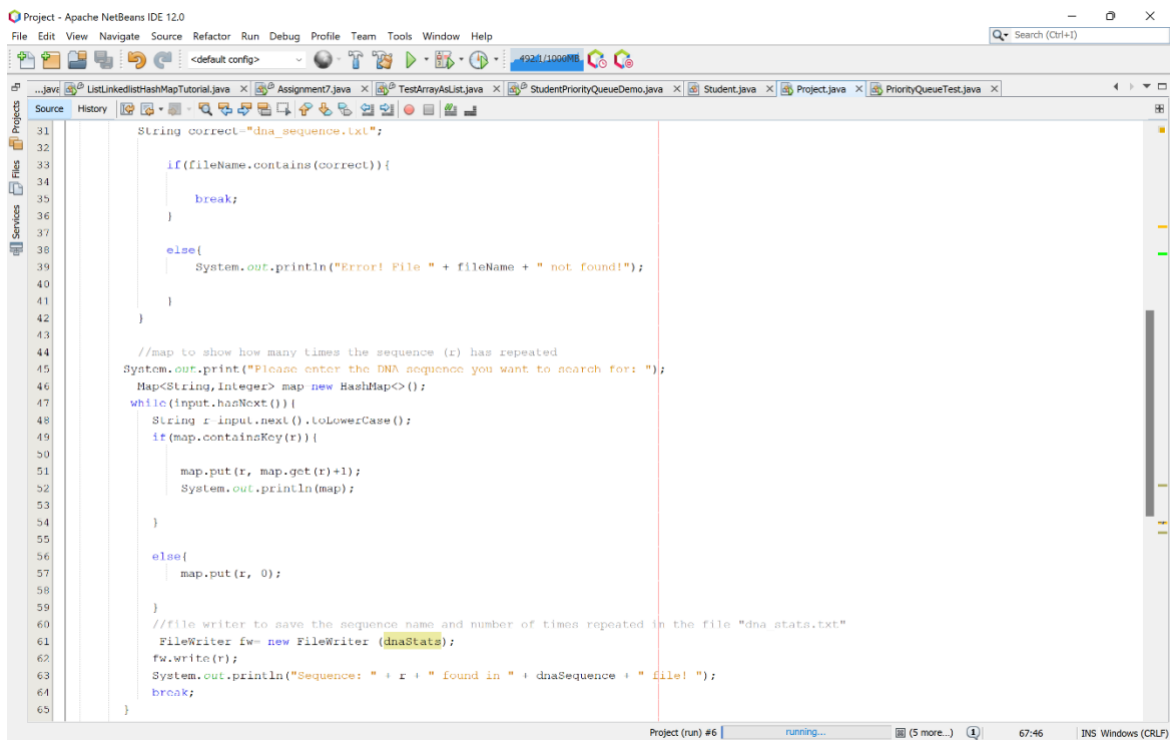
Noura Albadea

Section: 246
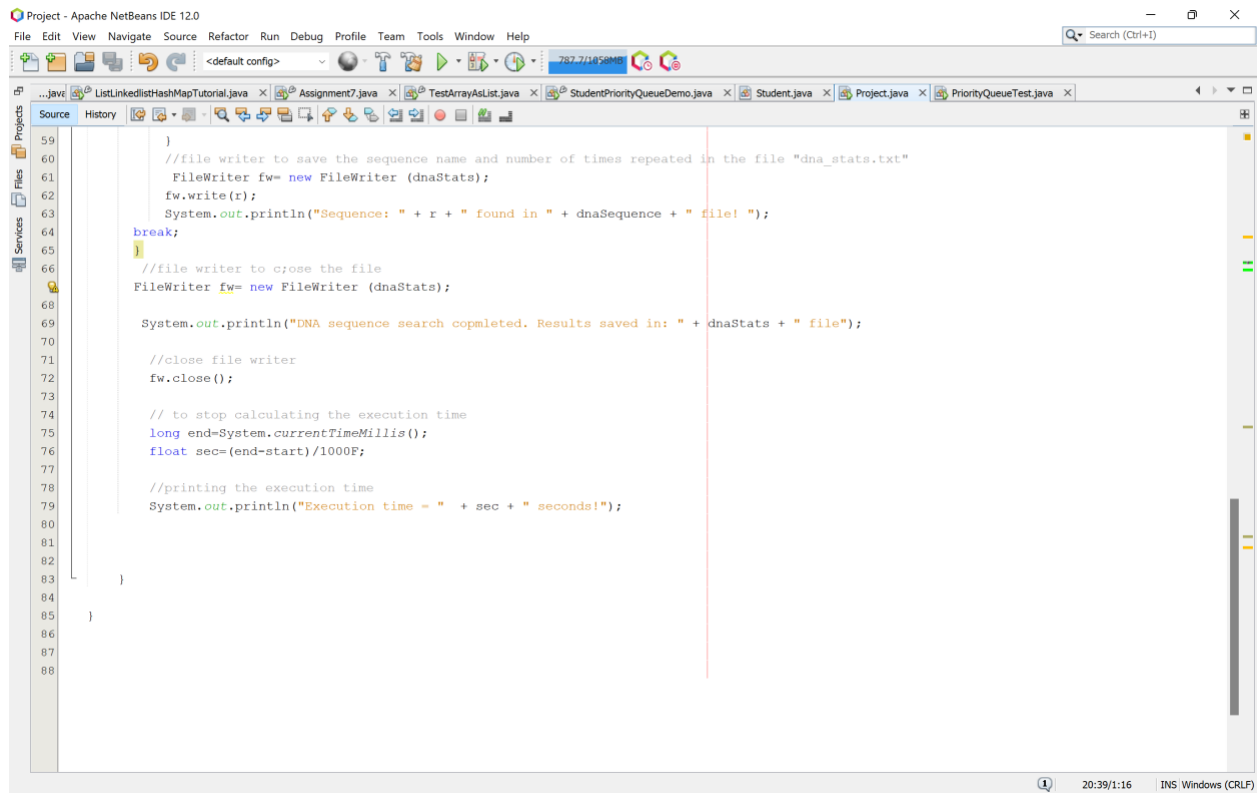
Code 1 : (without counting the number of times the sequence is repeated in the DNA file.)


```java
package project;

import java.io.*;
import java.util.*;

public class Project {

    //Leen Alfraih and Noura Albadea Section: 246

    public static void main(String[] args) throws FileNotFoundException, IOException, Exception {

        //to calculate the excution time ( start )
        long start= System.currentTimeMillis();
        for(int i=0; i<5; i++){
            Thread.sleep(60);
        }

        //creating two files
        File dnaSequence = new File ("dna_sequence.txt");
        File dnaStats = new File ("dna_stats.txt");

        //scanner to read from the file
        Scanner input = new Scanner (System.in);

        //while loop to write the file name: if correct stop and if wrong ask again
        while(true){

        System.out.print("Please enter the name of the DNA file: ");
        String fileName= input.next();
        String correct= "dna_sequence.txt";

            if(fileName.contains(correct)){

                break;
```
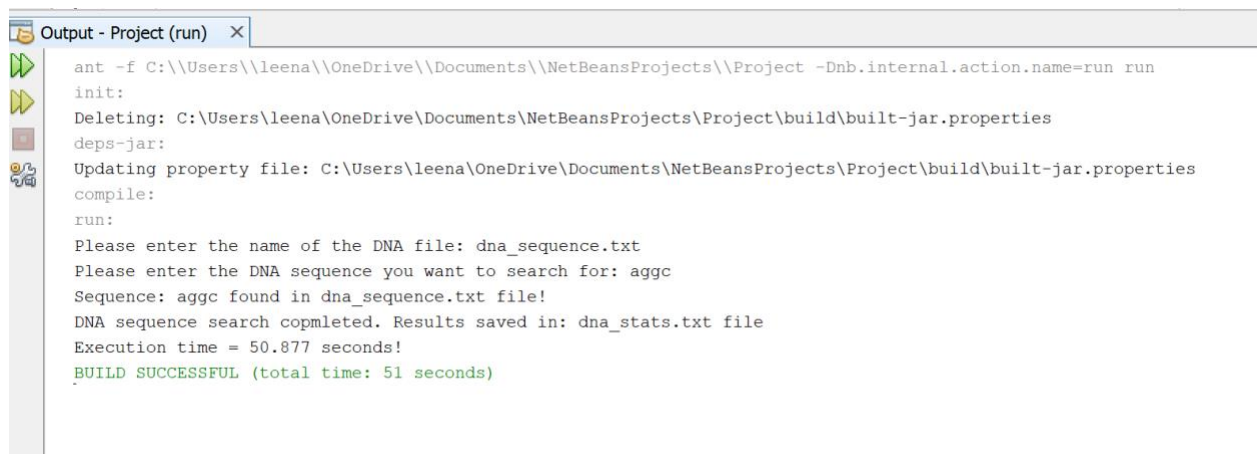


```java
        String correct="dna_sequence.txt";

            if(fileName.contains(correct)){

                break;
            }

            else{
                System.out.println("Error! File " + fileName + " not found!");

            }
        }

        //map to show how many times the sequence (r) has repeated
        System.out.print("Please enter the DNA sequence you want to search for: ");
        Map<String,Integer> map= new HashMap<>();
        while(input.hasNext()){
            String r= input.next().toLowerCase();
            if(map.containsKey(r)){

                map.put(r, map.get(r)+1);
                System.out.println(map);

            }

            else{
                map.put(r, 0);

            }
        }
        //file writer to save the sequence name and number of times repeated in the file "dna_stats.txt"
        FileWriter fw= new FileWriter (dnaStats);
        fw.write(r);
        System.out.println("Sequence: " + r + " found in " + dnaSequence + " file! ");
        break;
    }
```

```
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              System.out.println("Sequence: " + r + " found in " + dnaSequence + " file! ");
64      break;
65      }
66       //file writer to c;ose the file
67      FileWriter fw= new FileWriter (dnaStats);
68
69       System.out.println("DNA sequence search copmleted. Results saved in: " + dnaStats + " file");
70
71          //close file writer
72          fw.close();
73
74          // to stop calculating the execution time
75          long end=System.currentTimeMillis();
76          float sec=(end-start)/1000F;
77
78          //printing the execution time
79          System.out.println("Execution time = "  + sec + " seconds!");
80
81
82
83          }
84
85      }
86
87
88
```

Possible Outcomes:

1)

```
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\built-jar.properties
deps-jar:
Updating property file: C:\Users\leena\OneDrive\Documents\NetBeansProjects\Project\build\built-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!
DNA sequence search copmleted. Results saved in: dna_stats.txt file
Execution time = 50.877 seconds!
BUILD SUCCESSFUL (total time: 51 seconds)
```

2)

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)

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)