//File Name StudentList.java

**import** java.io.\*;

**import** java.text.\*;

**import** java.util.\*;

**public** **class** StudentList {

**public** **static** **void** main(String[] args) {

// Check arguments

**if**(args[0].equals("a")) {

System.***out***.println("Loading data ...");

**try** {

BufferedReader s = **new** BufferedReader(

**new** InputStreamReader(

**new** FileInputStream("students.txt")));

String r = s.readLine();

String i[] = r.split(",");

**for**(String j : i) { System.***out***.println(j); }

} **catch** (Exception e){}

System.***out***.println("Data Loaded.");

}

**else** **if**(args[0].equals("r"))

{

System.***out***.println("Loading data ...");

**try** {

BufferedReader s = **new** BufferedReader(

**new** InputStreamReader(

**new** FileInputStream("students.txt")));

String r = s.readLine();

System.***out***.println(r);

String i[] = r.split(",");

Random x = **new** Random();

**int** y = x.nextInt();

System.***out***.println(i[y]);

} **catch** (Exception e){}

System.***out***.println("Data Loaded.");

}

**else** **if**(args[0].contains("+")){

System.***out***.println("Loading data ...");

**try** {

BufferedWriter s = **new** BufferedWriter(

**new** FileWriter("students.txt", **true**));

String t = args[0].substring(1);

Date d = **new** Date();

String df = "dd/mm/yyyy-hh:mm:ss a";

DateFormat dateFormat = **new** SimpleDateFormat(df);

String fd= dateFormat.format(d);

s.write(", "+t+"\nList last updated on "+fd);

s.close();

} **catch** (Exception e){}

System.***out***.println("Data Loaded.");

}

**else** **if**(args[0].contains("?"))

{

System.***out***.println("Loading data ...");

**try** {

BufferedReader s = **new** BufferedReader(

**new** InputStreamReader(

**new** FileInputStream("students.txt")));

String r = s.readLine();

String i[] = r.split(",");

**boolean** done = **false**;

String t = args[0].substring(1);

**for**(**int** idx = 0; idx<i.length && !done; idx++) {

**if**(i[idx].equals(t)) {

System.***out***.println("We found it!");

done=**true**;

}

}

} **catch** (Exception e){}

System.***out***.println("Data Loaded.");

}

**else** **if**(args[0].contains("c"))

{

System.***out***.println("Loading data ...");

**try** {

BufferedReader s = **new** BufferedReader(

**new** InputStreamReader(

**new** FileInputStream("students.txt")));

String D = s.readLine();

**char** a[] = D.toCharArray();

**boolean** in\_word = **false**;

**int** count=0;

**for**(**char** c:a) {

**if**(c ==' ')

{

**if** (!in\_word) { count++; in\_word =**true**; }

**else** { in\_word=**false**;}

}

}

System.***out***.println(count +" word(s) found " + a.length);

} **catch** (Exception e){}

System.***out***.println("Data Loaded.");

}

}

}

**Data File name**

students.txt

**File Contents (Initial Stage)**

Student1, Student2, Student3, Student4

**Steps #1** (Initial Stage as in question. Check the output whether it matches with the output given here. If your output doesn’t match, please correct your program so that it produce exactly the same output given here.)

**Run #1** $java StudentList a

Loading data ...

Student1

Student2

Student3

Student4

Data Loaded.

**Run #2** $java StudentList r

Loading data ...

Student3

Data Loaded.

**Run #3** $java StudentList r

Loading data ...

Student1

Data Loaded.

**Run #4** $java StudentList c

Loading data ...

2 word(s) found

Data Loaded.

**Run #5** $java StudentList ?Student1

Loading data ...

We found it!

Data Loaded.

**Run #6** $java StudentList +Another

Loading data ...

Data Loaded.

File Contents (After running)

Student1, Student2, Student3, Student4 ,Another

List last updated on 2019-07-25 2:10:58 PM

1. Update code style for better consistency
2. App now terminates early if the number of arguments passed into it is wrong
3. Makes improvements to variable names
4. Refactors duplicate file read and write logic into methods
5. Replaces string literals with constants, storing those constants in a new class called Constants.java
6. Remove Temporary variables
7. Eliminates the ‘done’ control-flow variable. Adds better response for search operation.
8. Simplifies the logic behind the count operation
9. Adds handling for case when user enters invalid arguments
10. Add more comments and makes more naming improvements.