cse15l-lab-reports

Lab Report 3

Part 1 - Bugs

bug in ArrayExamples.java

1.

```
assertEquals(2.0, ArrayExamples.averageWithoutLowest(new double[]{1.0, 1.0, 2.0, 3.0}

static double averageWithoutLowest(double[] arr) {
  if(arr.length < 2) { return 0.0; }
  double lowest = arr[0];
  for(double num: arr) {
    if(num < lowest) { lowest = num; }
  }
  double sum = 0;
  for(double num: arr) {
    if(num != lowest) { sum += num; }
  }
  return sum / (arr.length - 1);
}
```

2.

```
assertEquals(3.5, ArrayExamples.averageWithoutLowest(new double[] { 2.0, 3.0, 4.0 }),

static double averageWithoutLowest(double[] arr) {
  if(arr.length < 2) { return 0.0; }
  double lowest = arr[0];
  for(double num: arr) {
    if(num < lowest) { lowest = num; }
  }
  double sum = 0;
  for(double num: arr) {
    if(num != lowest) { sum += num; }
  }
```

```
    return sum / (arr.length - 1);
`
```

3.

```
%TESTC  1 v2
%TSTTREE1,test1(lab3Report),false,1,false,-1,test1(lab3Report),,
%TESTS  1,test1(lab3Report)
%FAILED 1,test1(lab3Report)
%TRACES
java.lang.AssertionError: expected:<2.0> but was:<1.6666666666666667>
%TRACEE
%TESTE  1,test1(lab3Report)
%RUNTIME9
```

```
%TESTC  1 v2
%TSTTREE1,test2(lab3Report),false,1,false,-1,test2(lab3Report),,
%TESTS  1,test2(lab3Report)
%TESTE  1,test2(lab3Report)
%RUNTIME7
```

1. Before

```java
static double averageWithoutLowest(double[] arr) {
  if (arr.length < 2) {
    return 0.0;
  }
  double lowest = arr[0];
  for (double num : arr) {
    if (num < lowest) {
      lowest = num;
    }
  }
  double sum = 0;
  for (double num : arr) {
    if (num != lowest) {
      sum += num;
    }
  }
  return sum / (arr.length - 1);
}
```

After

```
static double averageWithoutLowest(double[] arr) {
  if (arr.length < 2) {
    return 0.0;
  }
  double lowest = arr[0];
  for (double num : arr) {
    if (num < lowest) {
      lowest = num;
    }
  }
  double sum = 0;
  booelean flag = false;
  for (double num : arr) {
    if (flag == false && num == lowest) {
        flag = true;
        continue;
    }
      sum += num;
  }
  return sum / (arr.length - 1);
}
```

1. The problem with the original code is that it removes all occurrences of the smallest number,
   but only subtracts 1 from the total number when taking the average.

I fixed it by removing only one occurrence of the smallest number. Unless the intended design is
that all occurrences are to be removed, then I would have to subtract the number of numbers
removed that were removed from the total.

Part 2 - Researching commands

4 grep options

1. `grep -r` : search recursively

   a. ex: `grep -r "gaming"`

   ```
   > grep -r "gaming"
   ./rat.txt:mr beast gaming
   ./911report/chapter-13.3.txt:                    algorithm and gaming the system. On
   ```

b. ex: `grep -r "among us"`

```
> grep -r "among us"
./government/Post_Rate_Comm/ReportToCongress2002WEB.txt:unreasonable discriminati
./biomed/1471-2261-3-5.txt:        clinically diagnosed valve disease among users
```

2. `grep -i` : ignore case

a. ex: `grep -ri "MIlwaukeE"`

```
> grep -ri "MIlwaukeE"
./government/About_LSC/Strategic_report.txt:(Milwaukee)
./government/About_LSC/Strategic_report.txt:NLADA Annual Conference in Milwaukee
./plos/pmed.0010066.txt:        MRI was performed at 1.5 T (System 9X, General
./biomed/1471-2180-2-22.txt:        (Milwaukee, WI). Nicotinamide-adenine dinuc
./biomed/1471-2172-3-1.txt:        were purchased from Fluka (Milwaukee, Wl). N
./biomed/1471-2490-3-2.txt:        Electrical medical systems, Milwaukee, WI). Th
./biomed/1471-2210-2-4.txt:        purchased from Aldrich Chemical Co., Milwauk
./biomed/1471-2121-3-21.txt:        2 ) was from Aldrich (Milwaukee, WI).
```

b. ex: `grep -ri "RIZz"`

```
> grep -ri "RIZz"
./government/Media/pro_bono_efforts.txt:By Russ Rizzo
./biomed/ar331.txt:        51]. Zhao and colleagues [ 52] identified frizzled (de
./biomed/ar331.txt:        Of potential importance is the fact that frizzled fami
./biomed/ar331.txt:        colleagues in rheumatoid arthritis [ 53]. A new frizzl
./biomed/ar331.txt:        54]. Perhaps down-regulation of frizzled family member
./biomed/1471-213X-2-7.txt:        frizzled (
./biomed/1471-213X-2-7.txt:        frizzled pathway regulates the
...
```

3. `grep -w` : search for whole word, not substring

a. ex: `grep -rw "cysteine protease"`

```
> grep -rw "cysteine protease"
./plos/journal.pbio.0020013.txt:        for the proteasome, in addition to "class
./biomed/1476-4598-2-25.txt:        Cathepsin B is a lysosomal cysteine proteas
```

```
./biomed/1476-4598-2-25.txt:              cysteine protease. The cleavage of calpasta
./biomed/1471-2180-1-33.txt:              cysteine protease, SpeB [ 4 ] . Analysis of
./biomed/1471-2180-1-33.txt:          restored; however secretion of the cysteine p
./biomed/1471-2180-1-33.txt:              405 over time. The cysteine protease
./biomed/1471-2180-1-33.txt:              the presence of a cysteine protease.
./biomed/gb-2002-3-12-research0077.txt:          cysteine protease [ 36]. JEvTrac
./biomed/gb-2003-4-2-r9.txt:              these include a cysteine protease, falcip
```

b. ex: `grep -rw "explode"`

```
> grep -rw "explode"
./biomed/cc2190.txt:          enteral nutrition (explode) AND jejunal or post-pyl
./911report/chapter-6.txt:              hit tanks, not people. It needed to be
```

4. `grep -l` : display file names which contain line matches

a. ex: `grep -rl "toilet"`

```
> grep -rl "toilet"
./government/Media/Farm_workers.txt
./government/Media/Bridging_legal_aid_gap.txt
./biomed/1471-2458-3-2.txt
./biomed/1472-684X-1-5.txt
./911report/chapter-5.txt
./911report/chapter-6.txt
```

b. ex: `grep -ril "killed.*air strike"`

```
> grep -ril "killed.*air strike"
./911report/chapter-10.txt
```