

Chapter 5 programming projects

Problem 5.41 took a lot of time to solve. I eventually got it to work with looping and checking every single possible number and adding it to an arraylist if it met the criteria.

```
9      for (int i = 0; i < 76; i++) {
10          longPower5.add(Long.valueOf(i*i*i*i*i));
11      }
12
13      for (int A = 1; A <= 75; A++) {
14          for (int B = A; B <= 75; B++) {
15              for (int C = B; C <= 75; C++) {
16                  for (int D = C; D <= 75; D++) {
17                      for (int E = D; E <= 75; E++) {
18                          int F = (int) (Math.pow(A, 5) + Math.pow(B, 5) + Math.pow(C, 5) + Math.pow(D, 5) + Math.pow(E, 5));
19                          int index = searchArray(longPower5, F);
20                          if (index != -1 && longPower5.get(index) == F) {
21                              solutions.add(A);
22                              solutions.add(B);
23                              solutions.add(C);
24                              solutions.add(D);
25                              solutions.add(E);
26                              solutions.add(F);
27                          }
28                      }
29                  }
30              }
31          }
32      }
```

```
public static int searchArray(ArrayList<Long> list, int f){
    for (int i = 0; i < list.size(); i++) {
        if (list.get(i) == f) {
            return i;
        }
    }
    return -1;
}
```

The solutions are:

```
19
43
46
47
67
1934917632
PS C:\Users\east0\OneDrive\Documents\CS 2420\CS-2420>
```

Problem 5.44 was a little easier as I just added a System.gc() and the timers for the program.

```
public class Chapter5Problem44Strings {  
    Run | Debug  
    public static void main(String[] args) {  
        System.gc();  
        Long startTime = System.nanoTime();  
        makeLongString1(N:100000);  
        Long endTime = System.nanoTime();  
        Long totalTime = endTime - startTime;  
        System.out.println(totalTime);  
  
        System.gc();  
        startTime = System.nanoTime();  
        makeLongString2(N:100000);  
        endTime = System.nanoTime();  
        totalTime = endTime - startTime;  
        System.out.println(totalTime);  
    }  
}
```

```
\8cae6f5504b120337a47413144867805\redhat.java\jdt_ws\CS-2420_  
1634164700  
2699600  
PS C:\Users\east0\OneDrive\Documents\CS 2420\CS-2420>
```