605.201 Module 10 Java I/O Assignment

Introduction:

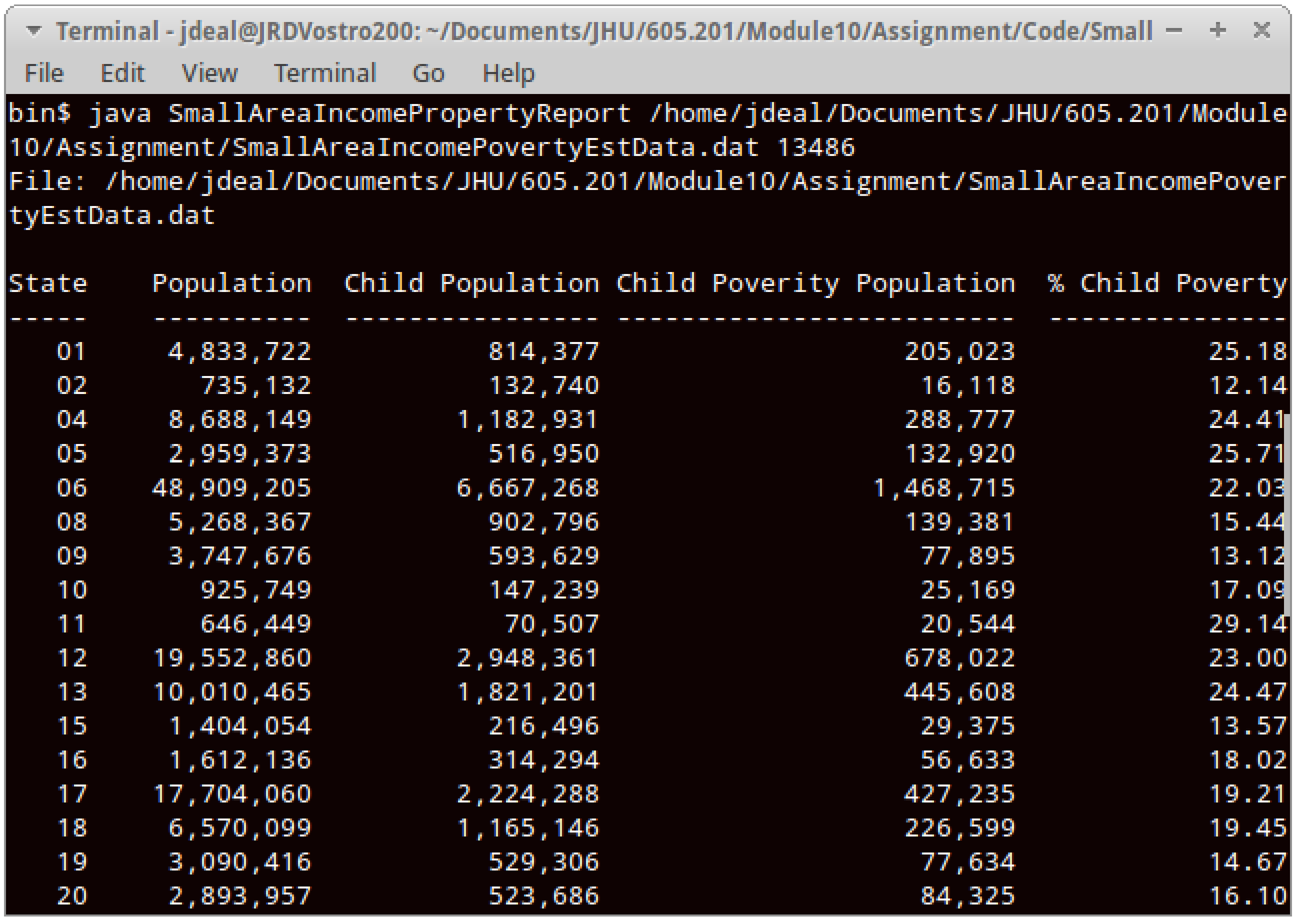
This assignment is to provide practice in using the Java I/O techniques discussed in the Module 10 video lectures and readings. Although the main focus of this assignment is Java I/O techniques, Java design and implementation techniques discussed in earlier modules should be incorporated in to this assignment.

Problem:

Supplied is a data file from the US Census which contains data from US school districts and reports statistics related to child poverty (http://www.census.gov/did/www/saipe/data/highlights/2013.html). It is desired to have a summary report which calculate basic statistics at the state level.

Desired Implementation:

Java 8 implementation to read the supplied text data and produce a report similar to the below:



Terminal - jdeal@JRDVostro200: ~/Documents/JHU/605.201/Module10/Assignment/Code/Small
File Edit View Terminal Go Help

```
bin$ java SmallAreaIncomePropertyReport /home/jdeal/Documents/JHU/605.201/Module
10/Assignment/SmallAreaIncomePovertyEstData.dat 13486
File: /home/jdeal/Documents/JHU/605.201/Module10/Assignment/SmallAreaIncomePover
tyEstData.dat

State    Population  Child Population Child Poverity Population  % Child Poverty
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   01     4,833,722           814,377                   205,023            25.18
   02       735,132           132,740                    16,118            12.14
   04     8,688,149         1,182,931                   288,777            24.41
   05     2,959,373           516,950                   132,920            25.71
   06    48,909,205         6,667,268                 1,468,715            22.03
   08     5,268,367           902,796                   139,381            15.44
   09     3,747,676           593,629                    77,895            13.12
   10       925,749           147,239                    25,169            17.09
   11       646,449            70,507                    20,544            29.14
   12    19,552,860         2,948,361                   678,022            23.00
   13    10,010,465         1,821,201                   445,608            24.47
   15     1,404,054           216,496                    29,375            13.57
   16     1,612,136           314,294                    56,633            18.02
   17    17,704,060         2,224,288                   427,235            19.21
   18     6,570,099         1,165,146                   226,599            19.45
   19     3,090,416           529,306                    77,634            14.67
   20     2,893,957           523,686                    84,325            16.10
```

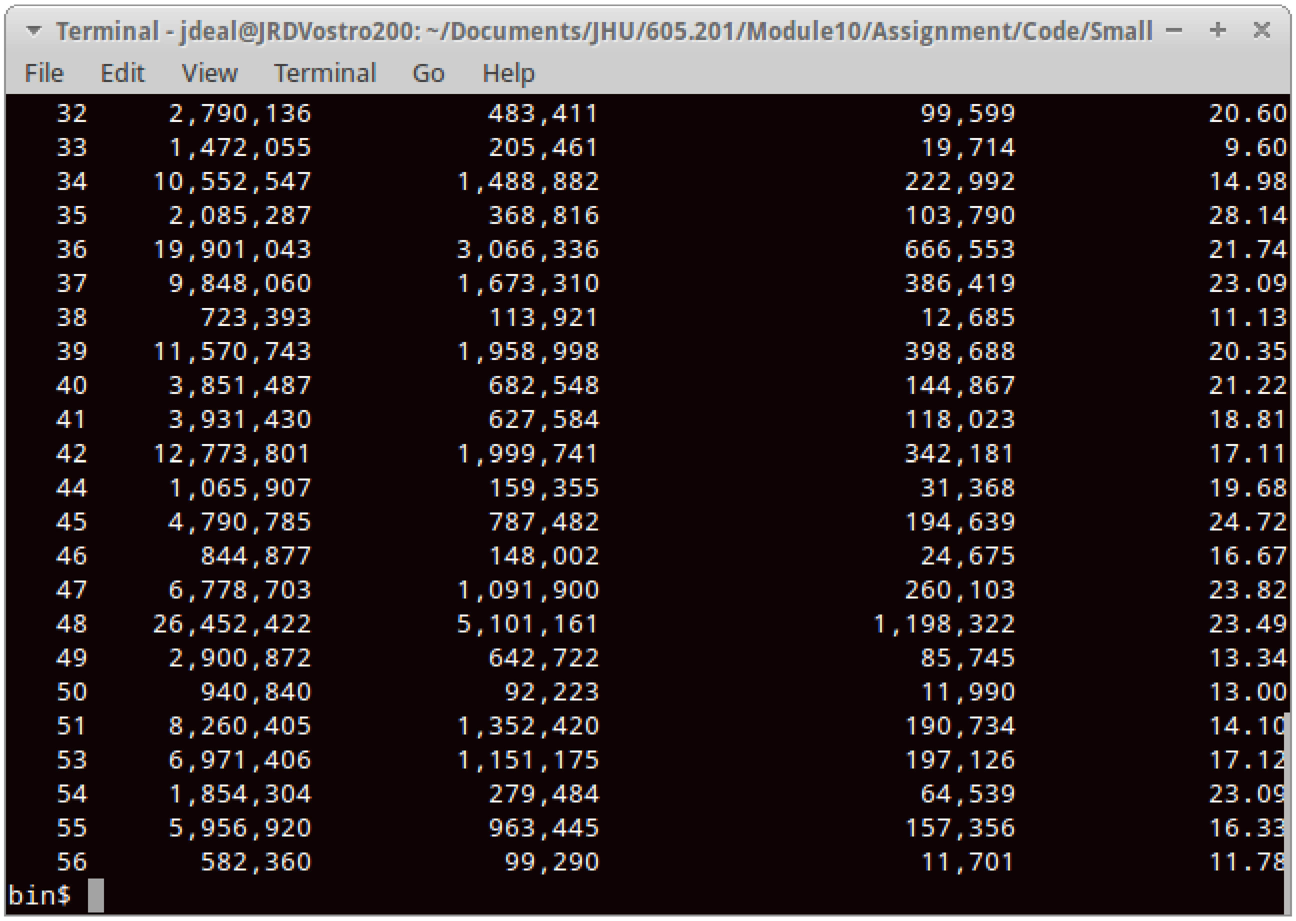
Terminal - jdeal@JRDVostro200: ~/Documents/JHU/605.201/Module10/Assignment/Code/Small
File Edit View Terminal Go Help

```
   32     2,790,136           483,411                      99,599        20.60
   33     1,472,055           205,461                      19,714         9.60
   34    10,552,547         1,488,882                     222,992        14.98
   35     2,085,287           368,816                     103,790        28.14
   36    19,901,043         3,066,336                     666,553        21.74
   37     9,848,060         1,673,310                     386,419        23.09
   38       723,393           113,921                      12,685        11.13
   39    11,570,743         1,958,998                     398,688        20.35
   40     3,851,487           682,548                     144,867        21.22
   41     3,931,430           627,584                     118,023        18.81
   42    12,773,801         1,999,741                     342,181        17.11
   44     1,065,907           159,355                      31,368        19.68
   45     4,790,785           787,482                     194,639        24.72
   46       844,877           148,002                      24,675        16.67
   47     6,778,703         1,091,900                     260,103        23.82
   48    26,452,422         5,101,161                   1,198,322        23.49
   49     2,900,872           642,722                      85,745        13.34
   50       940,840            92,223                      11,990        13.00
   51     8,260,405         1,352,420                     190,734        14.10
   53     6,971,406         1,151,175                     197,126        17.12
   54     1,854,304           279,484                      64,539        23.09
   55     5,956,920           963,445                     157,356        16.33
   56       582,360            99,290                      11,701        11.78
bin$
```

There should be two separate "programs" (two separate .java files each with a main method), one to read the text data file and write a reformatted file to be read by the second program which will create the report to standard out. Note before the report is displayed, a single line with "File: " then the path of the input file for the report is displayed.

The first program is to create a data file (not the report) which provides a pre-processed view of the data supplied to it either by striping off the unneeded fields or by stripping off the unneeded fields and summing the data by state code. The numbers should not be formatted and no additional records should be produced.

The second program should read the file produced by the first program and produce the report in the format shown in the above image. This program should format the numbers and produce the file path information and column headings.

The first program will have 3 run-time parameters, the data source file path, the destination file path, and the number of records in the data file (13486) . If the program does not use the last run-time parameter, it should still accept it.

The second program will have 2 run-time parameters, the input file path and the number of records. If the program does not use the last run-time parameter, it should still accept it.

Features and Restrictions:

This assignment is an individual effort. Collaboration with other students on design approaches, implementation techniques, etc. as well as using the course's Discussion Board and other course resources are encouraged but the design, implementation, and submitted files *must* be your own creation.

A good reference for the Java 8 API is at: http://docs.oracle.com/javase/8/docs/api/

The programs should use standard (SE) Java 8 code and compile without errors or warnings. It should also run without errors or warnings when given valid input.

The programs should provide reasonable parameter validation (correct number of parameters, reasonable values, etc.).

The programs should not use *any* Java collection (ArrayList, Map, Vector, etc.) except standard Java arrays. Collections are introduced in a later module.

The file produced by the first program should not be deleted after running the report program.

The program's code should be reasonable formatted and commented as demonstrated so far in the course and reflected in the course’s Coding Standards document in the Syllabus & Course Information section of Blackboard.

Resources:

File: SmallAreaIncomePovertyEstData.txt – contains the small area poverty data. It is a standard 8-bit readable text file.

File: SmallAreaIncomePovertyEstLayout.txt – contains information about the field layout of the SmallAreaIncomePovertyEstData.txt file.

Submitted Files:

Please submit the following files in a single compressed zip file (.zip) using the following naming convention: Assignment10_<JHUID><section number>. An example is: Assignment10_jdealjr182

- Source files needed to recreate both of your programs
- Source files for any needed custom classes
- The supplied text files and any other additional files needed to run your programs