

ITSE 2321 – Object-Oriented Programming (Java)

Program 9 – ArrayList, Classes, Objects, and Methods

The results of a survey of some households in the United States are available for public scrutiny. Each record contains data for one household, including a four-digit integer identification number, the annual income for the household, the number of household members, and the state of the household.

Write a program to read the survey results into an ArrayList, created in the main class, and perform the following analysis. **Do not use Arrays in your program. You will not receive credit for the Program if you do.**

- Print the record of each household included in the survey in a four-column format with headings. The four-digit integer identification number, the annual income for the household, the number of household members, and the state of the household.
- Calculate and print the average household income.
- List the identification number, income, members, and state of the households that exceed the average in a four-column format with headings.
- Determine and print the identification number, income, poverty level, members, and state of the households, in a five-column format with headings, that have income below the 2023 United States poverty level.
- Determine and print the percentage of households that have income below the 2023 United States Federal Poverty Level (FPL).
- There are several programs, including Medicaid, that use a percentage of the Federal Poverty Level (FPL) as the income criteria for program participation. The exact percentage of the FPL used for eligibility purposes varies based on the program and the state. For example, many states use 138% of the FPL for Medicaid eligibility. Assuming all the 50 states use this percentage, determine and print the percentage of households that would qualify for Medicaid.

Compute the poverty level income using one of the formulas below.

$$povertyLevel = 19720.00 + 5140.00 * (m - 2)$$

If household is in the 48 contiguous states or the District Of Columbia

$$povertyLevel = 24640.00 + 6430.00 * (m - 2)$$

If household is in the state of Alaska

$$povertyLevel = 22680.00 + 5910.00 * (m - 2)$$

If household is in the state of Hawaii

where m is the number of members of each household. This formula shows that the poverty level depends on the number of family members, m , and the poverty level income increases as m gets larger.

The input data is available in a file named, **Program9.txt**, on the I: drive and has the format of identification number, annual income for the household, and the number of household members.

Define a Class named, **HouseHold**, that contains the attributes described earlier. Write a test Class named, **Program9**, that creates an **ArrayList** of **HouseHold** objects.

No input, processing or output should happen in the main method. All work in the test class should be delegated to other non-static methods in the class.

The output of the program should be sent to an output file named, **Program9-output.txt**.

All classes in this program must be public, non-static and not nested in other classes.

Every method in your program should be limited to performing a single, well-defined task, and the name of the method should express that task effectively.

Before you upload your program to Blackboard:

- Ensure that your code conforms to the style expectations set out in class and briefly discussed below.
- Make sure your variable names and methods are descriptive and follow standard capitalization conventions.
- Put comments wherever necessary. Comments at the top of each module should include your name, file name, and a description of the module. Comments at the beginning of methods describe what the method does, what the parameters are, and what the return value is. See the **Program1-Template.java** for more details.
- *Program readability and elegance are as important as correctness.* After you have written your method, read and re-read it to eliminate any redundant lines of code, and to make sure variables and methods names are intuitive and relevant.

Read the assignment very carefully to ensure that you have followed all instructions and satisfied all requirements. **You will not get full credit for this program if it is not written as instructed even if it works as expected.**