A01

Due Date: Wednesday, January 25
File(s) to be submitted: Descendants.java
Sample output

Descendant Counter (Basic Programming)

Summary

Create a program to read in some genealogical information for a couple and print a (very brief) report on them.

See the sample output for examples of what the program should do when it runs. **Your program must read in data in the same order shown in the sample output.** Otherwise, your program might crash when we run it with our own sample data.

Your program must also *pause* where the sample program asks for the user to press enter. Again, failure to do so might cause your program to crash when we run it with our sample data.

A detailed explanation of the requirements is given below. (It's very detailed, since this is our first big assignment. Later assignments won't give as much detail.)

Details

- Create a project named **A01**, and in it a program named **Descendants**.
- Your program starts by introducing and describing itself. The program has a title (underlined with blank lines before and after). It says that it is the first assignment of the Winter 2023 session of CSCI 1226.
- Next your program identifies you (your name and A-number).
- Your program then pauses. That is, it writes a little message (like "Press enter...") then waits for the user to press the Enter key.

  > Go back to the notes if you can't remember what command we're supposed to use when we expect the user to press the enter key.

- Next your program asks for the parents' names. It records only their first names, ignoring anything after that.

  After a blank line, the program requests how many sons, daughter and grandchildren the couple has.

- Your program then pauses *again*.

- Your program should then (quietly) do its calculations. It needs to figure out how many children there are in total, and the average number of children for each of *their* children. (For example, if the couple has six children and fifteen grandchildren, then their average child has 2.5 children (fifteen divided by six)).

    See the program JavaAverage.java (on course page on Brightspace in "content" section, under "Sample Codes" → "01-Introduction") for how to get Java to use the number after the decimal point when dividing integer values.

  After doing the calculation it prints the results in a short report. The report contains:

  - The names of both parents.
  - The number of children they have.
  - The number of grandchildren they have.
  - The average number of children for each of their grandchildren.

  Finally, the program pauses one last time.

Note

It is a very important practice to write code that other programmers can easily read. This will involve adding sufficient comments and formatting the code in a readable manner.

Fortunately, NetBeans provides a nifty feature to format your code automatically, by right-clicking in blank space of your code and selecting **Format** from the menu list.

There are also conventions that have been used in the community for particular languages, and in this course, you're required to follow this standard. Please read the style guidelines (on Brightspace in "content" section, under "General Guidelines" → StyleRules.pdf) that we use when writing Java programs.

Your submission will be graded based on the formatting of the programs as well as the performance. If you're not following these conventions carefully, you will lose up to 30% of the total mark.

Grading Outline

- [30] Appropriate style of coding, including having suitable opening "javadoc" comment (with your name and A-number, and a description of the program), suitable "pseudo-code" comments (the steps of the program), correct use of indentation and blank lines, appropriate variable names, and suitable use of spaces and spelling in code and output.
- [20] The submitted program compiles and runs without errors (with reasonable input),
- [15] ... uses appropriate variables of the appropriate types,

- [10] ... reads values and stores them properly,
- [10] ... calculates values using necessary variables,
- [15] ... and displays the output as required.

Sample output

First sample:

```
Descendants Counter

------------------
Assignment #1 CSCI 1226 -- Winter 2023
Somayeh Kafaie (A00000000)

Press Enter to continue...

What is the father's name? Bob
What is the mother's name? Isabel

How many sons do they have? 4
How many daughters do they have? 2
And how many grandchildren do they have? 15

Press Enter to continue...

Bob and Isabel have 6 children and 15 grandchildren.
Their children have an average of 2.5 children each.

Press Enter to exit...
```

Second sample:

```
Descendants Counter

------------------
Assignment #1 CSCI 1226 -- Winter 2023
Somayeh Kafaie (A00000000)

Press Enter to continue...

What is the father's name? Albert
What is the mother's name? Victoria

How many sons do they have? 4
How many daughters do they have? 5
And how many grandchildren do they have? 42
```

```
Press Enter to continue...

Albert and Victoria have 9 children and 42 grandchildren.
Their children have an average of 4.666666666666667 children
each.

Press Enter to exit...
```

Third sample:

```
Descendants Counter

------------------
Assignment #1 CSCI 1226 -- Winter 2023
Somayeh Kafaie (A00000000)

Press Enter to continue...

What is the father's name? Archie Bunker
What is the mother's name? Edith Baines

How many sons do they have? 0
How many daughters do they have? 1
And how many grandchildren do they have? 1

Press Enter to continue...

Archie and Edith have 1 children and 1 grandchildren.
Their children have an average of 1.0 children each.

Press Enter to exit...
```