COMP-1502

ASSIGNMENT #0

Dept. of Mathematics & Computing

Mount Royal University

Introduction

This assignment will allow you to translate the basic programming constructs you learned in Python (decisions, sequences, loops, file I/O, commenting, modularity through functions, etc.) into Java.

Team work

- You MUST work with in a team on this project

Assignment Instructions

1. Use **only** Eclipse IDE (**Only** JDK 8 or 11).
2. The due date for this assignment is posted in D2L.

The Problem

We would like you to create an application that processes a file containing data for Federal Skilled Worker Program applicants. We have simplified the scoring system based on the Federal Skilled Worker Program (Express Entry) webpage, and the goal of your application is to create a file reporting which applicants are potentially eligible for the Program.

If an applicant scores **67 points or higher**, they may qualify for the Federal Skilled Worker Program; however, if they score lower than 67 points, they won't be eligible.

Program Behaviour

When your program runs, you should:

1. prompt for the **input file** to use (*i.e.* full-dataset.txt)
2. prompt for the **output file** to use (*i.e.* qualified_applicants.txt)
3. **display** the total number of qualified applicants from the **input file** you processed
4. **write** the first name, last name, age, and score for each applicant that met the threshold into the **output file**

```
Please provide the name of the input file (to be located in data/input/): dataset-full.txt
Please provide the name of the output file (to be placed in data/output/): qualified_applicants.txt

There were 1608 qualified applicants
```

Sample Run

When your program is run using **dataset-10.txt,** it should print the following message (where **bolded** text indicates user input):

```
Provide the name of the input file (located in data\input\): dataset-10.txt
Provide the name of the output file (to be placed in data\output\):
qualified_applicants-10.txt

There were 8 qualified applicants
```

When the program finishes, **qualified-applicants-10.txt** would contain the following information, in the order shown below. These are the correct scores for these applicants, per the scoring criteria (outlines below)

```
First Name          |Last Name           |  Age|Score
--------------------+--------------------+-----+-----
Aaron                Grimm                  30    86
Aaron                Koressel               33    86
Aaron                Russo                  30    86
Abigail              Kelley                 57    67
Abraham              Harper                 58    85
Abraham              Howard                 26    82
Ada                  Parker                 26    72
Ada                  Walker                 61    70
```

Program Inputs and outputs

You have been provided with three **input files**:

- `dataset-10.txt` contains the first 10 records from full-dataset.txt
- `dataset-100.txt` contains the first 100 records from full-dataset.txt
- `dataset-full.txt` contains 2,134 records of fictional applicants to the Federal Skilled Worker Program

You have also been provided with two **sample output files:**

- qualified_applicants-10.txt is the correct output for dataset-10.txt
- qualified_applicants-100.txt is the correct output for dataset-100.txt

While testing your program, you can compare your output to these sample output files

Input File Structure

The three files have the following structure, where the file header has **nineteen** columns, and every piece of distinct information is **tab-**separated (*i.e.* the delimiter is \t).

Col#	Title	Notes
0	first_name	The first name of the applicant.
1	last_name	The last name of the applicant.
2	age	The age of the applicant.
3	marital_status	The marital status of the applicant (connected to the answers to points 13, 14, and 15).
4	speak_1	The applicant's primary language speaking Canadian Language Benchmark (CLB).
5	listen_1	The applicant's primary language listening Canadian Language Benchmark (CLB).

6	read_1	The applicant's primary language reading Canadian Language Benchmark (CLB).
7	write_1	The applicant's primary language writing Canadian Language Benchmark (CLB).
8	all_2	'yes' or 'no'. 'yes' indicates that the applicant has a Canadian Language Benchmark (CLB) that is at least CLB 5 across the 4 language skills. 'no' indicates that the applicant has a CLB that is not at least 5 across all the language skills
9	education	Text representing the education that the applicant has received. The text will come from the Education entry in the *Scoring System* section below.
10	work_experience	The number of years of relevant work experience.
11	arranged_employment	'yes' indicating that the applicant has acceptable work arranged; 'no' otherwise.
12	adaptability_spouse_language	'yes' or 'no' value representing whether the applicant's spouse has an acceptable language score.
13	adaptability_spouse_education	'yes' or 'no' value representing whether the applicant's spouse has relevant educational qualifications.
14	adaptability_spouse_work	'yes' or 'no' value representing whether the applicant's spouse has relevant work experience.
15	adaptability_you_education	'yes' or 'no' value representing whether the applicant has relevant education.
16	adaptability_you_work	'yes' or 'no' value representing whether the applicant has relevant work experience.
17	adaptability_you_employment	'yes' or 'no' value representing whether the applicant has arranged employment.
18	adaptability_relatives	'yes' or 'no' value representing whether the applicant (or their spouse/partner) has family in Canada that qualifies.

Deliverables

Submit a working Java program with the behavior described above.

Scoring System

This system should be used to compute the point score for each applicant. It is a simplified version of the real scoring system used by the government of Canada.

1. Language Skills (max 28 points)

First official language points (max 24 points)

	Speaking	Listening	Reading	Writing

CLB level 9 or higher	6	6	6	6
CLB level 8	5	5	5	5
CLB level 7	4	4	4	4

Second official language (max 4 points)

You get **4 points** if and only if you have a score of at least CLB 5 in each of the 4 language abilities. **0 points** otherwise.

2. Education (max 25 points)

Level of education for Express Entry profile	**Federal Skilled Workers Program factor points**
Secondary school (high school diploma)	5
One-year degree, diploma or certificate	15
Two-year degree, diploma or certificate	19
Bachelor's degree or other programs (three or more years)	21
Two or more certificates, diplomas, or degrees	22
Professional degree needed to practice in a licensed profession	23
University degree at the Master's level	23
University degree at the Doctoral (PhD) level	25

3. Work Experience (15 points)

Experience	**Points**
Under 1 year	0
1 year	9
2-3 years	11
4-5 years	13
6 or more years	15

4. Age (12 points)

Age	**Points**
Under 18	0

18-35	12
36	11
37	10
38	9
39	8
40	7
41	6
42	5
43	4
44	3
45	2
46	1
47 or older	0

5. Arranged Employment (10 points)

The description is 'yes' if the applicant has arranged suitable employment.

6. Adaptability (10 points)

Adaptability	**Description**	**Points**
Your **spouse** or partner's language level	'yes' if your spouse has achieved the minimum standard; 'no' otherwise	5
Your **spouse** or partner's past studies in Canada	'yes' if your spouse completed at least 2 years of full-time study; 'no' otherwise	5
Your **spouse** or common-law partner's past work in Canada	'yes' if your partner did at least 1 year of full-time work in Canada; 'no' otherwise	5
Your past studies in Canada	'yes' if you have completed at least 2 academic years of full-time study; 'no' otherwise	5
Your past work in Canada	'yes' if you did at least 1 year of full-time work in Canada; 'no' otherwise	10

You have arranged employment in Canada	'yes' if you have arranged employment in Canada; 'no' otherwise	5
Relatives in Canada	'yes' if you, your spouse or common-law partner have a qualifying relative; 'no' otherwise	5

Allowable Java Techniques

Your code must not use any Java techniques not covered in class. If you're unsure about your code, talk to your instructor!

Research efforts

Be sure to cite sources that helped you arrive at your solution.

Submission

- Zip your project folder and submit it into D2L before the deadline

Suggested Marking Scheme

The following requirements must be met for your submission to be graded:

- Your code runs. This doesn't necessarily mean it works perfectly, but programs that crash immediately when run won't be graded.
- You must participate in a code demo to be scheduled by your instructor (No demo = zero).

Each of the following criteria will be graded from 0-5

- Functionality (the program works without error, and produces correct outputs)
- Appropriate Java structures are used
- Problem is decomposed into separate methods appropriately
- Documentation/commenting
- Style, cleanness, expressiveness, and code readability