CPT111 CW3 2021

Due date: December 17 2021 - 70% of final mark

Task

You are given the framework and user interface of a database recording persons, and your task is to complete this program, and also complete a small written assignment.

Task Requirements:

1. Person Database (95%)

This assignment is divided into a coding assignment and a written assignment. The coding component requires you to complete the program framework that you are given to make sure the program is fully functional. All method headers and Classes are provided, and you should study the program carefully and complete the methods where needed. You do not need to create any classes or methods, and part of the assignment is understanding the structure of the existing program and completing the methods accordingly. More detail is given below.

2. Legal, Social, Ethical and Professional Issues (5%)

You should complete a quiz on Learning Mall, discussing the application of the General Data Protection Regulation (GDPR). More detail is given below.

3. Submission

There are two deadlines for submission

1. Your code should all be submitted on Learning Mall by 6pm December 17 2021. You should submit your methods separately, and further guidance will be provided later in the semester.
2. Your written report and your complete java files should be submitted on learning mall by 6pm December 23 2021. More detail will be provided below.

Detailed Guidance

Person Database (95%)

The person database has a number of functionalities, and a full interface is provided which allows the user to select one of these options, and input a string. The complete framework has been provided, and so you need to complete the methods. **Note, you should not create any new methods, and should only complete the existing methods.** The database is a CSV (comma separated values) file, which contains a number of fields and file paths to their photographs.

```
Person Database Menu

Choose an option:
1. Load Person File
2. List all Person
3. Search for a Person
4. Generate a Wanted Poster
5. Generate Stats
6. Check for ID Fraud
7. Exit
```

Functionality

1) Load Person File (5%)
   To load a file, there is a readFile() method in the FileUtils class which needs to read a text file. There is also a Person class, which is used to create Person objects, and this must be completed (constructors, getters, and other methods). Finally, in the Menu class, there is a loadfiles() method, which receives a file name string and an empty list, and returns a populated list.

2) List all Persons (5%)
   After loading a file, in the Menu class, there is a listIDs() method, which uses the toString() method in the Person class to display all information about the persons.

3) Search for a Person (10%)
   Here, in the Menu class, there is a searchIDs() method, which receives a list of persons and a search String. Here, a fully completed method will look for partial and full matches using the input string, and will allow you to search by first name, nickname, family name, id, and nationality. And display the list of matches and the total number of matches. The search should not be case sensitive.

4) Generate a Wanted Poster (25%)
   Sometimes, persons are wanted for their offenses, and here we will use graphics to generate a Wanted poster to catch the offenders. You should input an exact match for the ID code and call the generatePoster() method. This will check for a match, create a JFrame, and then create an ImagePanel object. The ImagePanel object receives a Person object and uses the paintComponent() method to display a suitable poster. More information on the poster will be provided below.

5) Generate Stats (20%)

We want to generate statistics about our database. These statistics are the number of persons, the number of nationalities, average age, and the percentage of males and females. These are displayed by the generateStats() method, which is already completed for you. However, there are a number of methods called by this method, which you must complete.

```
Generate Stats

Number of persons in System: 4

Number of Nationalities in System: 4

Average age of people: 39.25

Average reward level: 462.5
```

6) Check for ID Fraud (30%)
Due to a hacking incident, a number of persons had their ID's changed to try and evade detection. You must complete the checkFraud() method, which receives a list of IDs and an input String of the chosen ID code, and will return whether the ID code is correct (true), or incorrect (false). More information on the ID checking will be provided below.

Dataset

The dataset and image files are available on Learning Mall to download, along with the framework of the code. The main file is stored as a CSV file (persons.csv) and needs to be read into the system. Each row of the file represents one person, and lists the:

- first name, family name, nickname, reward, nationality, id code, list of offenses, date of birth, and a file path to the image.
- Example: Mary, McCloud, Murderess, 200, British, A211080, Talking in the library, 15/08/1976, data/female/person3.png

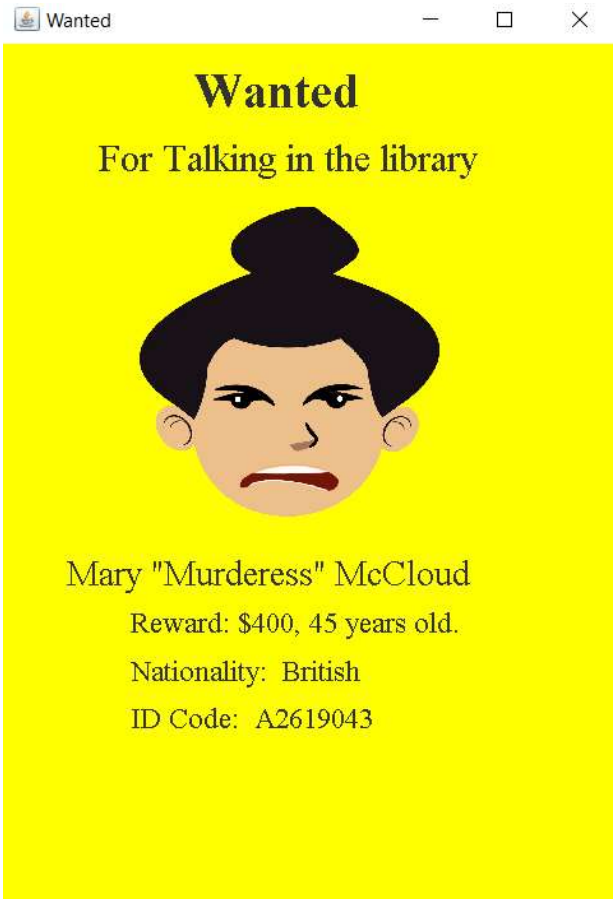
- The files should be stored in folder in your root Netbeans project folder.

- The Person class contains a number of instance variables, and you should modify the constructors and the FileUtils class to read this database.

Wanted Poster

One part of the system is to use Graphics to generate a wanted poster. A Wanted Poster is a poster that would be put up by the sheriff to warn the public about an escaped offender. It should include the name of the offender, the offense they are wanted for, age, reward, and their photo.

- A basic poster is shown on the right, which would get the absolute minimum of marks.
- However, you will get extra marks for improved design and formatting. You should be creative and have complete freedom to design your own poster! As long as the information is present, you can make any styling changes and add any extra decoration you want!
- You are also encouraged to consider using formulas to draw your poster rather than hard coding
- This poster should be generated using the ImagePanel object, through the generatePoster() method in the Menu class



Check for Fraud

As described above, the system also has an ID checking system in case of fraud. This is implemented in the checkFraud() method of the Menu class. You should complete this method. An ID is valid only if all of the following conditions are met:

- when the user inputs an ID code, a matching ID is found in the system
- The ID code is 8 characters in length
- The code begins with an “A”, “B”, or “C” (case sensitive)
- The third character matches the last number of their year of birth
- The final 2 characters are a checksum, and should add up to 7

Legal Ethical, Social, Professional Issues (5%)

- The second part of this assignment is to complete a quiz on Learning Mall, which will be available on December 15 2021. It must be completed before December 23 2021.

Notes

- All of this can and should be achieved using the Java resources covered in the lectures this semester.
- You may use code and resources from the lectures and labs this semester.
- This program can and should be completed using only the methods and instance variables already given. String inputs are also provided and passed into methods where appropriate.
- Do **not** attempt to create new objects or methods. Understanding the structure of the code is part of this assignment
- The design of the wanted poster should be your own. Shared designs with friends will be considered **collusion and plagiarism**.

Submission

You must submit your work electronically on the Learning Mall page before 6pm December 23 2021. The submission is in two stages, code, and quiz:

Code Submission, due date 6pm December 17 2021:

- The code submission will take place electronically, with online evaluation.
- Code submission will be similar to the process for CW1 code submission, with submission of individual methods. You will get the opportunity to test your methods.
- You will need to submit different methods to different code pages. Further instructions will be given closer to the deadline. Please ensure you follow them carefully.

Report Submission due date 6pm December 23 2021:

- One .txt file for **each** .java class file. These documents must NOT be in a ZIP archive. The file name must be the class name. Each file must have your name/student number in a comment at the top.
- You must also complete the LMO quiz on GDPR.
- A Learning Mall submission box will be provided for this, with further instructions closer to the deadline.

This assignment is individual work. Plagiarism (e.g. copying materials from other sources without proper acknowledgement) is a serious academic offence. Plagiarism and collusion will not be tolerated and will be dealt with in accordance with the University Code of Practice on Academic Integrity. Individual student may be invited to explain parts of their code in person, and if they fail to demonstrate an understanding of the code, no credit will be given for that part of the code.