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CS 622 Draft Assignment 1

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Please submit a draft of Assignment 1, using the Word template supplied, with *only* the following parts drafted:

1, 2, 3.1, and a beginning on 6.1 (around 3 classes and 3 sequence diagram steps)

# 1 SUMMARY DESCRIPTION

One- or two-paragraph overall description of your proposed term project—half-page (12-point Times New Roman) limit. By the end, term projects will incorporate most of the techniques discussed in the course. To do this, you may need to alter the direction of your project or introduce an additional project in future. You may alter this or even replace it as the semester progresses. You will probably find it useful to use your project acronym.

This project aims to develop a health tracking app for users to keep track of their personal health information. Users will create an account with login credentials and have the ability to input and track their own health information, such as BMI, blood pressure, and cholesterol. Additionally, users will have the option to add custom health problems and track them over time through notes. Information should be verified and stored in a secure database.

The app also allows for parents to input and track their children's immunization records under their account. This app will utilize various Java concepts such as object-oriented programming (OOP) for creating classes and inheritance relationships between them, exception handling for robustness and error handling, concurrency for multi-threading, JavaFX for creating a user-friendly graphical user interface (GUI), and Java Database Connectivity (JDBC) for storing and retrieving health information from a database. Additionally, the app will also make use of various Java APIs and libraries for handling health-related calculations and functions. With an emphasis on privacy, each user has complete control over who they share their health information with. Overall, this app provides a convenient and organized way for users to track their personal health information and their family's health records in a secure and private manner.

### >>>AI generation OR check: *I did not use AI generation here* \_\_(Please collapse this before submitting.)

(1) PARAGRAPH DESCRIBING YOUR VALUE ADDED TO THE AI-GENERATED MATERIAL

The AI response was great as a starting point for my project. It gave me a strong idea of what my project can achieve and what improvements can be made. As a human being, I can utilize this and mix my own ideas and creativity to come up with a more efficient and productive app. Using a well-versed prompt helped me to get as much accurate information as the AI could generate about the project. However, modified the response to make it clear that the app will be more of a personal health info storage system rather than a large-scale app. This is because I am unsure about in what extent I can provide security to these sensitive public health data. Additionally, I can also incorporate my unique experience and functionalities into the system to better suit the app towards my own preferences. Overall, my own perspective and creativity will be biggest value added to this AI generated material.

(2) MY PROMPT SEQUENCE (ONLY)

[1]

I want to create a "Family health information" Java project. I would like it to have the following capabilities at least:

1. Be able to add/remove/update users/groups of users and identify them as a family

2. Be able to insert health information with the date for each individual.

3. Be able to store/update information for users per family in a database

To do these, I may require a basic GUI or just use prompts.

[2]

Using java Object-oriented programming, JavaFX, and java database connectivity, can you generate a two paragraphs description of my term project "Family health information"?

(3) CODE OR TEXT PRODUCED BY THE ABOVE PROMPT SEQUENCE

chatGPT\_\_ CODEX\_\_OTHER (please specify)\_\_\_

cchatGPT:  
The "Family health information" Java project is a software application that helps families manage their health information in a centralized database. The application is built using Java Object-Oriented Programming, JavaFX, and Java Database Connectivity. The user interface is designed using JavaFX, which provides a sleek and intuitive design for the user to interact with. The Java Database Connectivity allows the application to interact with a database to store and retrieve health information.

The application provides the user with the ability to add, remove, and update users and groups of users. The users can be identified as part of a family, which makes it easy to manage the health information for a whole family in one centralized location. The user can add different types of health information, including BMI, blood pressure, diabetes, cholesterol, and more, and track the data over time by associating a date with each entry. The application also allows the user to store and update health information for each user in a database, which makes it easy to manage the information and access it from multiple devices. The "Family health information" Java project is a powerful tool for families to manage their health information in a secure and efficient manner.

## 2 I/O EXAMPLE FROM *PROJECTED* COMPLETED PROJECT *EVALUATION CRITERION (i) APPLIES*

Provide an example of projected *concrete* output for designated input. You will not be held to fulfilling exactly this—it is just explanatory at this point, to indicate where your project is going. We recognize that project direction and details will change as the term progress. This section refers to the project as a whole, not just to what you will produce this week, so we can gain an idea of what you have in mind overall.

Let's say you have a family consisting of three people - John, Jane, and their son Jack. When John joins the app as a user, he can assign him to the "Smith Family" group (unless the same family already exists in the db) and set a password for his family. Then, when he adds Jane and Jack as users, he can also assign them to the same "Smith Family" group. This way, the app knows that John, Jane, and Jack all belong to the same family group, and their health information will be stored together in the same database. They can also login using the family name and password and view all the information.

So, when I add a new health reading for John, the app will know to store that information in the database associated with the "Smith Family" group. And when I can view the health information for the entire family, the app will pull all the data associated with the "Smith Family" group and display it together.

This is just one potential example of how the app may be used.

### >>>AI generation OR check: *I did not use AI generation here* \_\_(Please collapse this before submitting.)

(1) PARAGRAPH DESCRIBING YOUR VALUE ADDED TO THE AI-GENERATED MATERIAL

The AI thoughtfully evaluated my prompt and provided an example of input output. It described how the app will ask for user input to basically store individuals as part of a group and then it will ask for health information from the user and output the status. It is a great example of the i/o for my projected completed FHI project. However, I can certainly see how my own perspective will modify this example already. I may make sure that the “Smith Family” group already exits or not. That’s why I would make sure at the beginning of account creation, I ask for the name of a family that user wants to be recorded as. Additionally, I could check if that family already existed in the db. If so, I will make the app redirect the user to that family and they can add themselves from that family group page. That’s just one way of how I can add value to this AI generated material.

(2) MY PROMPT SEQUENCE (ONLY)

[1]

For example, I added John, Jane, and Jack as members of the "Smith Family". Can you provide some examples i/o about this family from the family health information app?

(3) CODE OR TEXT PRODUCED BY THE ABOVE PROMPT SEQUENCE

chatGPT\_\_ CODEX\_\_OTHER (please specify)\_\_\_

chatGPT:

Here’s an example of input/output:  
Input:

User selects "Smith Family" group

User selects "Add member" function

User inputs "Emily Smith" and presses "Add"

Output:

The app adds "Emily Smith" to the "Smith Family" group and displays a confirmation message

Input:

User selects "Smith Family" group

User selects "View members" function

Output:

The app displays a list of members in the "Smith Family" group, including John, Jane, Jack, and Emily Smith

Input:

User selects "Smith Family" group

User selects "Add health information" function

User inputs "John Smith" and selects "BMI" from the list of health metrics

User inputs "25.3" for John's BMI and selects "Save"

Output:

The app adds John's BMI reading to the "Smith Family" group and displays a confirmation message

Input:

User selects "Smith Family" group

User selects "View health information" function

User selects "John Smith" from the list of family members

The app displays a graph of John's BMI readings over time

## 3 REQUIREMENTS IMPLEMENTED IN THIS RELEASE

Supply [functional requirements](https://docs.google.com/document/d/1eU7eINLDxmrf793D4OF2yGT4ry_SW3GQGoVDYzecGHc/edit?usp=sharing) statement that you accomplished for this assignment, i.e., functionality that the application provides for the user. Please state requirement in declarative form, as illustrated in the examples, because here we want to know the functionality intended (*what*, not *how*). For example, the following is *not* a proper functional requirement: *TicTac will have a class for O’s and a class for X’s.* It is common to mistake design elements like this for requirements. To get started, state what the application will accept as input, like requirement 3.1 below.

Keep in mind that the implementation of your requirements will incorporate *an abstract class*, *inheritance*, *upcasting or downcasting*, and *polymorphism*; that will probably influence the requirements you choose to implement in this assignment.

### >>>AI generation OR check: *I did not use AI generation here* \_\_(Please collapse this before submitting.)

(1) PARAGRAPH DESCRIBING YOUR VALUE ADDED TO THE AI-GENERATED MATERIAL

The chatGPT response based on my prompt was quite satisfactory as a starting point. It definitely helped me to bound my thought process to focus on the one requirement of adding users and familygroup. However, it I needed to step up and modify it such that the requirements follow the functional requirement guideline provided in the section. With that modification, I believe I added a significant value to the AI response to create a solid, clear, and functional requirement for my FHI project.

(2) MY PROMPT SEQUENCE (ONLY)

[1]

For my “Family health information” app can you generate one functional requirement (what the app shall be able to do, not how to) that should will incorporate an abstract class, inheritance, upcasting or downcasting, and polymorphism.

[2]

can this requirement have abstract class, upcasting, downcasting?

(3) CODE OR TEXT PRODUCED BY THE ABOVE PROMPT SEQUENCE

chatGPT\_\_ CODEX\_\_OTHER (please specify)\_\_\_

chatGPT:  
[1] 3.1 Implementing User and FamilyGroup Classes Using Inheritance and Polymorphism

The application should implement User and FamilyGroup classes using inheritance and polymorphism. The User class should have attributes such as name, age, and unique identifier. The FamilyGroup class should have attributes such as name, unique identifier, and a list of users. The application should allow the user to create new instances of User and FamilyGroup classes. Users can be added to an existing FamilyGroup instance or a new FamilyGroup instance can be created. The application should use polymorphism to allow for the addition or removal of users from a FamilyGroup instance.

[2] Yes, it is possible to incorporate abstract class, upcasting, and downcasting in this requirement. Here is an example of how it could be done:

3.1 Adding Users and Creating Family Groups

The application should allow the user to add new users and create family groups. Each user should have a name, age, and unique identifier. Users can be added to an existing family group or a new family group can be created. Family groups should have a name and a unique identifier. Once created, family groups can have users added or removed as necessary.

To implement this requirement, an abstract class "FamilyMember" can be created with attributes such as name, age, and unique identifier. Subclasses such as "User" and "FamilyGroup" can then be created that inherit from the "FamilyMember" abstract class. Upcasting can be used to assign a subclass object to a superclass reference variable, such as adding a "User" object to a "FamilyMember" array. Downcasting can be used to assign a superclass object to a subclass reference variable, such as casting a "FamilyMember" object to a "User" object in order to access its specific methods. This allows for flexibility in the program and easier management of family members and groups.

Continue with at most two more requirements.

## 3.1 Adding Users and Creating Family Groups

## The application shall ask the user for account information in command prompt or Gui. It shall be able to register user’s name, age, email, and assign a unique id. It shall also allow the user to add them to an existing family group or create a new family group. The application should allow users to either login to an existing family or create a new one. When a user logs in to an existing family, they should be prompted to provide the family name and password. When a new user wants to sign up, they must provide their name, age, email, family name, and family password.

### 6.1 Class model and Sequence Diagram

Identify where you included *inheritance*, *polymorphism*, and *abstract classes* or *interfaces* in your class model. Make classes and members *static* or not as per their intended usage. To do this use tools (e.g., Visio, Lucidchart, or draw.io), PowerPoint, or a combined model as in [this example](https://docs.google.com/spreadsheets/d/1wnua9en_nwBITm-pNiQTn7QzP1ylu9LK2QJeELa2GrA/edit?usp=sharing) (which you are free to cut and paste from). Insert indications in red to show where the three features below apply.

Diagram, schematic

Description automatically generated

Diagram

Description automatically generated with medium confidence