COMP3111 T-22 Activity 1

People:

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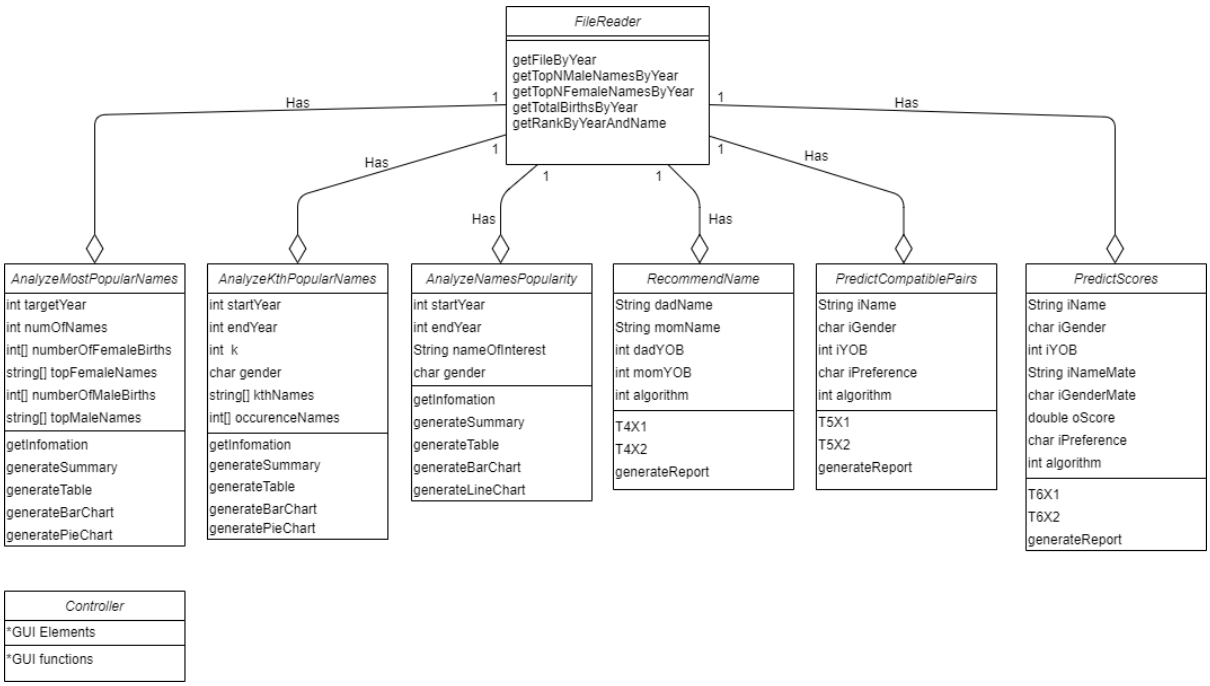
Github Repo:

https://github.com/Zhang-JK/COMP3111-T22
ZHANG Jiekai's branch: JK_dev
CHENG Yiren's branch: dylan_branch
LIANG Houdong's branch: dong_

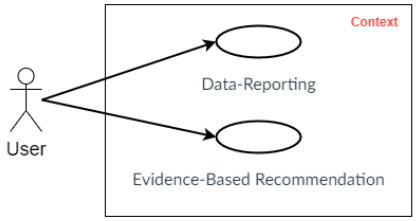
Part1. Class Diagram



Draw.io file:
https://drive.google.com/file/d/1VHRpz_lz55R74917TFZVTkhrnPVlHDRw/view?usp=sharing

Part2. Use-Case Diagram

Use Case Diagram



NOTES:

Data-Reporting including three sub-tasks:

- Task #1: Most Popular Names
- Task #2: K-th Popular Names
- Task #3: Popularity of Names

Evidence-Based Recommendation including three sub-tasks:

- Task #4: Recommendation on Names for Newborn Babies
- Task #5: Prediction on Names for Compatible Pairs
- Task #6: Prediction on Scores for Compatible Pairs

Draw.io file:
https://drive.google.com/file/d/16p-cfC04va_OPKi29jl04lOR18P2mTuh/view?usp=sharing

Part3. Use-Case Specifications

Use Case: Task 1, Most Popular Names (ZHANG Jiekai)

Brief Description

This use case describes how to select the top N most popular names in a year.

Use-case Diagram

Basic Flow

1. The user actor chooses the task1 tab.
2. The system displays the interface for entering a year and a number N, which is for the year to study and the top N names.

{Enter Year and N}

3. The user indicates the Year and N he/she would like to study, and clicks the “Start” button.

{Start Display Information}

4. Show the loading icon, disable the text boxes and button.
5. Display the summary, show the most popular name for both male and female, its occurrence, its percentage in that year.
6. Display data table, showing the Top N names for both male and female.
7. Display bar chart, showing the number of occurrences of the Top N names for both male and female.
8. Display the pie chart, representing the associated number of occurrences. The bigger the sector, the more popular the name.

{End Display Information}

9. Remove the loading icon, enable the text boxes and button.
10. The use case ends.

Alternative Flows

A1: Invalid Input

At **{Enter Year and N}** if there are any empty text boxes or if enter the year or N out of range (Year 1880~2019, N 1~10) or it is not an integer

1. The system pops up a notice explaining why the input is invalid and shows the valid range/format.
2. The flow of events is resumed at **{Enter Year and N}**.

A2: Cancel Activity

Between **{Start Display Information}** and **{End Display Information}** if the user clicks another task tab

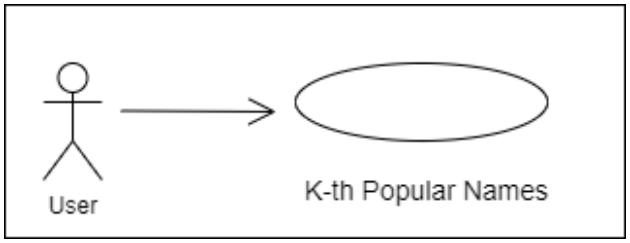
1. Remove all the information and clear the text boxes.
2. Directly end the use case.

Use Case: Task 2, K-th Popular Names (LIANG Houdong)

Brief Description

This use case describes how to generate a report in response to the queries on the K-th popular names over a given period.

Use-case Diagram



Basic Flow

1. The use case begins when the user requests a query on the k-th popular names of a given gender over a given period.
2. The user actor switches to task 2 tab.
3. The system displays the interface for entering a starting year, an ending year, a number k and a character gender.

{Enter Information}

4. The user indicates the time period, number k and wanted gender he/she would

like to study, and clicks the “Start” button.

{Start Display Information}

5. Show the loading icon, disable the text boxes and button.
6. The system retrieves and calculates the k-th popular names, their numbers of occurrences and percentage for a particular gender in the time period that user inputs.
7. The system generates the summary, showing the most popular name among all the k-th popular names of given gender and time period. The number of occurence and its percentage are shown as well.
8. The system displays the table which includes the rank of names, occurrences, and percentage of names for given gender and time period.
9. The system displays the bar chart, representing the number of occurrences of all k-th popular names for given gender and time period.
10. The system displays the pie chart representing the associated frequency of names holding the k-th rank for given gender and time period.

{End Display Information}

11. Remove the loading icon, enable the text boxes and button.
12. The use case ends.

Alternative Flows

A1: Invalid Input

At **{Enter Information}**

if a) there is any empty text box **or**

b) input years or k is out of range (startingYear/endingYear 1880~2019, k >= 1) **or**

c) k is not an integer **or**

d) startingYear is larger than endingYear (startingYear <= endingYear)

1. The system pops up a notice explaining why the input is invalid and shows the valid range/format.
2. The flow of events is resumed at **{Enter Information}**.

A2: Cancel Activity

Between **{Enter Information}** and **{End Display Information}** if the user clicks another task tab

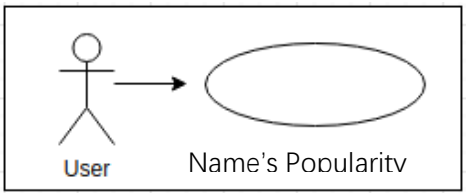
1. Remove all the information and clear the text boxes.
2. Directly end the use case.

Use Case: Task 3, Popularity of Names (CHENG Yiren)

Brief Description

This use case describes how to Generate a report in response to the queries on the popularity of a name over a given period.

Use Case Diagram



Basic Flow

1. The use case begins when the user requests a query on the popularity of a name over a given period.
2. The system displays the interface for typing in the year period and name.

{Enter Information}

3. The user indicates the name and gender of interest he wants to check the popularity in the year period of interest.

{Begin Displaying Information}

4. The system retrieves and calculates the rank, occurrences, and percentage of the name for particular gender in each year of the year period user inputs.
5. Then the system reports the year when the name of that gender is the most popular compared to its popularity in other years.
6. The system displays a table which includes the rank, occurrences, and percentage of the name in each year of the period.
7. The system displays a bar chart of the occurrence of the name in each year of the period when the name is in the top 1000 popular names ranking.
8. The system displays a line chart of the occurrence of the name in each year of the period when the name is in the top 1000 popular names ranking.

{End Displaying Information}

9. The use case ends.

Alternative Flows

A1: Invalid Input

At **{Begin Generating}** if the year or gender of interest is invalid,

1. The system informs the user that the entered year or gender is invalid.
2. The flow of events is resumed at **{Enter Information}**.

A2: Cancel Activity

Between **{Begin Displaying Information}** and **{End Displaying Information}** if the user clicks another task tab

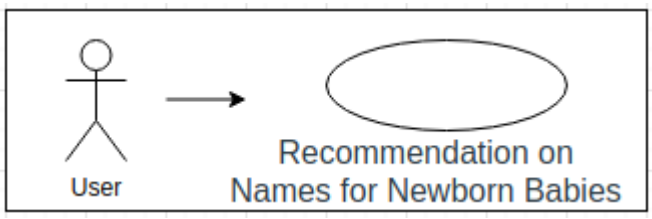
1. Remove all the information and clear the text boxes.
2. Directly end the use case.

Use Case: Task4, Recommendation on Names for Babies (ZHANG Jiekai)

Brief Description

This use case describes an online service using empirical data to help make informed decisions on naming their newborn babies.

Use-case Diagram



Basic Flow

1. The user actor chooses to task4 tab.
2. The system displays the interface for entering the following information: name of baby's dad and mom, years of birth of the baby's dad and mom. And display a selection bar to select the algorithm, the default is T4X1.

{Enter Information}

3. The user inputs the information and selects the algorithm, then clicks the "Start" button.
4. Show the loading icon, disable the text boxes and button.
   - 4.1. If the Algorithm is T4X1

   {Analysis Start}

   - 4.1.1. Set boy's recommended name to the most popular male name in the year of dad's birth, set girl's recommended name to the most popular female name in the year of mom's birth.
   - 4.1.2. Output the most popular name for both male in dad's birth year and female in mom's birth year, its occurrence, its percentage.
   - 4.1.3. Display bar chart, showing the number of occurrences of the Top 10 names for both male in dad's birth year and female in mom's birth year.
   - 4.1.4. Display a line chart showing the recommended name's percentage(popularity) in the year after the parents' birth.

   4.2. If the Algorithm is T4X2

   {Analysis Start}

   - 4.2.1. Use the T4X2 algorithm to give a recommended name for both boy and girl.

4.2.2. Display related charts/diagrams to support the recommendation.

{Analysis End}

5. Remove the loading icon, enable the text boxes and button.
6. The use case ends

Alternative Flows

A1: Invalid Input

At **{Enter Information}** if there are any empty text boxes or if the entered years is out of range or it is not an integer type

1. The system pops up a notice explaining why the input is invalid and shows the valid range/format.
2. The flow of events is resumed at **{Enter Information}**.

A2: Cancel Activity

Between **{Analysis Start}** and **{Analysis End}** if the user clicks another task tab

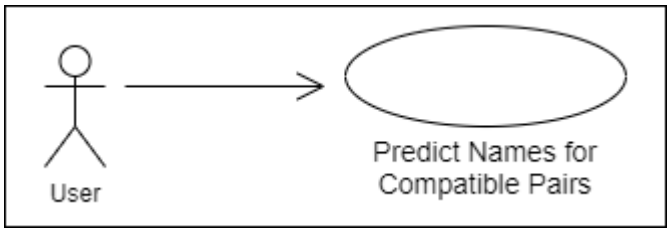
1. Remove all the information and clear the text boxes.
2. Directly end the use case.

Use Case: Task 5, Prediction on Names for Compatible Pairs (LIANG Houdong)

Brief Description

This use case describes an online service using empirical data to help make informed decisions on predicting names for compatible pairs.

Use-case Diagram



Basic Flow

1. The use case begins when the user seeks advice on helping make informed decisions on predicting names for compatible pairs.
2. The user actor switches to task 5 tab.

3. The system displays the interface for entering the following information: name, gender and years of birth of the user, the target gender, age preference and chosen algorithm.

{Enter Information}

4. The user inputs the information and selects the algorithm, then clicks the “Start” button.
5. Show the loading icon, disable the text boxes and button.
   5.1. If the Algorithm is T5X1

   {Prediction T5X1 Start}

   5.1.1. Set the recommended name of the soulmate to the most popular name of the target gender in the user's year of birth.

   5.1.2. The system outputs the recommended name of the soulmate, its number of occurrences and its percentage in the user's year of birth.

   5.1.3. The system displays a bar chart showing the number of occurrences of the recommended name of the soulmate in 5 years altogether before and after the user's birth year.

   5.1.4. The system displays a line chart showing the recommended name’s percentage in 5 years altogether before and after the user's birth year.

   5.2. If the Algorithm is T5X2

   {Prediction T5X2 Start}

   5.2.1. Use the T5X2 algorithm to predict names for compatible pairs of a given gender.

   5.2.2. Display related charts/diagrams to support the prediction.

{Prediction End}

6. Remove the loading icon, enable the text boxes and button.
7. The use case ends

Alternative Flows

A1: Invalid Input

At **{Enter Information}** if there is any empty text box or the input birth year is out of range (Year: 1880~2019)

1. The system pops up a notice explaining why the input is invalid and shows the valid range/format.
2. The flow of events is resumed at **{Enter Information}**.

A2: Cancel Activity

Between **{Enter Information}** and **{Prediction End}** if the user clicks another task tab

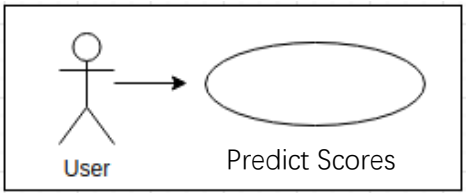
1. Remove all the information and clear the text boxes.
2. Directly end the use case.

Use Case: Task6, Prediction on Scores for Compatible Pairs (CHANG Yiren)

Brief Description

This use case describes an online service using empirical data to help make informed decisions on predicting scores for compatible pairs.

Use Case Diagram



Basic Flow

1. The use case begins when the user seeks advice on helping make informed decisions on predicting scores for compatible pairs.
2. The system displays the interface for typing in the user's name, gender, year of birth, preferred gender, preferred age difference, and the name he/she wants to predict the score for compatible pairs.

{Enter Information}

3. The user indicates his/her name, gender, year of birth, preferred gender, preferred age difference, and the name he/she wants to predict the score for compatible pairs.

{Start Predicting}

4. While the user chooses an algotithm to predict
   - 4.1 If the T6X1 algorithm is selected
     {Predict By T6X1}
     - 4.1.1 The system compares the length of the user's name and his/her name of interest.
     - 4.1.2 If the length is the same then assign the compatibility score to 100%, otherwise it's 0%.
     - 4.1.3 The system notifies the user the score for compatible pairs.
   - 4.2 If the T6X2 algorithm is selected
     (Predict By T6X2)
     - 4.2.1 The system retrieves the name popularity tables according to user's preferred age difference.
     - 4.2.2 The system assigns the compatibility score to 100% if the name of interest is the top 100 popular name of at least one year, otherwise the compatibility score is 0%.
     - 4.2.3 The system notifies the user the score for compatible pairs.

{End Predicting}

5. The use case ends.

Alternative Flows

A1: Invalid Input

At **{Choose Algorithm}** if the year of birth or gender is invalid,

1. The system informs the user that the entered year of birth or gender is invalid.
2. The flow of events is resumed at **{Enter Information}**.

A2: Cancel Activity

Between **{Start Predicting}** and **{End Predicting}** if the user clicks another task tab

1. Remove all the information and clear the text boxes.
2. Directly end the use case.