

Sample Solution for Activity 1

Note: Every project team member could attain up to 30 marks in Activity 1

- **(5 marks) Project Setup**
 - (1 mark) Team Formation
 - (1 mark) Task Allocation
 - (3 marks) Team Repo Setup on GitHub

- **(25 marks) System Requirements Specification**
 - (6 marks) Class Diagram
 - (3 marks) Use-Case Diagram
 - (8 marks) Use-Case Specifications for Data-Reporting Tasks (Task 1/2/3)
 - (1 mark) Brief Description
 - (1 mark) Use-case Diagram
 - (4 marks) Basic Flow
 - (2 marks) Alternative Flow
 - (8 marks) Use-Case Specifications for Evidence-Based Recommendation Tasks (Task 4/5/6)
 - (1 mark) Brief Description
 - (1 mark) Use-case Diagram
 - (5 marks) Basic Flow
 - (1 mark) Alternative Flow

Sample Solution for Activity 1

Class Diagram

We consider the following criteria for grading the class diagram part:

1. If the class diagram represents the general model of the software even with some minor mistakes such as incorrect multiplicities, association, fields, etc., the whole mark is given (6 point).
2. If the class diagram is incomplete and needs more relations and classes to be added, half of the mark is given (3 point).
3. If there is no class diagram nor it is not complete and reasonable, 0 point is given.

A sample class diagram is given below:



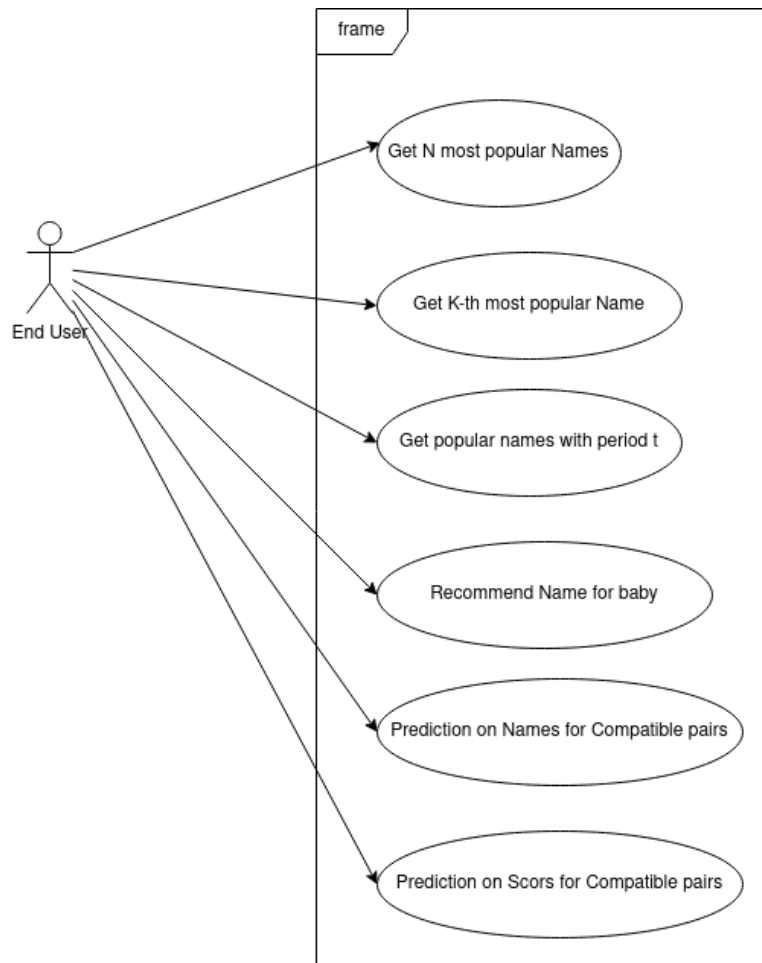
Sample Solution for Activity 1

Use-Case Diagram

The use-case diagram should have at least 6 use-cases with one actor. However, it is correct that students make it more fine-grained. We consider the following criteria for grading the use-case diagram:

1. If the use-case diagram contains 6 use-cases corresponding to 6 tasks with one actor (the user of the software), the whole mark is given (3 point). If the user considers more actors, they will get the whole point if the actor plays a satisfiable role in the software.
2. If the use-case diagram is incomplete and needs more use-cases to be added, 0.5 point will be given to the existing use-cases in it.
3. If there is no use-case diagram nor it is not complete and reasonable, 0 point is given.
 - a. It is possible that students split the use-case diagram in 6 and put each in description of corresponding task. If their answer follows the above criteria, they will be given the corresponding mark for it. Though, they will lose 0.5 point for not providing a use-case diagram since it was one of the requirements of this activity.
4. Having the use cases surrounding with a frame is very important. If it is missing, 1 point is deducted.

A sample use case diagram is given below:



Sample Solution for Activity 1

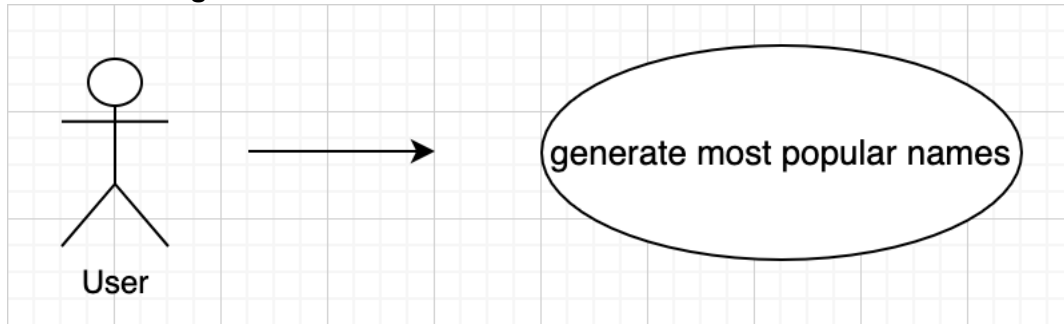
Task 1

Use Case: Most Popular Names

Brief Description

This use case describes how a user identifies the most popular names in a given period.

Use-case Diagram



Basic Flow

1. The use case begins when the user actor chooses to identify names that are the most popular over a given period.
2. The system displays the interface for selecting the number of names displayed (N) and YEAR that the user would like to check.

{Enter N, YEAR}

3. The User indicates the number of names displayed and year of interest.

{Display Query}

4. The system generates and displays the summary of results, relevant results presented with a data table, bar chart and pie chart.

4.1 The system displays the summary of results which contains the Year, Names, Gender, Occurrences (the number of births with the selected name), and Percentage (percent of total selected gender births in Year).

4.2 The system displays the table containing the result. In each row, it contains Names, Occurrences (the number of births with the selected name), Percentage (percent of total selected gender births in Year) and sort by name with the reported numbers in alphabetical order.

4.3 The system displays a bar chart which contains Names, Occurrences (the number of births with the selected name), Gender, Year, and sort by name with the reported numbers in alphabetical order.

Sample Solution for Activity 1

4.4 The system displays a pie chart which contains Names, Occurrences (the number of births with the selected name), Gender, Year.

5. The use case ends.

Alternative Flow

A1: Invalid N

At **{Display Query}** if the entered N is invalid (e.g., less than 1 or left blank),

1. The system notifies the user that the input N is invalid.
2. The flow of events is resumed at **{Enter N, YEAR}**.

A2: Invalid YEAR

At **{Display Query}** if the entered period is invalid (e.g., less than 1880 or greater than 2019 or ending year less than beginning year or left blank),

1. The system informs the user that the period is invalid.
2. The flow of events is resumed at **{Enter N, YEAR}**.

Sample Solution for Activity 1

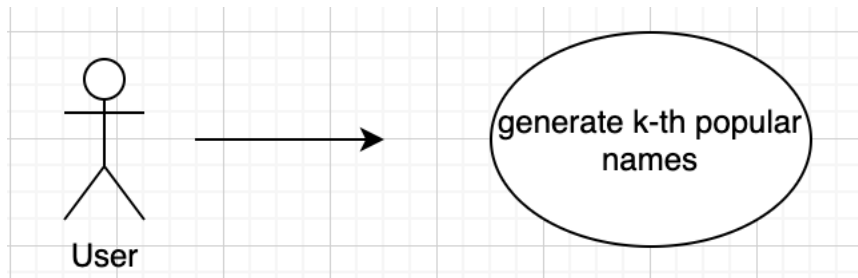
Task2

Use Case: K-th Popular Names

Brief Description

This use case describes how a user get a brief report in response to the queries on the K-th popular names over a given periods.

Use-case diagram



Basic flow

1. The use case begins when the user actor chooses to get a popularity of names report.
2. The system displays the interface for generating the report.

{Enter info}

3. The user gives a k, gender to specify male or female, year1 and year2 in which he would like to get the report on.

{Query Display}

4. The system generates and displays the summary of results, relevant results presented with a data table, bar chart and pie chart.
 - 4.1 The system displays the table containing the result: Name, Gender, Rank, Frequency (frequency compared with other years'), Occurrences (the number of births with the selected name), Percentage (percent of total selected gender births in Year).
 - 4.2 The system displays the table containing the result. In each row, it contains Name, Gender, Frequency (frequency compared with other years'), Occurrences (the number of births with the selected name), and Percentage (percent of total selected gender births in Year) and sort by name with the reported numbers in alphabetical order.
 - 4.3 The system displays a bar chart which contains Name, Rank, Gender, Frequency (frequency compared with other years'), Occurrences (the number of births with the selected name) and sort by name with the reported numbers in alphabetical order.
 - 4.4 The system displays a pie chart which contains Name, Rank, Frequency (frequency compared with other years'), Gender, Year.
5. The use case ends

Sample Solution for Activity 1

Alternative Flows

A1: Invalid YEAR

At **{Query Display}** if any of the two years inputs is not in between 1880 to 2019 or contain other characters other than number,

1. The system informs the user that he enters invalid year
2. The flow of event is resumed at **{Enter info}**

A2: Invalid GENDER

At **{Query Display}** if the gender contains special characters or number (e.g., @, #, _ etc.)

1. The system informs the user that he enters invalid gender
2. The flow of event is resumed at **{Enter info}**

A3: Invalid K

At **{Query Display}** if the k contains special characters or number (e.g., @, #, _etc.)

1. The system informs the user that he enters invalid k
2. The flow of event is resumed at **{Enter info}**

A4: Blank input

At **{Query Display}** if any of the input boxes is empty

1. The system informs the user to enter a value in all boxes
2. The flow of event is resumed at **{Enter info}**

Sample Solution for Activity 1

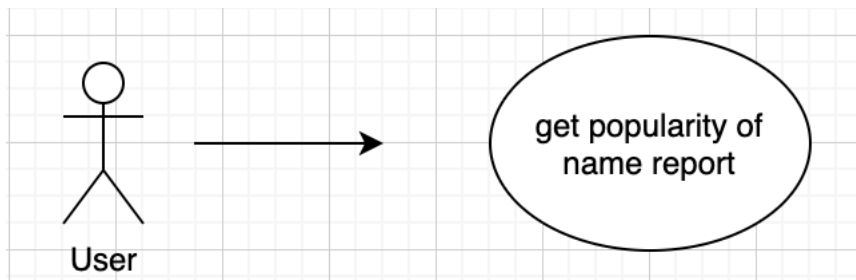
Task 3

Use Case: Popularity of names

Brief Description

This use case describes how a user get a brief report in response to the queries on the popularity of a particular name over a given periods.

Use-case Diagram



Basic Flow

1. The use case begins when the user actor chooses to get a popularity of names report.
2. The system displays the interface for generating the report.

{Enter info}

3. The user gives a name, gender to specify male or female, year1 and year2 in which he would like to get the report on.

{Query Display}

4. The system generates and displays the summary of results, relevant results presented with a data table, bar chart and line chart.

4.1 The system displays the table containing the result: Name, Gender, Rank (popularity rank), Occurrences (the number of births with the selected name), Percentage (percent of total selected gender births in Year).

4.2 The system displays the table containing the result. In each row, it contains Name, Gender, Rank (popularity rank), Occurrences (the number of births with the selected name), and Percentage (percent of total selected gender births in Year) and sort by name with the reported numbers in alphabetical order.

4.3 The system displays a bar chart which contains Name, Rank (popularity rank), Occurrences (the number of births with the selected name).

Sample Solution for Activity 1

4.4 The system displays a line chart which contains Name, Rank (popularity rank), Occurrences (the number of births with the selected name), Gender, Year.

5. The use case ends

Alternative Flows

A1: Invalid YEAR

At **{Query Display}** if any of the two years inputs is not in between 1880 to 2019 or contain other characters other than number,

1. The system informs the user that he enters invalid year
2. The flow of event is resumed at **{Enter info}**

A2: Blank input

At **{Query Display}** if any of the input boxes is empty

1. The system informs the user to enter a value in all boxes
2. The flow of event is resumed at **{Enter info}**

A3: Invalid NAME

At **{Query Display}** if the name contains special characters or number (eg. @, #, _ etc.)

1. The system informs the user that he enters invalid name
2. The flow of event is resumed at **{Enter info}**

A4: Invalid GENDER

At **{Query Display}** if the gender contains special characters or number (eg. @, #, _ etc.)

1. The system informs the user that he enters invalid gender
2. The flow of event is resumed at **{Enter info}**

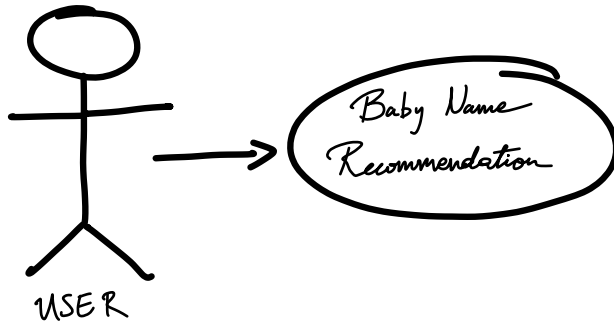
Sample Solution for Activity 1

Task 4

Brief Description:

Recommends a name either for a girl or for a boy

Use-case Diagram:



Basic Flow:

1. The use case begins when the user selects to get name recommendations for newborn babies.
2. The system provides an interface for the user to insert their information.
3. The user provides their personal data: Father's name, Mother's name, Father's DOB and Mother's DOB.
4. The user selects which algorithm they would like the system to use: T4X1 or T4X2.
5. The program displays the result.
6. The use case ends.

Alternative Flow:

1. The information provided by the user is incorrect. E.g. invalid DOB.
2. The system provides an error message regarding the error and prompts the user to fix the error.

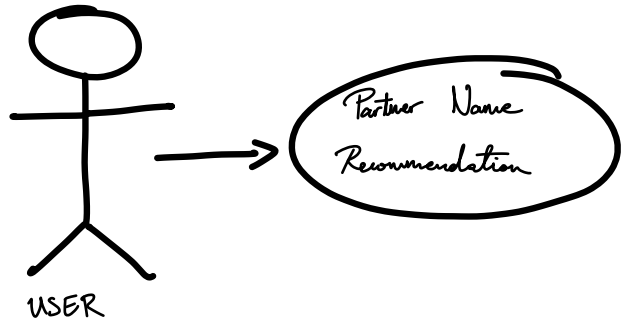
Sample Solution for Activity 1

Task 5

Brief Description:

Predicts names for compatible pairs given the user's inputs.

Use-case Diagram:



Basic Flow:

1. The use case begins when the user selects to predict names for compatible pairs.
2. The system provides an interface for the user to insert their information.
3. The user provides their personal data: Father's name, iName, iGender, iYOB, iGenderMate, iPreference.
4. The user selects which algorithm they would like the system to use: T5X1 or T5X2.
5. The program displays the result.
6. The use case ends.

Alternative Flow:

1. The information provided by the user is incorrect. E.g. invalid YOB.
2. The system provides an error message regarding the error and prompts the user to fix the error.

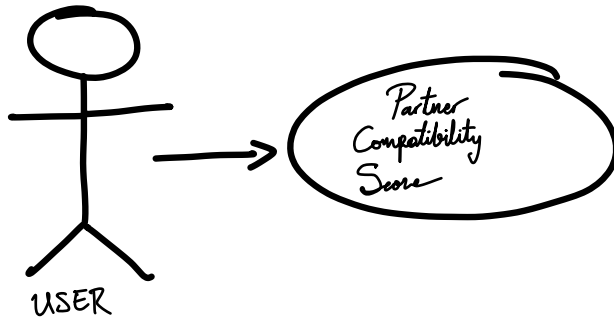
Sample Solution for Activity 1

Task 6

Brief Description:

Predicts a compatibility score for a couple

Use-case Diagram:



Basic Flow:

1. The use case begins when the user selects to get partner compatibility score.
2. The system provides an interface for the user to insert their information.
3. The user provides their personal data: iName, iGender, iYOB, iNameMate, iGenderMate, iPreference.
4. The user selects which algorithm they would like the system to use: T6X1 or T6X2.
5. The program displays the score.
6. The use case ends.

Alternative Flow:

1. The information provided by the user is incorrect. E.g. invalid YOB.
2. The system provides an error message regarding the error and prompts the user to fix the error.