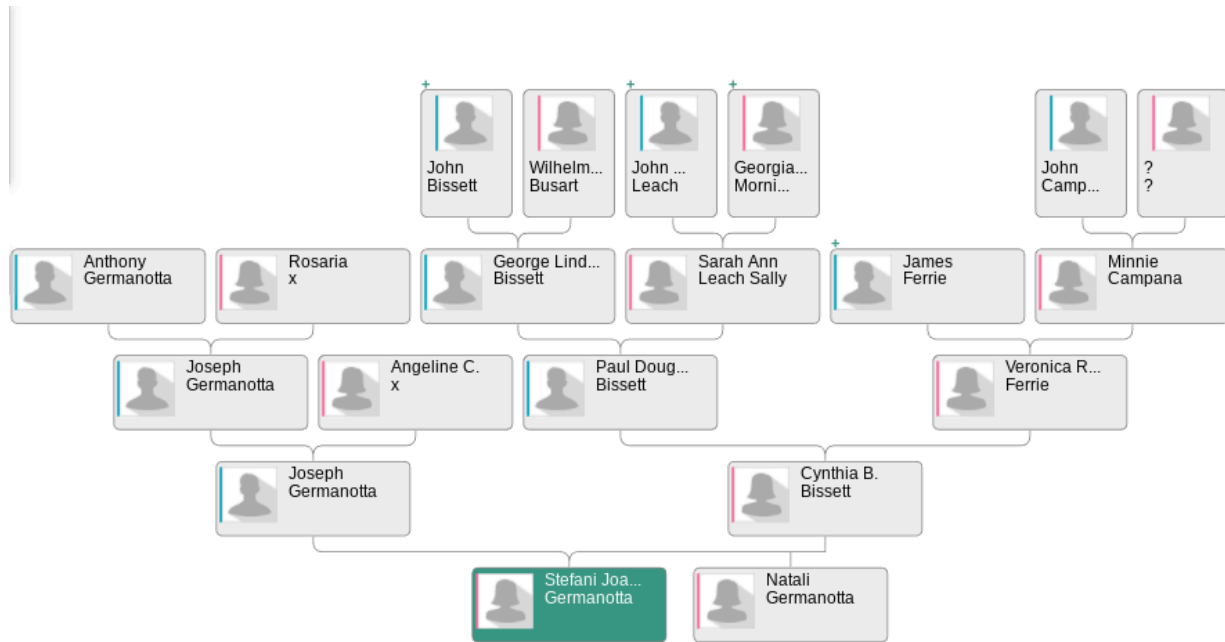


## CSE1322L Assignment 5

### Description

In this assignment you'll write a program to allow people to keep track of their family tree. As an example we'll be looking at Lady Gaga's family tree. According to geneanet.org her tree looks like this (Lady Gaga's real name is Stefani Joanne Angelina Germanotta):



This program will use a List (C#) or an ArrayList (Java) of Person, where a person has an ID, a Name and 2 parent IDs to hold their parents. When you add a new person to the tree, they will be given a unique number, and you'll be asked to select the number of each of their parents.

### Assignment:

- Start by joining the following replit:  
<https://replit.com/teams/join/glwzupcpssjxogrmyizarctzidafnwce-CSE1322LAssignment08>
- You should see “CSE1322L\_Assignment08\_Java” and “CSE1322L\_Assignment08\_C#”. Click the appropriate one to make your own copy of the base file.
  - You can do the assignment in replit, or in your favorite IDE. If you decide to do it in your favorite IDE, simply copy the 3 files (Family, Person and Main) from replit.
  - If you decide to do it in replit, remember you must still submit .java or .cs files. Do not submit a URL. Nor can you submit in replit.
- Familiarize yourself with the Person class contained in either Person.java or Person.cs.

Notice that each Person will have:

- ID - sequentially assigned
- Name - String
- Parent1\_id - int
- Parent2\_id - int
- A constructor which sets the ID, name and parent IDs of this object
- Getters for id, name, parent1 and parent2
- A toString/ToString override that simply returns the object's name.
- Note: If someone's parent is unknown you'd set it to -1.
- Next familiarize yourself with the Family class in Family.java or Family.cs
  - A family has an ArrayList (Java) or List (C#) of Person
  - You are provided with finished methods as follows:
    - addPerson which takes in a name and 2 parent IDs. It adds the person to the List/ArrayList
    - getIDFromName, which takes in a name and returns the ID of that person.
      - This is done with a loop over the ArrayList/List.
    - getNameFromID, which does the reverse of the last method, takes in a ID and returns the name of that person.
      - Again, done with a loop
    - parentRelationship, which takes in a String, and returns what that person's Parent would be called.
      - E.g. if passed "Self" it returns "Parent". If passed "Parent" it returns "Grand Parent", if passed "Great Great GrandParent" It returns "Great Great Great GrandParent"
    - childRelationship, which takes in a String, and returns what that person's child would be called.
      - E.g. If passed "Child" it'll return "GrandChild".
    - Everyone, which returns a single string with everyone's ID and name in it. This is used to produce menus so people can select their parents.
- Finally, familiarize yourself with the Main class (main.cs or Main.java). This method is complete and should not need to be changed in any way. This is a main method which adds a bunch of people to the tree (Lady Gaga's ancestors) and presents a menu that calls the appropriate functions in the Family objects.

### **Your Coding Tasks:**

You do not need to change any provided code. It is all correct. You should only have to code the body of 4 methods in the Family.java or Family.cs file. The four methods you'll need to code are:

- getChildrenIDs which takes in an integer. This method should return direct children. For example in the picture of Lady Gaga's family above, if John Bissett was entered first, and has ID 0, if you called this method and passed it 0, it would return an ArrayList/List which contains the ID for George Lindsey Bissett as that is the only child of John Bissett.

- This method can be written using a loop.
- getParents which takes in the ID of a child, and returns an Array with 2 cells, containing the ID of each of that child's parents. Note it may return -1 if we don't know the child's parents.
  - This method can be written using a loop
- printParents which takes in a childID and a relationship.
  - This method must **RECURSIVELY** print out all the parents, grand parents, great grandparents etc of the provided child.
  - Remember all recursive methods need a base condition. For this the base condition is that you are passed -1 as a childID you should do nothing since -1 implies unknown.
  - In all other conditions, you'll need to print out your parents, and their parents and their parents until you get to an unknown.
- printChildren which takes in a parentID and a relationship.
  - This method must **RECURSIVELY** print out all the children, grandchildren, great grandchildren etc of the provided parent.
  - Again, if you are passed -1, there is nothing to do.
  - Otherwise, you'll find all the direct children of this parent, and recurse to each child to find their descendants.

Once you have coded all 4 methods, you should be able to run it, and you'll see output similar to the sample output below

### **Sample Output:**

```

What would you like to do
1. Add a person to the tree
2. See a person's ancestors
3. See a person's descendants
4. Quit
2
Who do you want to see ancestors of?
0) John Bissett
1) Wilhelm Busart
2) John Leach
3) Georgianna Morningstar
4) John Campana
5) Anthony Germanotta
6) Rosaria X
7) George Lindsey Bissett
8) Sarah Ann Leach Sally
9) James Ferrie
10) Minnie Campana

```

- 11) Joseph Germanotta
- 12) Angeline C
- 13) Paul Douglas Bissett
- 14) Veronica R Ferrie
- 15) Joseph A Germanotta
- 16) Cynthia B. Bissett
- 17) Stephanie Joanne Germanotta
- 18) Natali Germanotta

17

Self Stephanie Joanne Germanotta  
Parent Joseph A Germanotta  
GrandParent Joseph Germanotta  
Great GrandParent Anthony Germanotta  
Great GrandParent Rosaria X  
GrandParent Angeline C  
Parent Cynthia B. Bissett  
GrandParent Paul Douglas Bissett  
Great GrandParent George Lindsey Bissett  
Great Great GrandParent John Bissett  
Great Great GrandParent Wilhelm Busart  
Great GrandParent Sarah Ann Leach Sally  
Great Great GrandParent John Leach  
Great Great GrandParent Georgianna Morningstar  
GrandParent Veronica R Ferrie  
Great GrandParent James Ferrie  
Great GrandParent Minnie Campana  
Great Great GrandParent John Campana  
What would you like to do  
1. Add a person to the tree  
2. See a person's ancestors  
3. See a person's descendants  
4. Quit

3

Who do you want to see descendants of?

- 0) John Bissett
- 1) Wilhelm Busart
- 2) John Leach
- 3) Georgianna Morningstar
- 4) John Campana
- 5) Anthony Germanotta
- 6) Rosaria X
- 7) George Lindsey Bissett
- 8) Sarah Ann Leach Sally
- 9) James Ferrie
- 10) Minnie Campana

- 11) Joseph Germanotta
- 12) Angeline C
- 13) Paul Douglas Bissett
- 14) Veronica R Ferrie
- 15) Joseph A Germanotta
- 16) Cynthia B. Bissett
- 17) Stephanie Joanne Germanotta
- 18) Natali Germanotta

17

Self Stephanie Joanne Germanotta

What would you like to do

1. Add a person to the tree
2. See a person's ancestors
3. See a person's descendants
4. Quit

3

Who do you want to see descendants of?

- 0) John Bissett
- 1) Wilhelm Busart
- 2) John Leach
- 3) Georgianna Morningstar
- 4) John Campana
- 5) Anthony Germanotta
- 6) Rosaria X
- 7) George Lindsey Bissett
- 8) Sarah Ann Leach Sally
- 9) James Ferrie
- 10) Minnie Campana
- 11) Joseph Germanotta
- 12) Angeline C
- 13) Paul Douglas Bissett
- 14) Veronica R Ferrie
- 15) Joseph A Germanotta
- 16) Cynthia B. Bissett
- 17) Stephanie Joanne Germanotta
- 18) Natali Germanotta

0

Self John Bissett

Child George Lindsey Bissett

GrandChild Paul Douglas Bissett

Great GrandChild Cynthia B. Bissett

Great Great GrandChild Stephanie Joanne Germanotta

Great Great GrandChild Natali Germanotta

What would you like to do

1. Add a person to the tree
2. See a person's ancestors
3. See a person's descendants
4. Quit

2

Who do you want to see ancestors of?

- 0) John Bissett
- 1) Wilhelm Busart
- 2) John Leach
- 3) Georgianna Morningstar
- 4) John Campana
- 5) Anthony Germanotta
- 6) Rosaria X
- 7) George Lindsey Bissett
- 8) Sarah Ann Leach Sally
- 9) James Ferrie
- 10) Minnie Campana
- 11) Joseph Germanotta
- 12) Angeline C
- 13) Paul Douglas Bissett
- 14) Veronica R Ferrie
- 15) Joseph A Germanotta
- 16) Cynthia B. Bissett
- 17) Stephanie Joanne Germanotta
- 18) Natali Germanotta

0

Self John Bissett

What would you like to do

1. Add a person to the tree
2. See a person's ancestors
3. See a person's descendants
4. Quit

1

What is this person's name?

Baby Gaga

Who is their first parent

- 1) Unknown
- 0) John Bissett
- 1) Wilhelm Busart
- 2) John Leach
- 3) Georgianna Morningstar
- 4) John Campana
- 5) Anthony Germanotta
- 6) Rosaria X
- 7) George Lindsey Bissett

- 8) Sarah Ann Leach Sally
- 9) James Ferrie
- 10) Minnie Campana
- 11) Joseph Germanotta
- 12) Angeline C
- 13) Paul Douglas Bissett
- 14) Veronica R Ferrie
- 15) Joseph A Germanotta
- 16) Cynthia B. Bissett
- 17) Stephanie Joanne Germanotta
- 18) Natali Germanotta

17

Who is their other parent

- 1) Unknown
- 0) John Bissett
- 1) Wilhelm Busart
- 2) John Leach
- 3) Georgianna Morningstar
- 4) John Campana
- 5) Anthony Germanotta
- 6) Rosaria X
- 7) George Lindsey Bissett
- 8) Sarah Ann Leach Sally
- 9) James Ferrie
- 10) Minnie Campana
- 11) Joseph Germanotta
- 12) Angeline C
- 13) Paul Douglas Bissett
- 14) Veronica R Ferrie
- 15) Joseph A Germanotta
- 16) Cynthia B. Bissett
- 17) Stephanie Joanne Germanotta
- 18) Natali Germanotta

-1

What would you like to do

1. Add a person to the tree
2. See a person's ancestors
3. See a person's descendants
4. Quit

2

Who do you want to see ancestors of?

- 0) John Bissett
- 1) Wilhelm Busart
- 2) John Leach

- 3) Georgianna Morningstar
- 4) John Campana
- 5) Anthony Germanotta
- 6) Rosaria X
- 7) George Lindsey Bissett
- 8) Sarah Ann Leach Sally
- 9) James Ferrie
- 10) Minnie Campana
- 11) Joseph Germanotta
- 12) Angeline C
- 13) Paul Douglas Bissett
- 14) Veronica R Ferrie
- 15) Joseph A Germanotta
- 16) Cynthia B. Bissett
- 17) Stephanie Joanne Germanotta
- 18) Natali Germanotta
- 19) Baby Gaga

19

Self Baby Gaga

Parent Stephanie Joanne Germanotta

GrandParent Joseph A Germanotta

Great GrandParent Joseph Germanotta

Great Great GrandParent Anthony Germanotta

Great Great GrandParent Rosaria X

Great GrandParent Angeline C

GrandParent Cynthia B. Bissett

Great GrandParent Paul Douglas Bissett

Great Great GrandParent George Lindsey Bissett

Great Great Great GrandParent John Bissett

Great Great Great GrandParent Wilhelm Busart

Great Great GrandParent Sarah Ann Leach Sally

Great Great Great GrandParent John Leach

Great Great Great GrandParent Georgianna Morningstar

Great GrandParent Veronica R Ferrie

Great Great GrandParent James Ferrie

Great Great GrandParent Minnie Campana

Great Great Great GrandParent John Campana

What would you like to do

1. Add a person to the tree
2. See a person's ancestors
3. See a person's descendants
4. Quit

3

Who do you want to see descendants of?

- 0) John Bissett



- 1) Wilhelm Busart
- 2) John Leach
- 3) Georgianna Morningstar
- 4) John Campana
- 5) Anthony Germanotta
- 6) Rosaria X
- 7) George Lindsey Bissett
- 8) Sarah Ann Leach Sally
- 9) James Ferrie
- 10) Minnie Campana
- 11) Joseph Germanotta
- 12) Angeline C
- 13) Paul Douglas Bissett
- 14) Veronica R Ferrie
- 15) Joseph A Germanotta
- 16) Cynthia B. Bissett
- 17) Stephanie Joanne Germanotta
- 18) Natali Germanotta
- 19) Baby Gaga

19

Self Baby Gaga

What would you like to do

1. Add a person to the tree
2. See a person's ancestors
3. See a person's descendants
4. Quit

4

### **Submission Guidelines:**

Program code (java or cs files only)

Please follow the posted submission guidelines here:

<https://ccse.kennesaw.edu/fye/submissionguidelines.php>

Ensure you submit before the deadline listed on the lab schedule for CSE1322L here:

<https://ccse.kennesaw.edu/fye/courseschedules.php>