San José State University
Department of Computer Engineering

CMPE 180-92

Data Structures and Algorithms in C++

Fall 2016
Instructor: Ron Mak

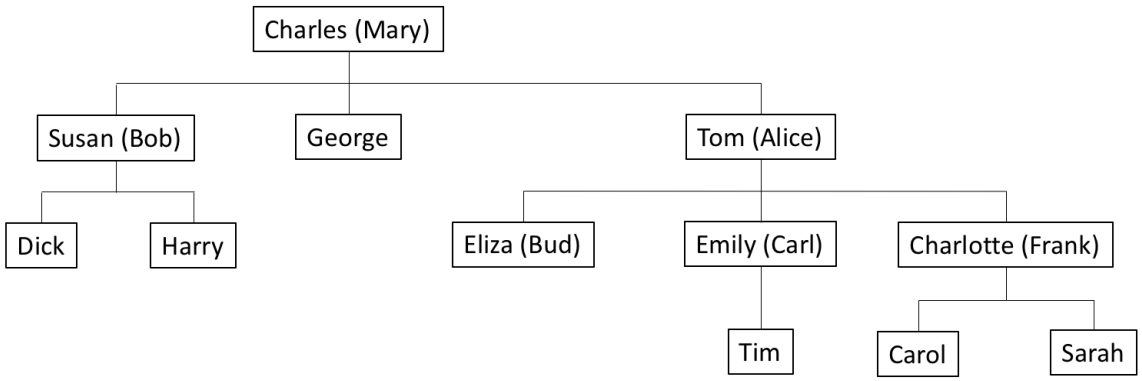
Assignment #10B

Assigned: Saturday, October 29
Due: Friday, November at 11:59 PM
URL: http://codecheck.it/codecheck/files/161030035427rrky6h9snc44xpvsoutk541
Canvas: Assignment 10.b. Genealogy tree
Points: 100

Genealogy tree

This assignment will give you practice writing recursive functions.

A genealogy tree for a person shows all the descendants of that person. Here is a tree for Charles:



You are provided the code that will build such a tree. Each node of the tree is an instance of the class **`Person`**, which you need to complete.

Expected output

Your output should exactly match the right:

- Each person's name is followed in parentheses by his or her spouse's name, if married.
- Each person is followed by his or her children in order, if any. Each child is in turn followed by his or her children, if any.
- Note carefully the printing of the vertical and horizontal lines.

```
Charles (Mary)
|
+---Susan (Bob)
|   |
|   +---Dick
|   |
|   +---Harry
|
+---George
|
+---Tom (Alice)
    |
    +---Eliza (Bud)
    |
    +---Emily (Carl)
    |   |
    |   +---Tim
    |
    +---Charlotte (Frank)
        |
        +---Carol
        |
        +---Sara


Done!
```

Recursive member functions

You must use recursion in the following member functions:

- **`print`**: After printing a person's name and the spouse name (if married), recursively print the children (if any).
- **`print_bar`**: Recursively print spaces and/or vertical bars before each name (except for the name at the top).
- **`~Person`**: Recursively delete all the nodes of the tree after printing it.

What to submit

Submit the signed zip file into **Canvas: Assignment 10.b. Genealogy tree**.

You can submit as many times as necessary to get satisfactory results, and the number of submissions will not affect your score. When you're done with your program, click the "Download" link at the very bottom of the Report screen to download the signed zip file of your solution.

Rubrics

Criteria	Maximum points
Correct program output (as determined by CodeCheck) • Positions of names in the tree • Vertical and horizontal lines	**40** • 20 • 20
Recursive member functions • **`print`** • **`print_bar`** • **`~Person`**	**60** • 20 • 20 • 20