**Composite Visitor Genealogy**

**Lab Assignment**

The project is due in one week: by the midnight on the day of the next lab. Make sure to include your name in comments of the source files.

Review the code of [genealogical tree](file:///C:\Users\wcheng\OneDrive%20-%20Kent%20State%20University\KSU%20Stark%20Campus\CS44001%20CS%20III%20Programming%20Patterns\Labs\Examples\Composite\genealogy.cpp) that uses Composite and two variants of the Visitor Pattern. Modify the program to work as follows.

1. **Maiden name.** Print maiden names of all women. Specifically, the maiden last name for a woman, whether married or unmarried, is the last name of her father. You should re-use the Composite Pattern of the genealogical tree example but write another Visitor that prints the maiden names. Any sensible output is accepted for a man.
2. **Marriage advice.** Print whether it is possible for two individuals to marry. The rules are as follows. It is illegal to marry oneself, one's siblings, parents, children and aunts/uncles. The gender of the person is not significant. It is also illegal to marry a person who is already married. Your program should ask for two names and output whether they can marry. For example:

Enter first candidate: Richard Moore

Enter second candidate: Carol Taylor

They can not marry.

You could assume that (first name, last name) combination uniquely identifies a person in the genealogical tree, i.e. there are no two people with the same first and last name.

You should re-use the Composite pattern of the genealogical tree example but write another Visitor that first checks if the name of the person matches one of the candidates and then checks if the other candidate has an relationship with the first candidate that is illegal for marriage and whether the two candidates are single. That is, the visitor explores nearby links to make sure the other candidate is not an illegal relation to the first candidate.

If one or two of the candidates are not in the genealogical tree, the program output is undefined.

**Hints:** You are free to re-use the already-defined visitors. For example, you can re-use the visitor that determines the person's last name. The visitor that you need to code has to keep the candidates' names in its state. Consider [this example](file:///C:\Users\wcheng\OneDrive%20-%20Kent%20State%20University\KSU%20Stark%20Campus\CS44001%20CS%20III%20Programming%20Patterns\Labs\Examples\Visitor\cars.cpp) of a stateful visitor Operator.

**Milestone:** Implement "Maiden name" part of the assignment.