

Lab Session: Classes

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The Problem – Social Network



Goal: to provide a program that stores information about a social network.

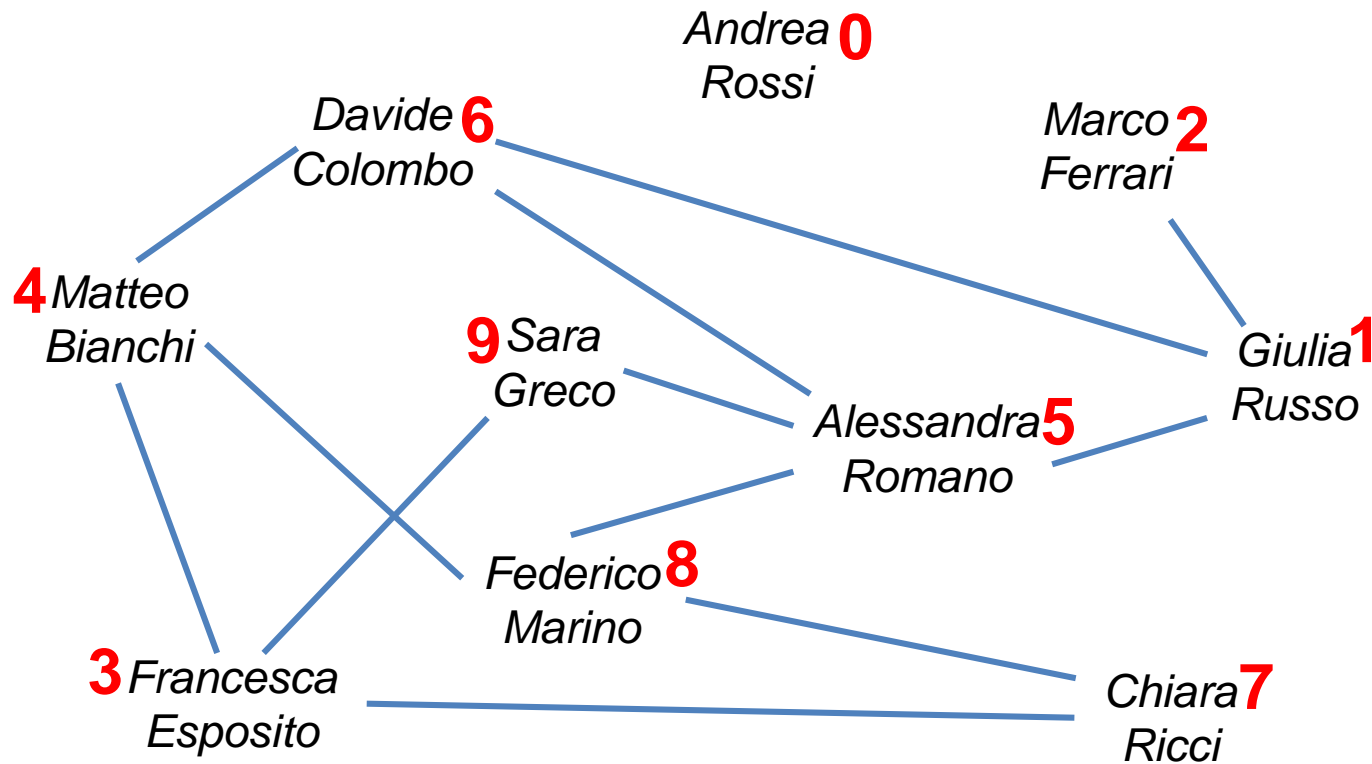
Users are uniquely identified by their name and surname. Users are stored in the social network within a vector, thus each user is represented by an index.

Friendship is represented by a `vector<vector<size_t>>`: the i -th row of this structure stores the list of indices of user i 's friends.

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Example:



0				
1	2	6	5	
2	1			
3	4	7	9	
4	3	6	8	
5	1	6	9	8
6	1	4	5	
7	8	3		
8	7	4		
9	3	5		

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- The class **User**, with the relevant methods, is already provided
- The class **SocialNetwork** only provides the relevant data structures to store users and friendship relations, as well as a *private* method

```
size_t CUserIndex (const std::string & name,  
                  const std::string & surname) const;
```

that returns the index of the user whose name and surname are passed as parameters, if he/she is stored in the social network, the size of the vector of users otherwise

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You have to implement:

1) An operator

`bool operator == (const User & lhs, const User & rhs);`
that returns **true** if the two users are equal, **false** otherwise.

2) A method

```
void AddUser(const std::string & name,  
             const std::string & surname);
```

that receives as parameters the name and surname of a new user and add him/her to the social network.

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3) Two methods

```
const std::vector<User>  
CGetFriends(const User & user) const;
```

and

```
const std::vector<User>  
CGetFriends(const std::string & name,  
            const std::string & surname) const;
```

that return the vector of friends of the user passed as parameter.

Note: always try to avoid code replication!

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4) A method

```
void AddFriendship(const std::string & first_name,  
                  const std::string & first_surname,  
                  const std::string & second_name,  
                  const std::string & second_surname);
```

that receives as parameters the names and surnames of two users and adds to the network the friendship relation among them.

Note: a user cannot be friend of her/himself and cannot be friend of another user who is not in the social network.