CSCI 1101
Computer Science II
Assignment No. 4
Due: March 28, 2013, 11.59 p.m.

You task is to use linked lists to analyze the spread of the cold virus. Suppose that your program reads a number of lines of text, each line containing a pair of names. The first name indicates the person who sneezes or coughs, and the second name indicates the person who is sneezed /coughed on. Assume that the virus is potent enough so that the second person catches the cold immediately. For example, the input to the program could be something like this:

```
Enter the pair of names:    Joe     Bill
Enter the pair of names:    Vic     Bill
Enter the pair of names:    Joe     Vic
Enter the pair of names:    Bill    Jane
Enter the pair of names:    Joe     James
Enter the pair of names:    Vic     Jake
Enter the pair of names:    James   Rob
Enter the pair of names:    Jane    Greg
Enter the pair of names:    done    done
```

("done" "done" signals the end of input).

Your program must read the lines of input and create a linked list. Each node in the list has three attributes – first person's name, second person's name and pointer to the next node.

Using the linked list,

- Print out the names of all people responsible for spreading the cold virus.
  In the above example, your program should print
  Joe Vic Bill James Jane

- Print out the names of all people NOT responsible for spreading the cold virus, even if they have it themselves.
  In the above example, your program should print
  Jake Rob Greg

- Given a name s, print the names of all people directly infected by s.
  For example, if the given name is Vic, your program should print
  Bill Jake
  Note: You should print the names only once

- **Bonus Challenge**: Given a name s and a positive integer n, print out the names of all people who may have contracted the cold virus from N via a

chain of n or fewer sneezes/coughs. For example, given s = “Joe” and n = 2, your program should print

Bill Jane Vic Jake James Rob

Note: You should print the names only once