PROBLEM 4
You have won a contest sponsored by an airline. The prize is a ticket to
travel around Canada, beginning in the most western point served by this
airline, then traveling only from west to east until you reach the most
eastern point served, and then coming back only from east to west until you
reach the starting city.
No city may be visited more than once, except for the starting city, which
must be visited exactly twice (at the beginning and the end of the trip). You
are not allowed to use any other airline or any other means of
transportation. Given a list of cities served by the airline, and a list of
direct flights between pairs of cities, find an itinerary which visits as
many cities as possible and satisfies the
above conditions beginning with the first city and visiting the last city on
the list and returning to the first city.

Different data sets are written in an ASCII input file, C:\IOI\ITIN.DAT.
Each data set consists of:

•   in the first line: the number N of cities served by the airline and
the number V of
direct flights that will be listed. N will be a positive integer not larger
than 100.
V is any positive integer.
•   in each of the next N lines: a name of a city served by the airline.
The names are
ordered from west to east in the input file. That is, the i-th city is west
of the j-th city if and only if i < j (There are no two cities in the same
meridian). The name of each city is a string of, at most, 15 digits and/or
characters of the Latin alphabet,
for example: AGR34 or BEL4
        (There are no spaces in the name of a city)
•   in each of the next V lines: two names of cities, taken from the list
of cities,
separated by a blank space. If the pair city1 city2 appears in a line, it
indicates that there exists a direct flight from city1 to city2 and also a
direct flight from city2 to city1.

Different data sets will be separated by an empty record (that is, a line
containing only the end of line character). There will be no empty record
after the last data set.
The following example is stored in file
C:\IOI\ITIN.DAT.

```
8  9                          5  5
Vancouver                     C1
Yellowknife                   C2
Edmonton                      C3
Calgary                       C4
Winnipeg                      C5
Toronto                       C5  C4
Montreal                      C2  C3
Halifax                       C3  C1
Vancouver Edmonton            C4  C1
Vancouver Calgary             C5  C2
Calgary Winnipeg
Winnipeg Toronto
Toronto Halifax
```

```
Montreal Halifax
Edmonton Montreal
Edmonton Yellowknife
Edmonton Calgary
```

The input may be assumed correct. No checking is necessary.
The solution found for each data set must be written to an ASCII output file,
C:\IOI\ITIN.SOL: in the first line, the total number of cities in the input
data set;
in the next line, the number M of different cities visited in the itinerary,
and in the
next M+1 lines the names of the cities, one per line, in the order in which
they are
visited. Note the first city visited must be the same as the last. Only one
solution is
required. If no solution is found for a data set, only two records for this
data set must
be written in ITIN.SOL, the first one giving the total number of cities, and
the second
one saying: "NO SOLUTION".

A possible solution for the above example:
```
ITIN.SOL
8                               5
7                               NO SOLUTION
Vancouver
Edmonton
Montreal
Halifax
Toronto
Winnipeg
Calgary
Vancouver
```

Put your program solution into an ASCII file named C:\IOI\DDD.xxx. Extension
.xxx
is .BAS for Qbasic, .LCN for LOGO, .C for C, .PAS for PASCAL.