British Informatics Olympiad Final

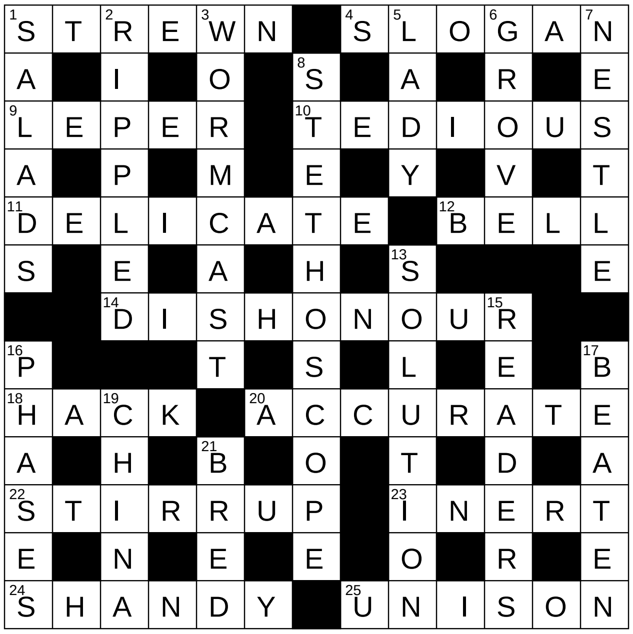
11–13 April 1997

Sponsored by Data Connection

Reverse Crossword

A conventional crossword is written on a rectangular grid of 'black' and 'white' squares. The white squares are ultimately filled with letters which, read across or down, make words corresponding to given clues. Across and down clues are listed separately. They are ordered based on the position in the grid of the first letter of their solution; left to right then up to down.

An example grid, completed with solution words, is shown below. Some squares have also been given numbers. If you list the across words in the normal crossword order, the numbers for their starting squares will be in increasing order. Similarly for the down words.



You are to write a program which will produce the crossword grid, with the solution words filled in. You will be given the size of a *square* grid, and sorted lists of the across words and down words, but you will not be given the position of the 'black' squares.

The first line of the input will contain 3 numbers; the first is the size of the grid (< 20), the second the number of across words, and the third the number of down words. There will then follow (one on each line) the across words in normal crossword order, followed by the down words in normal crossword order. Your output should consist of the crossword grid completed with the solution words, such that :

- All the words that are listed should appear in the solution, going in the correct direction (across or down) and in the correct order.
- There should be no other words visible. A word is any combination of 2 or more letters across or down. Diagonally adjacent letters do not count.
- The grid of 'black' and 'white' squares must have 180° rotational symmetry.

If you do not believe there is a solution you should print out '`Impossible`'.

Sample Input

```
13 13 13
STREWN
SLOGAN
LEPER
TEDIOUS
DELICATE
BELL
DISHONOUR
HACK
ACCURATE
STIRRUP
INERT
SHANDY
UNISON
SALADS
RIPPLED
WORMCAST
LADY
GROVE
NESTLE
STETHOSCOPE
SOLUTION
READERS
PHASES
BEATEN
CHINA
BRED
```

Sample Output

```
STREWN.SLOGAN
A.I.O.S.A.R.E
LEPER.TEDIOUS
A.P.M.E.Y.V.T
DELICATE.BELL
S.E.A.H.S...E
..DISHONOUR..
P...T.S.L.E.B
HACK.ACCURATE
A.H.B.O.T.D.A
STIRRUP.INERT
E.N.E.E.O.R.E
SHANDY.UNISON
```