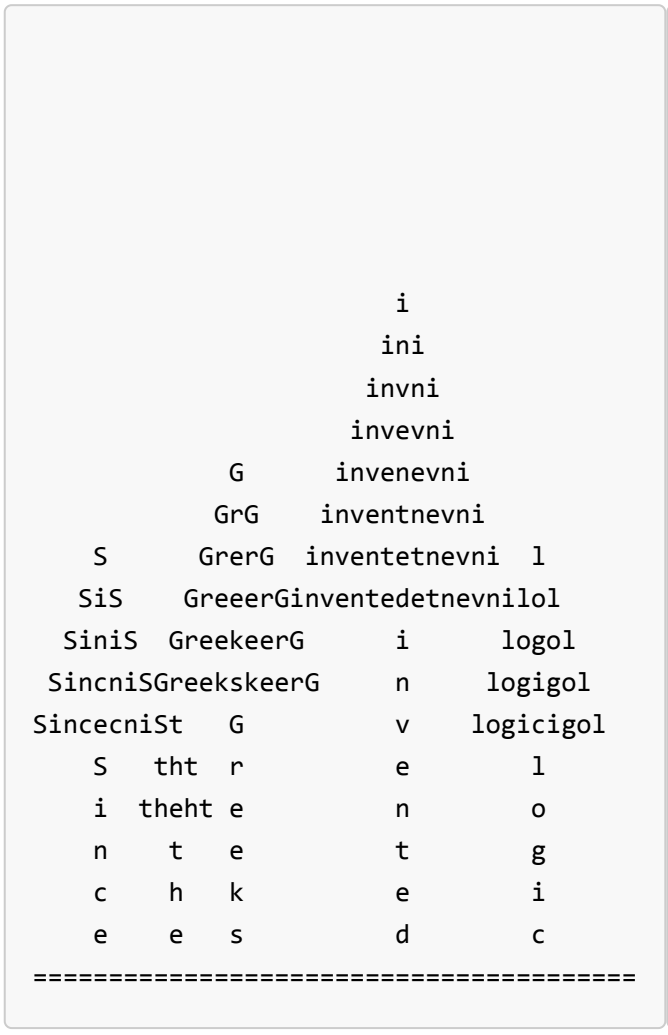
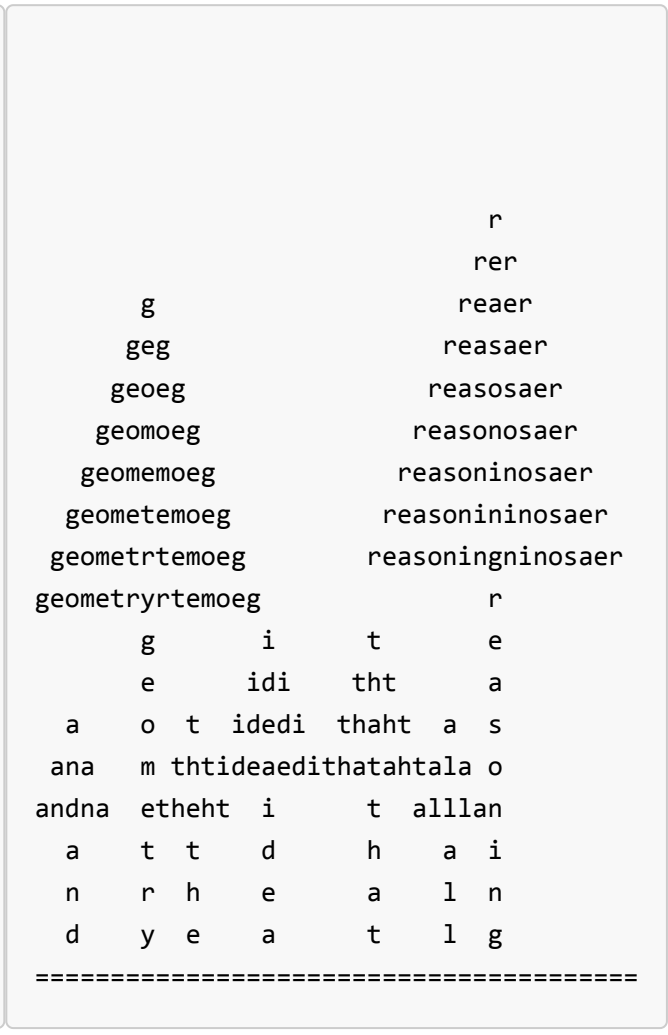
ECOO '12 R3 P1 - The Word Garden

Time limit: 2.0s **Memory limit:** 64M

In addition to creating problems for the ECOO competition, I have an unusual landscaping business on the side. I create custom-made "Word Gardens". To make a Word Garden, I take one of my customers' favourite quotations, turn each word in the quotation into a tree, and then plant the trees in rows, packing them as tightly together as I can.

Here's an example, using a paraphrased quote from Hubert Dreyfus' classic book, What Computers Can't Do. The original quote was, "Since the Greeks invented logic and geometry the idea that all reasoning might be reduced to some kind of calculation has fascinated most of the West's rigorous thinkers".





```
             r
            rer
           reder
          reduder
    m    reducuder
   mim  reducecuder
  migimreducedecuders      k
 mighgim     r     sos    kik
mighthgim    e    somos  kinik
    m        d   somemoskindnik
    i b      u t    s      k o
    gbeb     ctot   o      iofo
    h b      e t    m      n o
    t e      d o    e      d f
========================================
```

```
          c
         cac
        calac                f
       calclac              faf
      calcuclac            fasaf
     calculuclac          fascsaf
    calculaluclac        fascicsaf
   calculataluclac      fascinicsaf
  calculatitaluclac    fascinanicsaf
 calculatioitaluclac  fascinatanicsaf
calculationoitaluclacfascinatetanicsaf
          c         fascinatedetanicsaf
          a                  f
          l                  a
          c                  s   m
          u                  c  mom
          l  h               i mosom
          a hah              nmostsom
          thasah             a   m o
          i  h               t   oofo
          o  a               e   s o
          n  s               d   t f
========================================
```

```
                r             t
               rir           tht
              rigir         thiht
             rigogir       thiniht
     W      rigorogir      thinkniht
    WeW    rigororogir    thinkekniht
   WeseW  rigorouorogir  thinkerekniht
  WestseWrigorousuorogirthinkersrekniht
 West'tseW      r             t
West's'tseW     i             h
  t  W          g             i
 tht e          o             n
thehts          r             k
  t  t          o             e
  h  '          u             r
  e  s          s             s
=======================================
```

Notice that each word tree has a "trunk" consisting of the original word repeated twice vertically, and then "leaves" added to the top half of the trunk so that each level of leaves corresponds to an increasing portion of the word, repeated forwards and backwards and centered on the trunk. The tree for the word `Since` is shown at right.

```
    S
   SiS
  SiniS
 SincniS
SincecniS
    S
    i
    n
    c
    e
=========
```

The word trees are always planted in rows with an exact width of 40 characters. I plant the trees from left to right, placing each one as far to the left as I can without overlapping any previously planted tree. The ground consists of 40 `=` characters, and the maximum height of any tree is 23 characters (not including the ground).

The input will contain 5 lines of text. Each line of text will contain a list of words with each pair of words separated by a single space character. Each word will consist of a sequence of alphanumeric characters (and possibly also punctuation characters in some cases).

Each line of text should be turned into a line of trees, as described above. The ground should always have exactly 40 `=` characters. Each line of trees will always fit into a space of 24 rows by 40 columns.

Sample Input

```
Since the Greeks invented logic
and geometry the idea that all reasoning
might be reduced to some kind of
calculation has fascinated most of
the West's rigorous thinkers
```

Sample Output

See above. Note that each new row of trees should appear in the output window *below* the row before, not beside it as shown here. The rows are only shown side by side to save space.