

# Problem B

## Genealogical Research


**Problem ID:** genealogical

**CPU Time limit:** 1 second

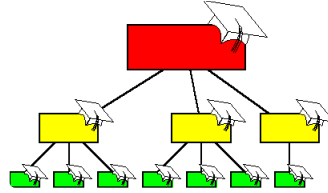
**Memory limit:** 1024 MB

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**Source:** Waterloo Programm  
Contest 2003-09-20

**License:** 

These days, everyone seems to be exploring their ancestry. This effort is supported by family history software, now marketed by a number of vendors. Unfortunately this software is expensive and runs only on the McDoze X operating system. You are to write an open-source equivalent.



### Input

Your program accepts a series of commands, one per line. The commands are described by the following syntax:

```
command ::= birth
          ::= death
          ::= ancestors
          ::= descendants
          ::= QUIT

birth ::= BIRTH child : date : mother : father

death ::= DEATH person : date

ancestors ::= ANCESTORS person

descendants ::= DESCENDANTS person

child ::= name

mother ::= name

father ::= name

person ::= name

date ::= name

name ::= <<any sequence of characters not beginning or ending
        with a space or containing a colon>>
```

Spaces in the input are ignored except where they appear within *name*. The BIRTH and DEATH commands record the birth and death of an individual. You may assume that each individual has a unique name. The ANCESTORS and DESCENDANTS commands are queries: they print a family tree or a reverse family tree for the named person, using the BIRTH and DEATH information entered by previous commands. The QUIT command indicates the end of input.

You may assume that no input line exceeds 100 characters, and that there are not more than 250 lines of input. You may assume that DEATH, ANCESTORS, and DESCENDANTS commands refer to a name for which a BIRTH command has previously been given. QUIT appears only as the last line of input.

### Output

The BIRTH, DEATH, and QUIT commands have no output. For each ANCESTORS (DESCENDANTS) command, print the following information

1. Print a line containing “ANCESTORS of” (“DESCENDANTS of”) followed by the person’s name
2. Indented 2 spaces from the previous line, print the person’s first parent (child) in alphabetical order, followed by the parent’s (child’s) birth date, followed by a space, followed by a hyphen, and, if the parent (child) has died, another space and the date of death. If there is no birth record for the parent (child), print the name alone.
3. Print the ancestry (descendant) information for the parent (child), indented another 2 spaces, using these same steps (i.e. steps 2-4).
4. Repeat steps 2-4 for the remaining parent (children). Indentation should be the same as for the previous parent (child).

Leave an empty line between the output sequences for successive commands.

Sample Input 1

BIRTH John Doe : January 7, 1599 : Jane Doe : Adam Doe  
BIRTH Mary Worth : May 18, 1666 : Jane Doe : Adam Doe  
BIRTH Casper Ghost : Jan 2, 1959 : Mary Worth : John Doe  
DEATH Mary Worth : Jan 3, 1959  
ANCESTORS Casper Ghost  
DESCENDANTS John Doe  
QUIT

Sample Output 1

ANCESTORS of Casper Ghost  
John Doe January 7, 1599 -  
Adam Doe  
Jane Doe  
Mary Worth May 18, 1666 - Jan 3, 1959  
Adam Doe  
Jane Doe  
  
DESCENDANTS of John Doe  
Casper Ghost Jan 2, 1959 -