

## Problem C: Hardwood Species

Hardwoods are the botanical group of trees that have broad leaves, produce a fruit or nut, and generally go dormant in the winter.

America's temperate climates produce forests with hundreds of hardwood species -- trees that share certain biological characteristics. Although oak, maple and cherry all are types of hardwood trees, for example, they are different species. Together, all the hardwood species represent 40 percent of the trees in the United States.

On the other hand, softwoods, or conifers, from the Latin word meaning "cone-bearing," have needles. Widely available US softwoods include cedar, fir, hemlock, pine, redwood, spruce and cypress. In a home, the softwoods are used primarily as structural lumber such as 2x4s and 2x6s, with some limited decorative applications.

Using satellite imaging technology, the Department of Natural Resources has compiled an inventory of every tree standing on a particular day. You are to compute the total fraction of the tree population represented by each species.

Input to your program consists of a list of the species of every tree observed by the satellite; one tree per line. No species name exceeds 30 characters. There are no more than 10,000 species and no more than 1,000,000 trees.

Print the name of each species represented in the population, in alphabetical order, followed by the percentage of the population it represents, to 4 decimal places.

### Sample Input

```
Red Alder
Ash
Aspen
Basswood
Ash
Beech
Yellow Birch
Ash
Cherry
Cottonwood
Ash
Cypress
Red Elm
Gum
Hackberry
White Oak
Hickory
Pecan
Hard Maple
```

White Oak  
Soft Maple  
Red Oak  
Red Oak  
White Oak  
Poplar  
Sassafras  
Sycamore  
Black Walnut  
Willow

## **Output for Sample Input**

Ash 13.7931  
Aspen 3.4483  
Basswood 3.4483  
Beech 3.4483  
Black Walnut 3.4483  
Cherry 3.4483  
Cottonwood 3.4483  
Cypress 3.4483  
Gum 3.4483  
Hackberry 3.4483  
Hard Maple 3.4483  
Hickory 3.4483  
Pecan 3.4483  
Poplar 3.4483  
Red Alder 3.4483  
Red Elm 3.4483  
Red Oak 6.8966  
Sassafras 3.4483  
Soft Maple 3.4483  
Sycamore 3.4483  
White Oak 10.3448  
Willow 3.4483  
Yellow Birch 3.4483