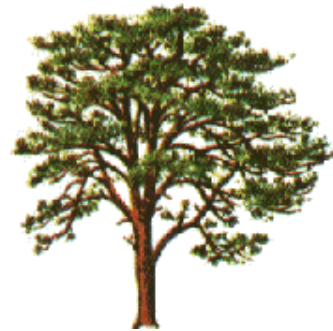


10226 Hardwood Species

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 2×4s and 2×6s, 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

The first line is the number of test cases, followed by a blank line.

Each test case of 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.

There is a blank line between each consecutive test cases.

Output

For each test case 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.

Print a blank line between 2 consecutive test cases.

Sample Input

```
1

Red Alder
Ash
Aspen
Basswood
Ash
Beech
Yellow Birch
Ash
Cherry
Cottonwood
Ash
Cypress
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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

Sample Output

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