

Fade to Black

Computer Science Society
Programming Contest
Fall 2010

A *hex triplet* is a six-digit, three-byte hexadecimal number used in HTML, CSS, SVG, and other computing applications, to represent colors. The bytes represent the red, green and blue components of a color. One byte represents a number in the range 00 to FF in hexadecimal notation, or 0 to 255 in decimal notation. This represents the least (0) to the most (255) intensity of each of the color components. For example, black is represented by 000000 (no red, green or blue), white is represented by FFFFFFFF (red, green and blue at maximum intensity), and yellow is represented by FFFF00 (red and green at maximum intensity, no blue).

One way to measure the brightness of a color is to view it as a point in three-dimensional space with red, green, and blue axes, and measure its Euclidean distance from the origin (0, 0, 0) (i.e. black). By this measure, white is the brightest color. In this problem, you are given a list of hex triplets representing colors, and will sort them from brightest to darkest, i.e. fading to black.

Input Format

Each input line contains a hex triplet representing a color.

Output Format

Output the original lines of input, sorted so the colors appear by descending brightness. If two or more colors have equal brightness, they should appear in ascending alphabetical order.

Input Sample

```
003300
3AB2D7
56428D
FFFFFF
42568D
112200
```

Output Sample

```
FFFFFF
3AB2D7
42568D
56428D
003300
112200
```