SIENAcollege
Computer Science

34th Annual High School Programming Contest

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Gold Problem #5: Clothing Restrictions

Background Information: You are about to go to school for the day. However, you have many fashion options from which to choose. You must wear a HAT, a SHIRT, PANTS, and SOCKS. Each item has four separate colors from which to choose: GREEN, RED, BLUE, and YELLOW. How many different choices do you have? Without restrictions, you have 4x4x4x4 = 256 options. However, how many do you have if you have restrictions?

Your program will be given *n* distinct restrictions to your wardrobe choices. A restriction is a colored clothing item not being worn with another clothing item. For example, a possible restriction is

GREEN HAT YELLOW SOCKS

This means that you cannot wear a GREEN HAT with YELLOW SOCKS, thus slightly limiting your choices. All restrictions will involve the listed colors and apparel.

Programming Problem:

Input: an integer *n*, followed by *n* clothing restrictions of the previous form, each on a separate line
Output: The number of possible combinations that remain

Example 1:

Input:
```
0
```
Output:
```
256
```

Example 2:

Input:
```
1
BLUE HAT YELLOW SOCKS
```
Output:
```
240
```

Example 3:

Input:
```
2
BLUE HAT YELLOW SOCKS
GREEN PANTS BLUE SHIRT
```
Output:
```
225
```

Hints on reading this input:

As you can see, you will need to read four words that are on the same line of input into variables. In case this is not something you have done before, we give examples on the next page.

In Python, the following will read a line such as `BLUE HAT YELLOW SOCKS` and place those 4 words into the variables `color1`, `item1`, `color2`, and `item2`, respectively:

```
(color1, item1, color2, item2) = input().split()
```

In Java, if you have a Scanner named `s`, the 4 words could be placed into variables `color1`, `item1`, `color2`, and `item2` with these lines:

```
String color1 = s.next();
String item1 = s.next();
String color2 = s.next();
String item2 = s.next();
```