# C++ Fundamentals – Retake Exam – 17 December 2023

Please submit your source code to all below-described problem in [Judge](https://judge.softuni.org/Contests/4436/CPlusPlus-Fundamentals-Retake-Exam-17-December-2023).

## Counting Cattle

You must count cattle! Your program will receive encoded "cattle input", and you must count and sort the various animals.

The "cattle input" consists of two characters:

* The first char is the "cattle code": **a letter, which describes the cattle type: C for cow; S for sheep – these are the specific cattle we care about, and anything else (also as a large latin letter) for "anything else"**
* The second char is the "cattle size", relative for this cattle type: **a single digit from 0..9**
* For example S9 is the biggest sheet, C9 is the biggest cow, but that does not mean these **two have the same size**
* Also, for example A9 means **"some kind of a cattle with code A and size 9"**

You need to read all cattle input and sort out all the input in three corresponding lists, one for each cattle type:

* List with all the cows
* List with all the sheep
* List of everything else, which is not a cow of a goat

In addition, you need to calculate the average size in each list: **sum the total sizes of these lists** (sum of each corresponding cattle type size, and also all the other unknowns), and then divide by the list count.

**Hint:**

1. You can determine **the expected output** format by **looking at the "Output" columns** in the examples below.
2. There will be **at least one animal** in the input, but you must handle the cases, where some of the lists will be zero.

Look at the examples below for details.

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Explanation** |
| S3 C4 G6 B1 K3 Z9 S5 C7 S8 | 2 cows: C4 C7 with avg. size 5.50  3 sheep: S3 S5 S8 with avg. size 5.33  4 others: G6 B1 K3 Z9 with avg. size 4.75 | While reading the input, we detect respectively the cows, sheep and others, and split them across the three lists.  The total size of all cows is 4+7 = 11, divided by two it makes 5.5 average size for the cows;  The total size of all sheep is 3+5+8 = 16, divided by total of 3 sheep makes average of 5.33;  The total size of all others is 6+1+3+9 = 19, divided by 4 other cattle makes average of 4.75. |

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Explanation** |
| C5 C4 C3 | 3 cows: C5 C4 C3 with avg. size 4.00  no sheep!  no others! | The total size of all cows is 5+4+3 = 12, divided by 3 it makes 4.00 average size for the cows;  No sheep or other animals, so the other two lists are empty. |

|  |  |
| --- | --- |
| **Input** | **Output** |
| C5 S3 G3 C4 C3 D3 C0 G6 C8 S9 B0 | 5 cows: C5 C4 C3 C0 C8 with avg. size 4.00  2 sheep: S3 S9 with avg. size 6.00  4 others: G3 D3 G6 B0 with avg. size 3.00 |