

01.Vehicles Statistics

You were just chosen to implement a log system for cars, which pass through two cameras: one in each direction. Each camera recognizes the **car's number plate** (alpha-numeric and numbers, no spaces), **the car's color**, and **the car's size** (S, M, L, X, XL, XXL).

- **S** is reserved for two-wheel vehicles
- **M** and **L** are for normal cars up to 3.5 tons of weight
- **XL** is truck
- **XXL** - the biggest trucks, which can pull up to one container

The data comes in the following format: "**NNNNNNNN {color} {size}**", where "**NNNNNNNN**" is the **number**, the rest are pretty self-explanatory. The input finishes with "**end**".

The program **reads the input**, **sorts out each of the vehicles** in its corresponding class-containers, and then **prints out the statistics**, such as:

- **All cars per size**
- **All cars per color**

Your job is to finish the implementation of the system:

- Study the input and the expected outputs.
- Study the code.
- Finish the class hierarchy.
- Finish the **printInfo** method.

Now, there's one catch: your colleague, who did the initial architecture, **forgot to make the printInfo method virtual**. Since you **cannot touch the .h file**, you **need to find a way to handle** this situation and achieve the printout of the proper classes.

Input

- The data comes in the following format: "**NNNNNNNN {color} {size}**", until a "**end**" command is received.

Output

- On the first line, we have a message: "**Vehicles by size:**"
- On the next lines we get the sorting of the cars **first by size**.
- When sorting by size is complete, we should print the following message: "**Vehicles by color:**"
- On the next lines we get the sorting of the cars **by color**.

Examples

Input	Output
CA6626TM grey L A6181AA white M PB3295KX red S CB2412AE red XXL EA3945AA white M CA8653BA white XL end	Vehicles by size: L: - CA6626TM, grey bigger car. M: - A6181AA, white medium car. - EA3945AA, white medium car. S: - PB3295KX, red with 2 wheels. XL: - CA8653BA, white truck. XXL: - CB2412AE, red big truck. Vehicles by color: grey: - CA6626TM, grey bigger car. red: - PB3295KX, red with 2 wheels. - CB2412AE, red big truck. white: - A6181AA, white medium car. - EA3945AA, white medium car. - CA8653BA, white truck.
CA6626TM grey L CA6626TM white L CA6626TM white XL CA6626TM red XXL end	Vehicles by size: L: - CA6626TM, grey bigger car. - CA6626TM, white bigger car. XL: - CA6626TM, white truck.

	<p>XXL:</p> <ul style="list-style-type: none">- CA6626TM, red big truck. <p>Vehicles by color:</p> <p>grey:</p> <ul style="list-style-type: none">- CA6626TM, grey bigger car. <p>red:</p> <ul style="list-style-type: none">- CA6626TM, red big truck. <p>white:</p> <ul style="list-style-type: none">- CA6626TM, white bigger car.- CA6626TM, white truck.
--	--