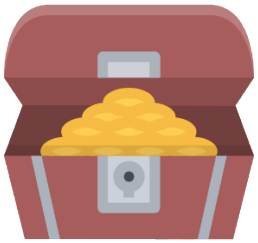
Treasure Hunt



The pirates need to carry a treasure chest safely back to the ship. Looting along the way.

Create a program that **manages** the **state** of the **treasure chest** along the way. On the **first line** you will receive the **initial loot** of the treasure chest, which is a **string** of **items** separated by a **'|'.**

"{loot$_1$}|{loot$_2$}|{loot$_3$}… {loot$_n$}"

The following lines represent commands **until "Yohoho!"** which ends the treasure hunt:

- **Loot {item$_1$} {item$_2$}…{item$_n$} –** pick up treasure loot along the way. Insert the items at the **beginning** of the chest. If an item is **already** contained **don't** insert it.
- **Drop {index} – remove** the loot at the given **position** and **add** it at the **end** of the treasure chest. If the index is **invalid** skip the command.
- **Steal {count} –** someone steals the **last count** loot items. If there are **less items** than the given count **remove as much** as there are. Print the stolen items separated by **', '**:

  {item$_1$}, {item$_2$}, {item$_3$} … {item$_{count}$}

In the end output the **average treasure gain** which is the **sum** of all treasure items **length** divided by the **count** of all items inside the chest **formatted** to the **second decimal** point:

"Average treasure gain: {averageGain} pirate credits."

If the chest is **empty** print the following message:

"Failed treasure hunt."

Input

- On the **1st line** you are going to receive the **initial treasure chest** (**loot** separated by **'|'**)
- On the next **lines**, until **"Yohoho!"**, you will be receiving commands.

Output

- Print the output in the **format described above**.

Constraints

- The **loot items** will be strings containing any ASCII code.
- The **indexes** will be integers in the range [**-200**…**200**]
- The **count** will be an integer in the range [**1**….**100**]

Examples

Input	Output
Gold|Silver|Bronze|Medallion|Cup Loot Wood Gold Coins Loot Silver Pistol Drop 3 Steal 3 Yohoho!	Medallion, Cup, Gold Average treasure gain: 5.40 pirate credits.

Comments

The first command **"Loot Wood Gold Coins"** adds **Wood** and **Coins** to the chest but **omits** Gold since it is already contained. The chest now has the following items:

Coins Wood Gold Silver Bronze Medallion Cup

The **second** command adds **only Pistol** to the chest

The **third** command **"Drop 3"** removes the **Gold** from the chest, but immediately adds it at the **end**:

Pistol Coins Wood Silver Bronze Medallion Cup Gold

The **fourth** command **"Steal 3"** removes the **last 3** items **Medallion**, **Cup**, **Gold** from the chest and prints them.

In the end calculate the average treasure gain which is the sum of all items length Pistol(**6**) + Coins(**5**) + Wood(**4**) + Silver(**6**) + Bronze(**6**) = **27** and **divide** it by the count 27 / 5 = **5.4** and format it to the **second decimal** point.

Input	Output
Diamonds|Silver|Shotgun|Gold Loot Silver Medals Coal Drop -1 Drop 1 Steal 6 Yohoho!	Coal, Diamonds, Silver, Shotgun, Gold, Medals Failed treasure hunt.