Exercise: Regular Expressions

Problems for exercise and homework for the Python Fundamentals Course @SoftUni.
Submit your solutions in the SoftUni judge system at https://judge.softuni.org/Contests/1743.

1. Capture the Numbers

Write a program that receives **strings on different lines** and **extracts only the numbers**. Print all extracted numbers **on a single line**, separated by a **single space**.

Examples

Input	Output
The300 What is that? I think it's the 3rd movie Let's watch it at 22:45	300 3 22 45
123a456 789b987 654c321 0	123 456 789 987 654 321 0
Let's go11!!!11! Okey!1!	11 11 1

2. Find Variable Names in Sentences

Write a program that finds all **variable names** in each string. A variable name starts with an **underscore ("_")** and contains **only capital and non-capital letters and digits**. Extract only their names **without the underscore.** Try to do this **only with regular expressions**.

The **output** consists of all variable names **extracted** and **printed on a single line**, **separated** by a **comma**.

Input	Output
The _id and _age variables are both integers.	id,age
Calculate the _area of the _perfectRectangle object.	area,perfectRectangle
__invalidVariable _evenMoreInvalidVariable_ _validVariable	validVariable

3. Find Occurrences of Word in Sentence

Write a program that finds **how many times** a **word** is **used** in a string**.** The output is a **single number** indicating the **number** of times the **string contains the word**. Note that **letter case does not matter** – it is case-insensitive.

Examples

Input	Output
The waterfall was so high, that the child couldn't see its peak. the	2
How do you plan on achieving that? How? How can you even think of that? how	3
There was one. Therefore I bought it. I wouldn't buy it otherwise.	1

Follow us:

there	

4. Extract Emails

Write a program that receives a **single string** and **extracts all email addresses from it**. **Print** the extracted email addresses **on separate lines**. Emails are in the format **"{user}@{host}"**, where:

- **{user}** could consist only of **letters** and **digits**; the symbols **"."**, **"-"** and **"_"** can appear **between** them.
  - o Examples of valid users: **"stephan"**, **"mike03"**, **"s.johnson"**, **"st_steward"**, **"softuni-bulgaria"**, **"12345"**
  - o Examples of invalid users: **''--123"**, **"....."**, **"nakov_-"**, **"_steve"**, **".info**"
- **{host}** is a sequence of **at least two words**, each couple of words must be separated by a **single dot "."**. Each word consists of **only letters** and can have **hyphens "-" between** the letters.
  - o Examples of valid hosts: **"softuni.bg"**, **"software-university.com"**, **"intoprogramming.info"**, **"mail.softuni.org"**
  - o Examples of invalid hosts: **"helloworld"**, **".unknown.soft."** , **"invalid-host-"**, **"invalid-"**

Examples of valid emails: info@softuni-bulgaria.org, kiki@hotmail.co.uk, no-reply@github.com, s.peterson@mail.uu.net, info-bg@software-university.software.academy

Examples of invalid emails: --123@gmail.com, …@mail.bg, .info@info.info, _steve@yahoo.cn, mike@helloworld, mike@.unknown.soft., s.johnson@invalid-

Examples

Input	Output
Please contact us at: support@github.com.	support@github.com
Just send email to s.miller@mit.edu and j.hopking@york.ac.uk for more information.	s.miller@mit.edu j.hopking@york.ac.uk
Many users @ SoftUni confuse email addresses. We @ Softuni.BG provide high-quality training @ home or @ class. -- steve.parker@softuni.de.	steve.parker@softuni.de

5. Furniture

Write a program that calculates **the total cost** of bought furniture. You will be given **information about each purchase on separate lines** until you receive the command **"Purchase"**. **Valid information** should be in the format: **">>{furniture_name}<<{price}!{quantity}"**. The **price** could be a **floating-point or integer number**. You should store the names of the furniture and the total price.

In the end, print the **name of each bought furniture** and **the total cost**, formatted to the **second decimal point**:

"Bought furniture:

{1st name}

{2nd name}

…

{N name}

Total money spend: {total_cost}"

Examples

Input	Output	Comment
>>Sofa<<312.23!3 >>TV<<300!5 >Invalid<<!5 Purchase	Bought furniture: Sofa TV Total money spend: 2436.69	Only the Sofa and the TV are valid, for each of them we multiply the price by the quantity and print the result

6. *Extract the Links

Write a program that **extracts links** from a **given text**. The text will come in the form of strings, each representing a sentence. You need to extract **only the valid links** from it. Example:

"www.internet.com"

Sub-Domain   Domain name   Domain extension

The **Sub-Domain** must always be "**www**". The **Domain name** can consist of English alphabet letters (**uppercase** and **lowercase**), digits, and dashes (**"-"**). The **Domain extension** consists of one or more **domain blocks**, a **domain block** consists of a **dot** followed by **one or more lowercase** English alphabet **letters**, a **Domain extension** must have at least **one domain block** in order to be **valid**. The Sub-Domain and Domain name must be separated by a single **dot**. Any link that **does NOT follow** the specified above rules should be treated as **invalid**.

Example incorrect links:

- "**ww**.justASite.bg"
- "**lel**.awesome.com"
- "www.weird_site.hit.bg"
- "www.no-symb**#^**ols-allow**%**ed.com"
- "www.mark**.12**"
- "www.web-site**.**"
- "www.example-site**._*^#**"

Example of correct links:

- "Some text**www.softuni.bg**"
- "Just a link in a **www.sea-of-text.bg**-swimming around"
- "Instruments **www.Instruments.rom.com.trombone**2000 Instrument here"
- "All your ice cream flavors-**www.scream.for.ice.cream**(We also have squirrels)"

The **output** is all valid links you have found, printed – each on a new line.

Examples

Input	Output
Join WebStars now for free, at www.web-stars.com You can also support our partners: Internet - www.internet.com WebSpiders - www.webspiders101.com Sentinel - www.sentinel.-ko	www.web-stars.com www.internet.com www.webspiders101.com
Need information about cheap hotels in London?	www.london-hotels.co.uk

You can check us at www.london-hotels.co.uk ! We provide the best services in London. Here are some reviews in some blogs: London Hotels are awesome! - www.indigo.bloggers.com I am very satisfied with their services - ww.ivan.bg Best Hotel Services! - www.rebel21.sedecrem.moc	www.indigo.bloggers.com www.rebel21.sedecrem.moc

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