

# 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

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.
  - Examples of valid users: "stephan", "mike03", "s.johnson", "st\_steward", "softuni-bulgaria", "12345"
  - 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.
  - Examples of valid hosts: "softuni.bg", "software-university.com", "intoprogramming.info", "mail.softuni.org"
  - 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:

{1<sup>st</sup> name}

{2<sup>nd</sup> name}

...

{N name}

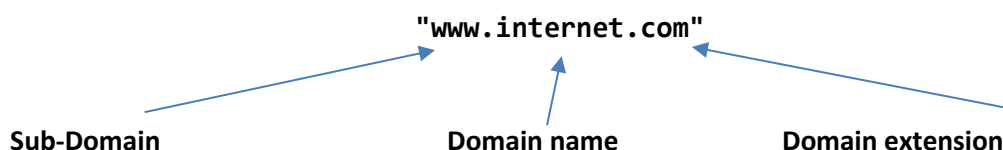
Total money spend: {total\_cost}"

## 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:



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 textwww.softuni.bg"
- "Just a link in a www.sea-of-text.bg-swimming around"
- "Instruments www.Instruments.rom.com.trombone2000 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 <a href="http://www.web-stars.com">www.web-stars.com</a> You can also support our partners: Internet - <a href="http://www.internet.com">www.internet.com</a> WebSpiders - <a href="http://www.webspiders101.com">www.webspiders101.com</a> 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

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