# Exercise: Regular Expressions

Problems for exercise and homework for the ["C# Fundamentals" course @ SoftUni](https://softuni.bg/trainings/3606/programming-fundamentals-with-csharp-january-2022)  
You can check your solutions in [Judge](https://judge.softuni.org/Contests/1668/Regular-Expressions-Exercise)

## Furniture

Create a program to calculate the total cost of different types of furniture. You will be given some lines of input until you receive the line **"Purchase"**. For the line to be valid it should be in the following format:

**">>{furniture name}<<{price}!{quantity}"**

The price can be a floating-point number or a whole number. Store the names of the furniture and the total price. At the end print each bought furniture on a separate line in the format:

**"Bought furniture:**

**{1st name}**

**{2nd name}**

**…"**

And on the last line print, the following: **"Total money spend: {spend money}"** formatted to the second decimal point.

### 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 |
| >>Chair<<412.23!3  >>Sofa<<500!5  >>Recliner<<<<!5  >>Bench<<230!10  >>>>>>Rocking chair<<!5  >>Bed<<700!5  Purchase | Bought furniture:  Chair  Sofa  Bench  Bed  Total money spend: 9536.69 |  |

## Race

Write a program that processes information about a race. On the **first line,** you will be given a **list of participants** **separated by ", "**. On the next few lines until you receive a line **"end of the race"** you will be given some info which will be some **alphanumeric characters**. In between them, you could have some **extra characters which you should ignore**. For example: **"G!32e%o7r#32g$235@!2e"**. The **letters are the name** of the person and the **sum of the digits is the distance** he ran. So here we have **George** who ran **29 km**. Store the information about the person only **if the list of racers contains the name of the person**. If you receive the **same person more than once just add the distance to his old distance**. At the end **print the top 3 racers** in the format:

**"1st place: {first racer}**

**2nd place: {second racer}**

**3rd place: {third racer}"**

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comment** |
| George, Peter, Bill, Tom  G4e@55or%6g6!68e!!@  R1@!3a$y4456@  B5@i@#123ll  G@e54o$r6ge#  7P%et^#e5346r  T$o553m&6  end of race | 1st place: George  2nd place: Peter  3rd place: Tom | On the 3rd input line, we have Ray. He is not on the list, so we do not count his result. The other ones are valid. George has a total of 55 km, Peter has 25 and Tom has 19. We do not print Bill because he is in 4th place. |
| Ivan, Peter, James, Kyle  I4v@43an%66?77!!@  G1@!3u$s445s6@  B3@i@#245ll  I&v54a%66n@  7P%et^#e5346r  J$a553m&e6s  K2y3=l/^e23  end of race | 1st place: Ivan  2nd place: Peter  3rd place: James |  |

## SoftUni Bar Income

Let's take a break and visit the game bar at SoftUni. It is about time for the people behind the bar to go home and you are the person who has to draw the line and calculate the money from the products that were sold throughout the day. Until you receive a line with the text "end of shift" you will be given lines of input. But before processing that line you have to do some validations first.

**Each valid order** should have a **customer, product, count, and a price:**

* A valid customer's name should be **surrounded by '%'** and must **start with a capital letter**, followed by **lower-case letters**
* A valid product **contains any word character** and must be **surrounded by '<' and '>'**
* A valid count is an **integer**, **surrounded by '|'**
* A valid price is any **real number followed by '$'**

The parts of a valid order should appear in the order given: **customer, product, count, and price**.

Between each part there can be other symbols, except (**'|', '$', '%' and '.'**)

For each valid line print on the console: "{customerName}: {product} - {totalPrice}"

When you receive "end of shift" print the total amount of money for the day **rounded to 2 decimal places** in the following format:"Total income: {income}"**.**

### Input / Constraints

* Strings that you have to process until you receive text "end of shift".

### Output

* Print all of the valid lines in the format "{customerName}: {product} - {totalPrice}"
* After receiving "end of shift" print the total amount of money for the day rounded to 2 decimal places in the following format: "Total income: {income}"
* Allowed working **time** / **memory**: **100ms** / **16MB**.

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comment** |
| %George%<Croissant>|2|10.3$  %Peter%<Gum>|1|1.3$  %Maria%<Cola>|1|2.4$  end of shift | George: Croissant - 20.60  Peter: Gum - 1.30  Maria: Cola - 2.40  Total income: 24.30 | Each line is valid, so we print each order, calculating the total price of the product bought.  In the end, we print the total income for the day |
| %InvalidName%<Croissant>|2|10.3$  %Peter%<Gum>1.3$  %Maria%<Cola>|1|2.4  %Valid%<Valid>valid|10|valid20$  end of shift | Valid: Valid - 200.00  Total income: 200.00 | On the first line, the customer name isn`t valid, so we skip that line. The second line is missing product count.  The third line doesn`t have a valid price.  And only the fourth line is valid |

## \*Extract Emails

Write a program to **extract all email addresses from a given text**. The text comes at the only input line. Print the emails on the console, each at a separate line. Emails are considered to be in format <user>@<host>, where:

* **<user>** is a sequence of **letters** and **digits**, where '.', '-' 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, separated by dots '**.**'. Each word is a sequence of letters and can have hyphens '**-**' between the letters.
  + Examples of 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

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| --- | --- |
| **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 |