# Lab: Objects and Classes

Tasks for exercise in class and for homework to the course ["Programming Advanced for QA" @ SoftUni](https://softuni.bg/trainings/4257/programming-advanced-for-qa-november-2023)

Test your tasks in the Judge system: <https://judge.softuni.org/Contests/4482>

## Songs

Define a class called **Song** that will hold the following information about some songs:

* **Type List**
* **Name**
* **Time**

### Input / Constraints

* On the first line, you will receive the **number of songs - N**.
* On the next **N** lines, you will be receiving data in the following format: **"{typeList}\_{name}\_{time}".**
* On the last line, you will receive **Type List** or "**all**".

### Output

* If you receive **Type List** as an input on the last line, print out **only the names of the songs**, which are from that **Type List**.
* If you receive the "**all**" command, print out the names of **all the songs**.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  favourite\_DownTown\_3:14  favourite\_Kiss\_4:16  favourite\_Smooth Criminal\_4:01  favourite | DownTown  Kiss  Smooth Criminal |
| 4  favourite\_DownTown\_3:14  listenLater\_Andalouse\_3:24  favourite\_In To The Night\_3:58  favourite\_Live It Up\_3:48  listenLater | Andalouse |
| 2  like\_Replay\_3:15  ban\_Photoshop\_3:48  all | Replay  Photoshop |

## Students

Define a class called **Student**, which will hold the following information about some students:

* **first name - string**
* **last name - string**
* **age - int**
* **home town - string**

**Input**

Read information about some students, until you receive the "**end**" command.

After that, you will receive a **city name**.

**Output**

Print the students who are from the given city in the following format:

"**{firstName} {lastName} is {age} years old.**"

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| John Smith 15 Sofia  Peter Ivanov 14 Plovdiv  Linda Bridge 16 Sofia  Simon Stone 12 Varna  end  Sofia | John Smith is 15 years old.  Linda Bridge is 16 years old. |
| Anthony Taylor 15 Chicago  David Anderson 16 Washington  Jack Lewis 14 Chicago  David Lee 14 Chicago  end  Chicago | Anthony Taylor is 15 years old.  Jack Lewis is 14 years old.  David Lee is 14 years old. |

## Store Boxes

Define a class **Item,** which contains these properties: **Name** and **Price.**

Define a class **Box,** which contains these properties: **Serial Number, Item, Item Quantity** and **Price for a Box.**

Until you receive **"end",** you will be receiving data in the following format: "**{Serial Number} {Item Name} {Item Quantity} {itemPrice}**"

The **Price of one box** has to be calculated: **itemQuantity \* itemPrice.**

Print all the boxes ordered descending by price for a box, in the following format:

**{boxSerialNumber}**

**-- {boxItemName} – ${boxItemPrice}: {boxItemQuantity}**

**-- ${boxPrice}**

The price should be **formatted to the 2nd digit after the decimal separator**.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 19861519 Dove 15 2.50  86757035 Butter 7 3.20  39393891 Orbit 16 1.60  37741865 Samsung 10 1000  end | 37741865  -- Samsung - $1000.00: 10  -- $10000.00  19861519  -- Dove - $2.50: 15  -- $37.50  39393891  -- Orbit - $1.60: 16  -- $25.60  86757035  -- Butter - $3.20: 7  -- $22.40 |
| 48760766 Alcatel 8 100  97617240 Intel 2 500  83840873 Milka 20 2.75  35056501 SneakersXL 15 1.50  end | 97617240  -- Intel - $500.00: 2  -- $1000.00  48760766  -- Alcatel - $100.00: 8  -- $800.00  83840873  -- Milka - $2.75: 20  -- $55.00  35056501  -- SneakersXL - $1.50: 15  -- $22.50 |

## \*Vehicle Catalogue

Your task is to **create a Vehicle catalog,** which contains only **Trucks** **and** **Cars**.

Define a class **Truck** with the following properties: **Brand, Model, and Weight**.

Define a class **Car** with the following properties: **Brand, Model, and Horse Power**.

Define a class **Catalog** with the following properties: **Collections of** **Trucks and Cars**.

You must read the input, until you receive the "**end**" command. It will be in following format: "**{type}/{brand}/{model}/{horse power / weight}**"

In the end, you have **to print all of the vehicles ordered alphabetical by brand,** in the following format:

"**Cars:**

**{Brand}: {Model} - {Horse Power}hp**

**Trucks:**

**{Brand}: {Model} - {Weight}kg**"

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| Car/Audi/A3/110  Car/Maserati/Levante/350  Truck/Mercedes/Actros/9019  Car/Porsche/Panamera/375  end | Cars:  Audi: A3 - 110hp  Maserati: Levante - 350hp  Porsche: Panamera - 375hp  Trucks:  Mercedes: Actros - 9019kg |
| Car/Subaru/Impreza/152  Car/Peugeot/307/109  end | Cars:  Peugeot: 307 - 109hp  Subaru: Impreza - 152hp |