# Exercise: Objects and Classes

Problems with exercise and homework for the ["JS Front-End" Course @ SoftUni.](https://softuni.bg/trainings/4240/js-front-end-october-2023)

## Employees

You're tasked to create a list of employees and their personal numbers.

You will receive an array of strings. Each string is an employee **name** and to assign them a personal number you have to find the **length of the name** (whitespace included).

***Try to use an object***.

At the end print all the list employees in the following format:

**"Name: {employeeName} -- Personal Number: {personalNum}"**

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| [  'Silas Butler',  'Adnaan Buckley',  'Juan Peterson',  'Brendan Villarreal'  ] | Name: Silas Butler -- Personal Number: 12  Name: Adnaan Buckley -- Personal Number: 14  Name: Juan Peterson -- Personal Number: 13  Name: Brendan Villarreal -- Personal Number: 18 |
| [  'Samuel Jackson',  'Will Smith',  'Bruce Willis',  'Tom Holland'  ] | Name: Samuel Jackson -- Personal Number: 14  Name: Will Smith -- Personal Number: 10  Name: Bruce Willis -- Personal Number: 12  Name: Tom Holland -- Personal Number: 11 |

## Towns

You’re tasked to create and print **objects** from a text table.

You will receive the input as an **array** of strings, where each string represents a table row, with values on the row separated by pipes **" | "** and spaces.

The table will consist of exactly 3 columns **"Town"**, **"Latitude"** and **"Longitude"**. The **latitude** and **longitude** columns will always contain **valid numbers**. Check the examples to get a better understanding of your task.

The **output** should be **objects**. Latitude and longitude must be parsed to **numbers and formatted to the second decimal point**!

### Examples

|  |
| --- |
| **Input** |
| ['Sofia | 42.696552 | 23.32601',  'Beijing | 39.913818 | 116.363625'] |
| **Output** |
| { town: 'Sofia', latitude: '42.70', longitude: '23.33' }  { town: 'Beijing', latitude: '39.91', longitude: '116.36' } |

|  |
| --- |
| **Input** |
| ['Plovdiv | 136.45 | 812.575'] |
| **Output** |
| { town: 'Plovdiv', latitude: '136.45', longitude: '812.58' } |

## Store Provision

You will receive **two arrays**. The first array represents the current **stock** of the local store. The second array will contain **products** that the store has **ordered** for delivery.

The following information applies to both arrays:

Every **even** index will hold the **name** of the **product** and every **odd** index will hold the **quantity** of that **product**. The second array could contain products that are **already in** the local store. If that happens **increase** the **quantity** for the given product. You should store them into an **object**, and print them in the following format: **(product -> quantity)**

All of the arrays’ values will be **strings.**

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| [  'Chips', '5', 'CocaCola', '9', 'Bananas', '14', 'Pasta', '4', 'Beer', '2'  ],  [  'Flour', '44', 'Oil', '12', 'Pasta', '7', 'Tomatoes', '70', 'Bananas', '30'  ] | Chips -> 5  CocaCola -> 9  Bananas -> 44  Pasta -> 11  Beer -> 2  Flour -> 44  Oil -> 12  Tomatoes -> 70 |
| [  'Salt', '2', 'Fanta', '4', 'Apple', '14', 'Water', '4', 'Juice', '5'  ],  [  'Sugar', '44', 'Oil', '12', 'Apple', '7', 'Tomatoes', '7', 'Bananas', '30'  ] | Salt -> 2  Fanta -> 4  Apple -> 21  Water -> 4  Juice -> 5  Sugar -> 44  Oil -> 12  Tomatoes -> 7  Bananas -> 30 |

## Movies

Write a function that stores information about movies inside an array. The movie's object info must be **name, director,** and **date**. You can receive several types of input:

* **"addMovie {movie name}"** – add the movie
* **"{movie name} directedBy {director}"** – check if the movie **exists** and then add the director
* **"{movie name} onDate {date}"** – check if the movie **exists** and then add the date

At the end print all the movies that have **all the info** (if the movie has **no** director, name, or date, **don’t** print it) in **JSON format.**

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| [  'addMovie Fast and Furious',  'addMovie Godfather',  'Inception directedBy [Christopher Nolan](https://www.imdb.com/name/nm0634240/?ref_=tt_ov_dr)',  'Godfather directedBy [Francis Ford Coppola](https://www.imdb.com/name/nm0000338/?ref_=tt_ov_dr)',  'Godfather onDate 29.07.2018',  'Fast and Furious onDate 30.07.2018',  'Batman onDate 01.08.2018',  'Fast and Furious directedBy [Rob Cohen](https://www.imdb.com/name/nm0003418/?ref_=tt_ov_dr)'  ] | {"name":"Fast and Furious","date":"30.07.2018","director":"Rob Cohen"}  {"name":"Godfather","director":"Francis Ford Coppola","date":"29.07.2018"} |
| [  'addMovie The Avengers',  'addMovie Superman',  'The Avengers directedBy Anthony Russo',  'The Avengers onDate 30.07.2010',  'Captain America onDate 30.07.2010',  'Captain America directedBy Joe Russo'  ] | {"name":"The Avengers","director":"Anthony Russo","date":"30.07.2010"} |

## Inventory

Create a function, which creates a **register for heroes**, with their **names**, **level**, and **items** (if they have such).

The **input** comes as an **array of strings**. Each element holds data for a hero, in the following format:

**"**{heroName} / {heroLevel} / {item1}, {item2}, {item3}...**"**

You must store the data about every hero. The **name** is a **string**, a **level** is a **number** and the items are all **strings.**

The **output** is all of the data for all the heroes you’ve stored **sorted ascending by level**. The data must be in the following format for each hero:

**Hero: {heroName}**

**level => {heroLevel}**

**Items => {item1}, {item2}, {item3}**

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| [  'Isacc / 25 / Apple, GravityGun',  'Derek / 12 / BarrelVest, DestructionSword',  'Hes / 1 / Desolator, Sentinel, Antara'  ] | Hero: Hes  level => 1  items => Desolator, Sentinel, Antara  Hero: Derek  level => 12  items => BarrelVest, DestructionSword  Hero: Isacc  level => 25  items => Apple, GravityGun |
| [  'Batman / 2 / Banana, Gun',  'Superman / 18 / Sword',  'Poppy / 28 / Sentinel, Antara'  ] | Hero: Batman  level => 2  items => Banana, Gun  Hero: Superman  level => 18  items => Sword  Hero: Poppy  level => 28  items => Sentinel, Antara |

## Words Tracker

Write a function that receives an **array of words** and finds **occurrences of given words** in that sentence.

The input will come as an **array of strings**. The **first string** will contain the **words** you will be looking for separated by a **space**. All **strings after that** will be the words in which you will check for a match.

Print for **each word** how many times it **occurs**. The words should be **sorted by count in descending**.

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| [  'this sentence',  'In', 'this', 'sentence', 'you', 'have', 'to', 'count', 'the', 'occurrences', 'of', 'the', 'words', 'this', 'and', 'sentence', 'because', 'this', 'is', 'your', 'task'  ] | this - 3 sentence - 2 |
| [  'is the',  'first', 'sentence', 'Here', 'is', 'another', 'the', 'And', 'finally', 'the', 'the', 'sentence'] | the – 3  is - 1 |

## Odd Occurrences

Write a function that extracts the elements of a sentence, if it appears an odd number of times (**case-insensitive**).

The input comes as a **single string**. The words will be **separated by a single space**.

### Example

|  |  |
| --- | --- |
| **Input** | **Output** |
| 'Java C# Php PHP Java PhP 3 C# 3 1 5 C#' | c# php 1 5 |
| 'Cake IS SWEET is Soft CAKE sweet Food' | soft food |

## Piccolo

Write a function that:

* Records a **car number** for every car that enters the **parking lot**
* Removes a **car number** when the car goes out
* Input will be an array of strings in format **[direction, carNumber]**

Print the output with all car numbers which are in the parking lot **sorted in ascending by number.**

If the parking lot is empty, print: **"Parking Lot is Empty"**.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| ['IN, CA2844AA',  'IN, CA1234TA',  'OUT, CA2844AA',  'IN, CA9999TT',  'IN, CA2866HI',  'OUT, CA1234TA',  'IN, CA2844AA',  'OUT, CA2866HI',  'IN, CA9876HH',  'IN, CA2822UU'] | CA2822UU  CA2844AA  CA9876HH  CA9999TT |
| ['IN, CA2844AA',  'IN, CA1234TA',  'OUT, CA2844AA',  'OUT, CA1234TA'] | Parking Lot is Empty |

## Make a Dictionary

You will receive an **array** with **strings in the form of JSON's.**

You have to parse these strings and combine them into **one object**. Every string from the array will hold **terms** and a **description.** If you receive the **same term** **twice,** replace it with the **new definition**.

Print every term and definition in that dictionary on new line in format:

**`Term: ${term} => Definition: ${definition}`**

**Don't forget to sor**t the dictionary **alphabetically** by the terms as in real dictionaries.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| [  '{"Coffee":"A hot drink made from the roasted and ground seeds (coffee beans) of a tropical shrub."}',  '{"Bus":"A large motor vehicle carrying passengers by road, typically one serving the public on a fixed route and for a fare."}',  '{"Boiler":"A fuel-burning apparatus or container for heating water."}',  '{"Tape":"A narrow strip of material, typically used to hold or fasten something."}',  '{"Microphone":"An instrument for converting sound waves into electrical energy variations which may then be amplified, transmitted, or recorded."}'  ] | Term: Boiler => Definition: A fuel-burning apparatus or container for heating water.  Term: Bus => Definition: A large motor vehicle carrying passengers by road, typically one serving the public on a fixed route and for a fare.  Term: Coffee => Definition: A hot drink made from the roasted and ground seeds (coffee beans) of a tropical shrub.  Term: Microphone => Definition: An instrument for converting sound waves into electrical energy variations which may then be amplified, transmitted, or recorded.  Term: Tape => Definition: A narrow strip of material, typically used to hold or fasten something. |
| [  '{"Cup":"A small bowl-shaped container for drinking from, typically having a handle"}',  '{"Cake":"An item of soft sweet food made from a mixture of flour, fat, eggs, sugar, and other ingredients, baked and sometimes iced or decorated."} ',  '{"Watermelon":"The large fruit of a plant of the gourd family, with smooth green skin, red pulp, and watery juice."} ',  '{"Music":"Vocal or instrumental sounds (or both) combined in such a way as to produce beauty of form, harmony, and expression of emotion."} ',  '{"Art":"The expression or application of human creative skill and imagination, typically in a visual form such as painting or sculpture, producing works to be appreciated primarily for their beauty or emotional power."} '  ] | Term: Art => Definition: The expression or application of human creative skill and imagination, typically in a visual form such as painting or sculpture, producing works to be appreciated primarily for their beauty or emotional power.  Term: Cake => Definition: An item of soft sweet food made from a mixture of flour, fat, eggs, sugar, and other ingredients, baked and sometimes iced or decorated.  Term: Cup => Definition: A small bowl-shaped container for drinking from, typically having a handle  Term: Music => Definition: Vocal or instrumental sounds (or both) combined in such a way as to produce beauty of form, harmony, and expression of emotion.  Term: Watermelon => Definition: The large fruit of a plant of the gourd family, with smooth green skin, red pulp, and watery juice. |

## Class Vehicle

Create a class with the name **Vehicle** that has the following properties:

* **type** – a string
* **model** – a string
* **parts** – an object that contains:
* **engine** – number (quality of the engine)
* **power** – number
* **quality** – engine \* power
* **fuel** – a number
* **drive** – a method that receives fuel loss and decreases the fuel of the vehicle by that number

The **constructor** should receive the **type**, the **model**, the **parts** as an **object,** and the **fuel**

In judge post your **class** (**Note: all names should be as described**)

### Example

Test your Vehicle class.

|  |  |
| --- | --- |
| **Input** | **Output** |
| let parts = { engine: 6, power: 100 };  let vehicle = new Vehicle('a', 'b', parts, 200);  vehicle.drive(100);  console.log(vehicle.fuel);  console.log(vehicle.parts.quality); | 100  600 |
| let parts = {engine: 9, power: 500};  let vehicle = new Vehicle('l', 'k', parts, 840);  vehicle.drive(20);  console.log(vehicle.fuel); | 820 |