

Lab: Objects and Classes

Problems with exercise and homework for the ["JS Front-End" Course @ SoftUni](https://softuni.org).

1. Person Info

Write a function that receives **3 parameters**, sets them to an **object**, and **returns** that object.

The input comes as **3 separate strings** in the following order: **firstName**, **lastName**, **age**.

Examples

Input	Object Properties
"Peter", "Pan", "20"	firstName: Peter lastName: Pan age: 20
"George", "Smith", "18"	firstName: George lastName: Smith age: 18

Hints

```
function personInfo(firstName, lastName, age) {  
    //TODO: Create the person object and set the properties  
    return person;  
}
```

2. City

Write a function that receives a **single parameter** – an **object**, containing **five properties**:

{ name, area, population, country, postcode }

Loop through all the **keys** and **print** them with their **values** in format: **"{key} -> {value}"**

See the examples below.

Examples

Input	Output
{ name: "Sofia", area: 492, population: 1238438, country: "Bulgaria", postcode: 1000 }	name -> Sofia area -> 492 population -> 1238438 country -> Bulgaria postcode -> 1000

<pre>country: "Bulgaria", postCode: "1000" }</pre>	<pre>postCode -> 1000</pre>
<pre>{ name: "Plovdiv", area: 389, population: 1162358, country: "Bulgaria", postCode: "4000" }</pre>	<pre>name -> Plovdiv area -> 389 population -> 1162358 country -> Bulgaria postCode -> 4000</pre>

3. City Taxes

This task is an extension of Problem 1, you may use your solution from that task as a base.

You will receive a **city's name** (string), **population** (number), and **treasury** (number) as arguments, which you will need to set as **properties** of an **object** and **return** it. In addition to the input parameters, the object must have a property **taxRate** with an initial value of **10**, and three **methods** for managing the city:

- **collectTaxes()** - Increase **treasury** by **population * taxRate**
- **applyGrowth(percentage)** - Increase population by **given percentage**
- **applyRecession(percentage)** - Decrease treasury by **given percentage**

Round down the values after each calculation.

Input

Your solution will receive three **valid** parameters. The methods that expect parameters will be tested with valid input.

Output

Return an **object** as described above. The methods of the object modify the object and don't return anything.

Input	Output
<pre>const city = cityTaxes('Tortuga', 7000, 15000); console.log(city);</pre>	<pre>{ name: 'Tortuga', population: 7000, treasury: 15000, taxRate: 10, collectTaxes: [Function: collectTaxes], applyGrowth: [Function: applyGrowth], applyRecession: [Function: applyRecession] }</pre>
Testing with code	
Input	Output

<pre>const city = cityTaxes('Tortuga', 7000, 15000); city.collectTaxes(); console.log(city.treasury); city.applyGrowth(5); console.log(city.population);</pre>	<pre>85000 7350</pre>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------

4. Convert to Object

Write a function that receives a **string** in **JSON format** and converts it to an **object**.

Loop through all the keys and print them with their values in format: "{key}: {value}"

Examples

Input	Output
'{"name": "George", "age": 40, "town": "Sofia}"'	name: George age: 40 town: Sofia
'{"name": "Peter", "age": 35, "town": "Plovdiv}"'	name: Peter age: 35 town: Plovdiv

Hints

- Use **JSON.parse()** method to parse JSON string to an object

```
function solve(jsonStr) {
  let person = JSON.parse(jsonStr);

  //TODO: Iterate through the properties and
  //TODO: print the result
}

solve('{"name": "George", "age": 40, "town": "Sofia}");
```

5. Convert to JSON

Write a function that receives a **first name**, **last name**, **hair color** and sets them to an **object**.

Convert the **object** to **JSON string** and print it.

Input is provided as **3 single strings** in the order stated above.

Examples

Input	Output
'George', 'Jones', 'Brown'	{"name":"George","lastName":"Jones","hairColor":"Brown"}
'Peter', 'Smith', 'Blond'	{"name":"Peter","lastName":"Smith","hairColor":"Blond"}

Hints

- Use `JSON.stringify()` to parse the object to JSON string

```
function solve(name, lastName, hairColor) {  
    //TODO: Create an object with the given input  
    console.log(JSON.stringify(person));  
}  
  
solve('George', 'Jones', 'Brown');
```

6. Phone Book

Write a function that stores information about a **person's name** and **phone number**. The input is an **array of strings** with space-separated name and number. **Replace duplicate names**. Print the result as shown.

Example

Input	Output
['Tim 0834212554', 'Peter 0877547887', 'Bill 0896543112', 'Tim 0876566344']	Tim -> 0876566344 Peter -> 0877547887 Bill -> 0896543112
['George 0552554', 'Peter 087587', 'George 0453112', 'Bill 0845344']	George -> 0453112 Peter -> 087587 Bill -> 0845344

7. Meetings

Write a function that manages meeting appointments. The input comes as an **array of strings**. Each string contains a **weekday** and person's **name**. For each **successful** meeting, **print a message**. If you receive the **same weekday** twice, the meeting cannot be scheduled so print a **conflicting message**. In the end, print a list of all **successful** meetings.

Example

Input	Output
['Monday Peter', 'Wednesday Bill']	Scheduled for Monday Scheduled for Wednesday

'Monday Tim', 'Friday Tim']	Conflict on Monday! Scheduled for Friday Monday -> Peter Wednesday -> Bill Friday -> Tim
['Friday Bob', 'Saturday Ted', 'Monday Bill', 'Monday John', 'Wednesday George']	Scheduled for Friday Scheduled for Saturday Scheduled for Monday Conflict on Monday! Scheduled for Wednesday Friday -> Bob Saturday -> Ted Monday -> Bill Wednesday -> George

8. Address Book

Write a function that stores information about a person's **name** and his **address**. The input comes as an **array of strings**. Each string contains the **name** and the **address** separated by a **colon**. If you receive the same name **twice** just **replace** the address. In the end, print the full list, **sorted alphabetically** by the person's name.

Input	Output
['Tim:Doe Crossing', 'Bill:Nelson Place', 'Peter:Carlyle Ave', 'Bill:Ornery Rd']	Bill -> Ornery Rd Peter -> Carlyle Ave Tim -> Doe Crossing
['Bob:Huxley Rd', 'John:Milwaukee Crossing', 'Peter:Fordem Ave', 'Bob:Redwing Ave', 'George:Mesta Crossing', 'Ted:Gateway Way', 'Bill:Gateway Way', 'John:Grover Rd', 'Peter:Huxley Rd', 'Jeff:Gateway Way', 'Jeff:Huxley Rd']	Bill -> Gateway Way Bob -> Redwing Ave George -> Mesta Crossing Jeff -> Huxley Rd John -> Grover Rd Peter -> Huxley Rd Ted -> Gateway Way

9. Cats

Write a function that receives **array** of strings in the following format **'{cat name} {age}'**.

Create a **Cat class** that receives in the **constructor** the **name** and the **age** parsed from the input.

It should also have a method named **"meow"** that will print **"{cat name}, age {age} says Meow"** on the console.

For each of the strings provided, you must **create a cat object** and invoke the **.meow ()** method.

Examples

Input	Output
['Mellow 2', 'Tom 5']	Mellow, age 2 says Meow Tom, age 5 says Meow
['Candy 1', 'Poppy 3', 'Nyx 2']	Candy, age 1 says Meow Poppy, age 3 says Meow Nyx, age 2 says Meow

Hints

- Create a **Cat class** with properties and methods described above
- Parse the input data
- Create all objects using the class constructor and the parsed input data, store them in an array
- Loop through the array using **for...of** a cycle and **invoke .meow()** method

```
function solve(arr) {  
  let cats = [];  
  //TODO: Create class Cat  
  
  for (let i = 0; i < arr.length; i++) {  
    let catData = arr[i].split(' ');  
    let name, age;  
    [name, age] = [catData[0], catData[1]];  
    cats.push(new Cat(name, age));  
  }  
  //TODO: Iterate through cats[] and invoke .meow() using for...of loop  
}  
  
solve(['Mellow 2', 'Tom 5']);
```

10. Songs

Define a **class Song**, which holds the following information about songs: **typeList**, **name**, and **time**.

You will receive the input as an **array**.

The first element **n** will be the number of songs. Next **n** elements will be the songs data in the following format: **"{typeList}_{name}_{time}"**, and the last element will be **typeList** / **"all"**.

Print only the **names of the songs**, which have the same **typeList** (obtained as the last parameter). If the value of the last element is **"all"**, print 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

Solution:

Create a **Song** class with properties described above

```
class Song {
  constructor(type, name, time) {
    this.type = type;
    this.name = name;
    this.time = time;
  }
}
```

Create a new array, where you will store songs

```
let songs = [];
let numberOfSongs = input.shift();
let typeSong = input.pop();
```

Iterate over the songs:

```
for (let i = 0; i < numberOfSongs; i++) {
  let [type, name, time] = input[i].split('_');
  let song = new Song(type, name, time);
  songs.push(song);
}
```

```
if (typeSong === 'all') {  
  songs.forEach((i) => console.log(i.name));  
} else {  
  let filtered = songs.filter((i) => i.type === typeSong);  
  filtered.forEach((i) => console.log(i.name));  
}
```