Exercise: DOM Introduction

Problems for in-class lab for the "JS Advanced" Course @SoftUni". Submit your solutions in the SoftUni judge system at https://judge.softuni.bg/Contests/2761/DOM-Introduction-Exercise

Environment Specifics

Please, be aware that every JS environment may **behave differently** when executing code. Certain things that work in the browser are not supported in **Node.js**, which is the environment used by **Judge**.

The following actions are **NOT** supported:

- `.forEach()` with **NodeList** (returned by `querySelector()` and `querySelectorAll()`)
- `.forEach()` with **HTMLCollection** (returned by `getElementsByClassName()` and `element.children`)
- Using the **spread-operator** (`...`) to convert a **NodeList** into an array
- `append()` in Judge (use only `appendChild()`)
- `prepend()`
- Always turn the collection into a **JS array** (forEach, forOf, et.)

If you want to perform these operations, you may use `Array.from()` to first convert the collection into an array.

1. Subtraction

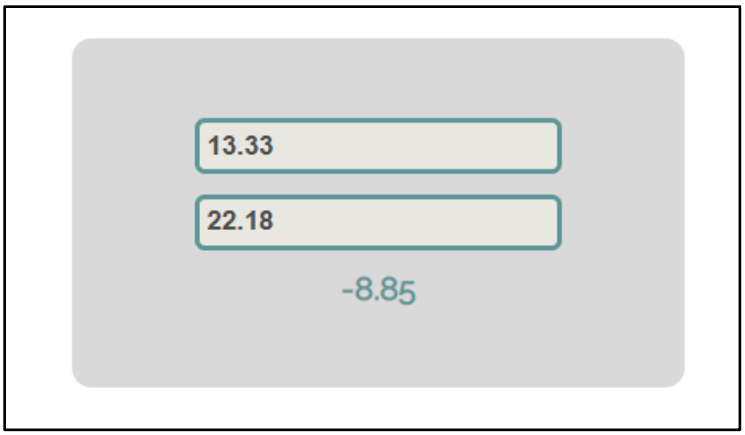
An HTML page holds **two text fields** with ids **"firstNumber"** and **"secondNumber"**. Write a function to **subtract** the values from these text fields and display the result in the **div** named **"result"**.

HTML and JavaScript Code

Implement the above to provide the following functionality:

- Your function should take the values of "**firstNumber**" and "**secondNumber**", **convert** them to numbers, **subtract** the first number from the second one and then append the result to the ** ** with **id="result"**.
- Your function should be able to work with **any 2 numbers** in the inputs, not only the ones given in the example.

Example



Hints

We see that the **textboxes** and the **div** have **id** attributes on them.

```
<div id="wrapper">
    <input type="text" id="firstNumber" value="13.33" disabled>
    <input type="text" id="secondNumber" value="22.18" disabled>
    <div id="result"></div>
</div>
```

We can take the numbers directly from the input field by using the **`getElementById()`** function. After we have taken the elements from the DOM, it's time to do the actual work. We get the values of the two **textboxes**, as one would expect, type is **text**. To get a **number**, we need to use a function to **parse them**.

```
let num1 = document.getElementById('firstNumber').value;
let num2 = document.getElementById('secondNumber').value;
```

All that's left for you to do is append the result to the **div**.

2. Pascal or Camel Case

An **HTML** file is given and your task is to write a function that takes **two string parameters** as an input and transforms the **first parameter** to the type required by the **second parameter**.

- **The first parameter** will be the text that you need to modify depending on the second parameter. The words in it will **always** be **separated by space**.
- **The second parameter** will be either "**`Camel Case`**" or "**`Pascal Case`**". In case of different input, your **output** should be **`"Error!"`**

When the button is clicked the function should convert the first string to either of the cases. The **output** should consist of only **one word** - the string you have modified. Once your **output** is done, you should set it as HTML to the ** element**. For more information, see the examples below:

Example

Input	Output
`"this is an example", "Camel Case"`	`thisIsAnExample`
`"secOND eXamPLE", "Pascal Case"`	`SecondExample`
`"Invalid Input", "Another Case"`	`Error!`

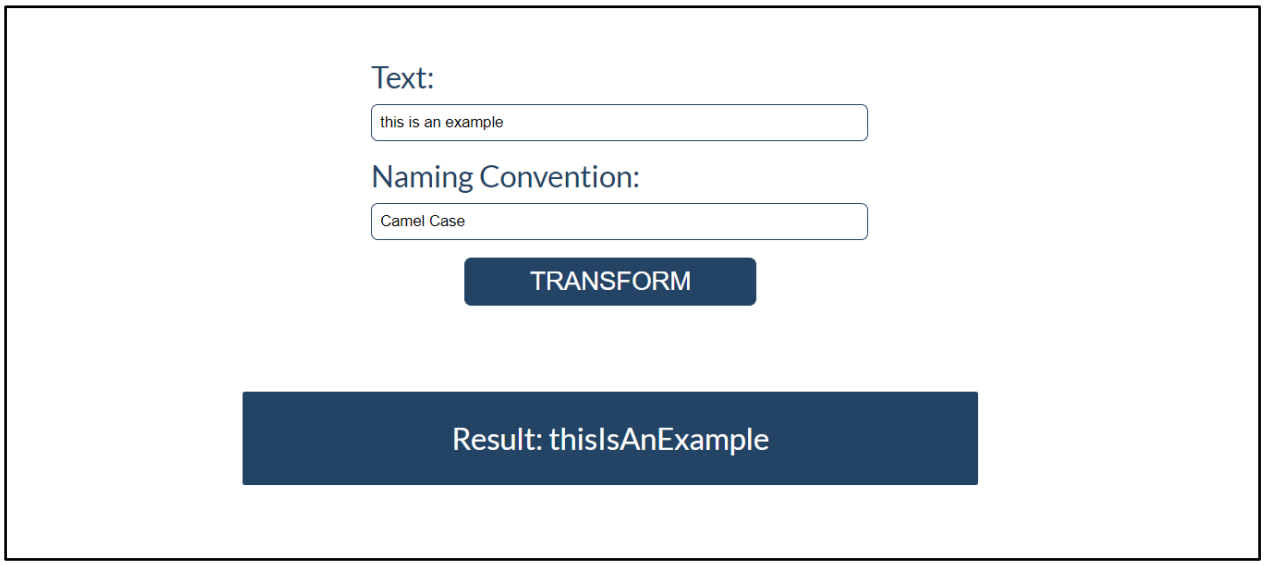
Hints

First, take the two values from the input fields:

```
let input = document.getElementById("text").value;
let currentCase = document.getElementById("naming-convention").value;
```

Then, write a function that generates the result:

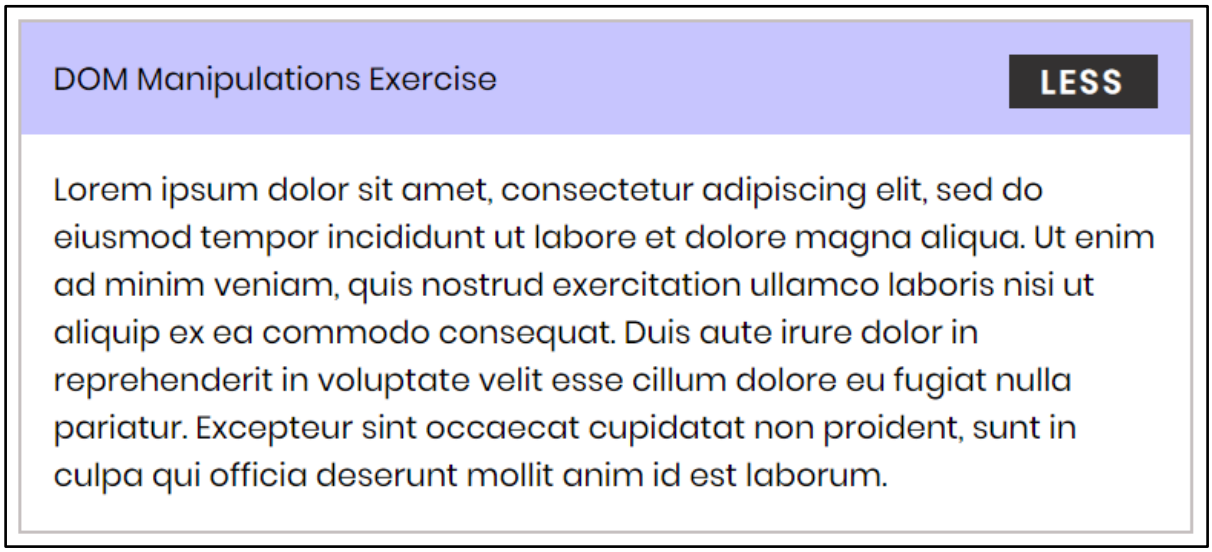
- First, convert all the **letters to lowercase**
- Depending on the command, make the input either **`Pascal Case`** or **`Camel Case`**



3. Accordion

An **HTML** file is given and your task is to show **more**/**less** information. By clicking the **[More] button**, it should **reveal** the content of a **hidden** div and **changes** the text of the button to **[Less]**. When the same link is clicked **again** (now reading **Less**), **hide** the div and **change** the text of the link to **More**. Link action should be **toggleable** (you should be able to click the button an infinite amount of times).

Example



Hints

- To **change** the text content of a button, you could use **`getElementsByClassName`**. However, that returns a **collection** and we need only **one** element from it, so the correct way is to **use** **`getElementsByClassName("button")[0]`** as it will return the needed span element.
- After that we should change the **display style** of the div with an **`id`** "**extra**". If the display style is "**none**", we should **change** it to "**block**" and the **opposite**.

- Along with all of this, we should **change** the text content of the **button** to **`[Less]`**/**`[More]`**.

4. Search in List

An HTML page holds a **list** of towns, a **search** box, and a **`[Search]`** button. Implement the **`search`** function to **bold** and **underline** the items from the list which include the text from the **search** box. Also, print the number of items the current search **matches** in the format **`` `${matches} matches found` ``**.

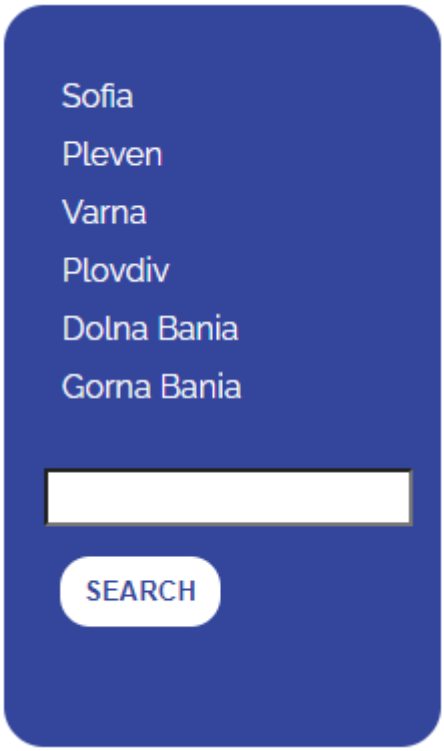
Note: It is necessary to clear the results of the previous search.

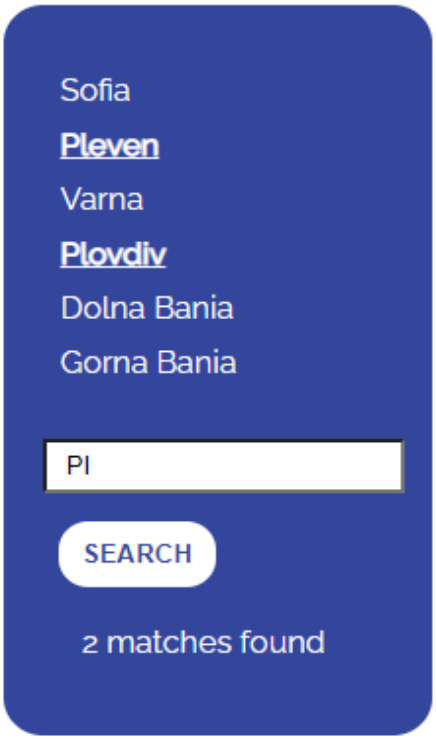
Write your **JavaScript** code in this file:

search.js

```
function search() {
    // TODO
}
```

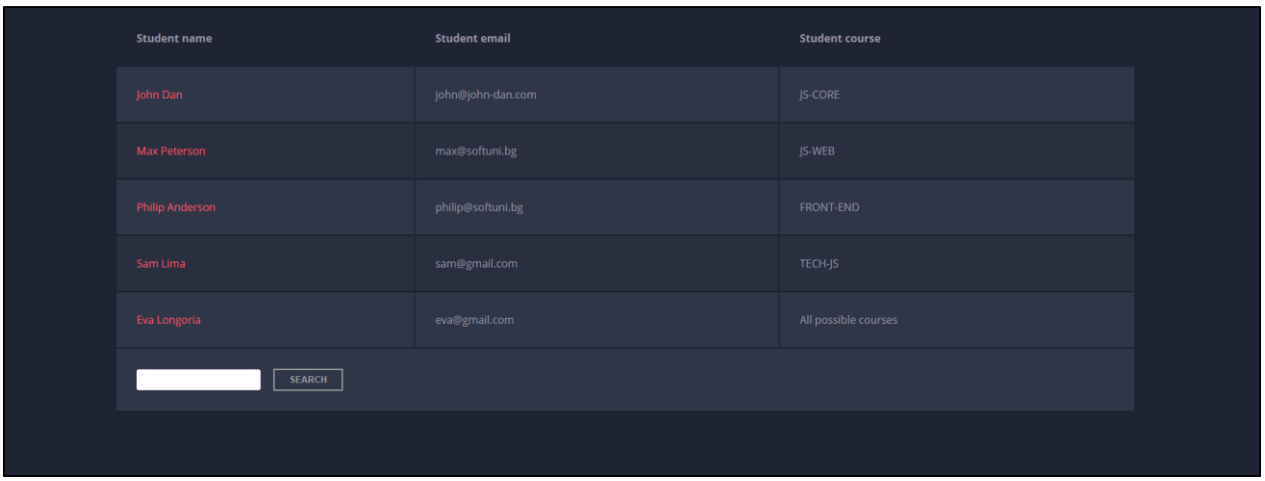
Screenshots





5. Table - Search Engine

Write a function that **searches** in a **table** by given input.



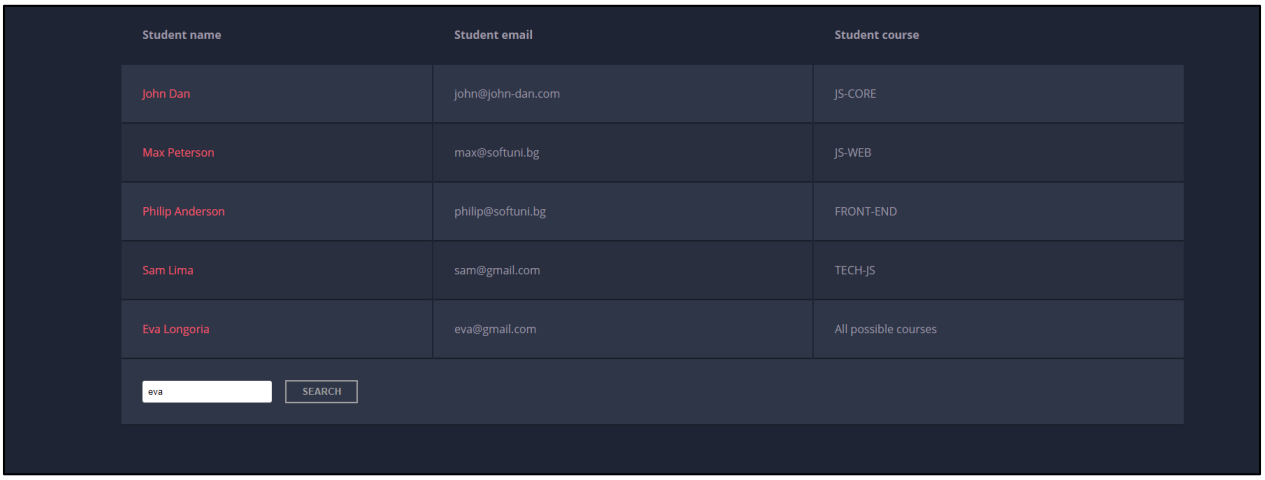
When the **"Search" button** is **clicked**, go through all cells in the table except for the first row (Student name, Student email and Student course) and check if the given input has a match (check for both **full words** and **single letters**).

If any of the rows contain the submitted string, add a **`class select`** to that row. Note that more than one row may contain the given string.

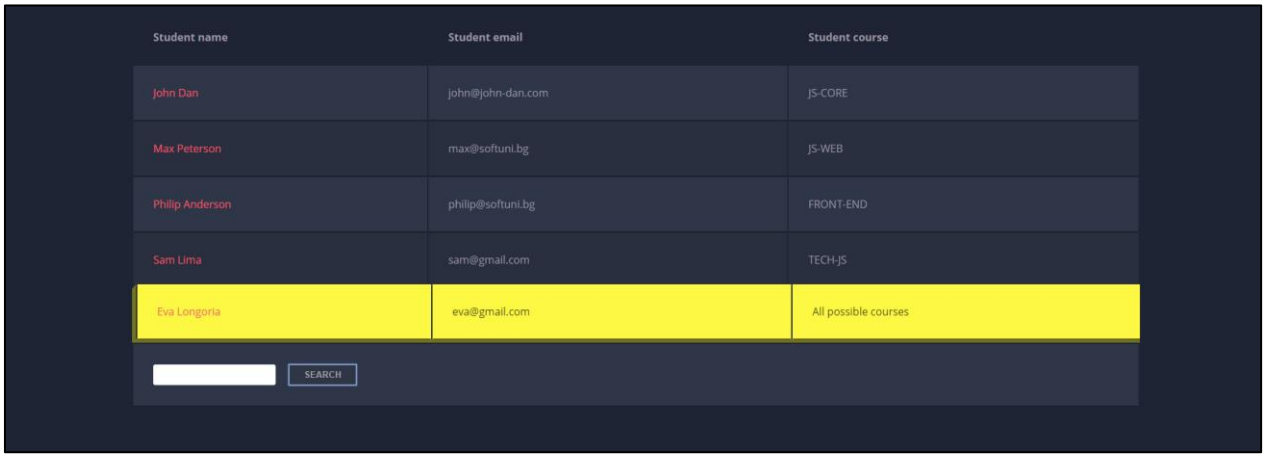
Otherwise, if there is no match, **nothing should happen**.

Note: After every search ("**Search**" button is clicked), **clear the input field** and **remove all already selected classes** (if any) from the previous search, for the **new search** to contain only the **new result**.

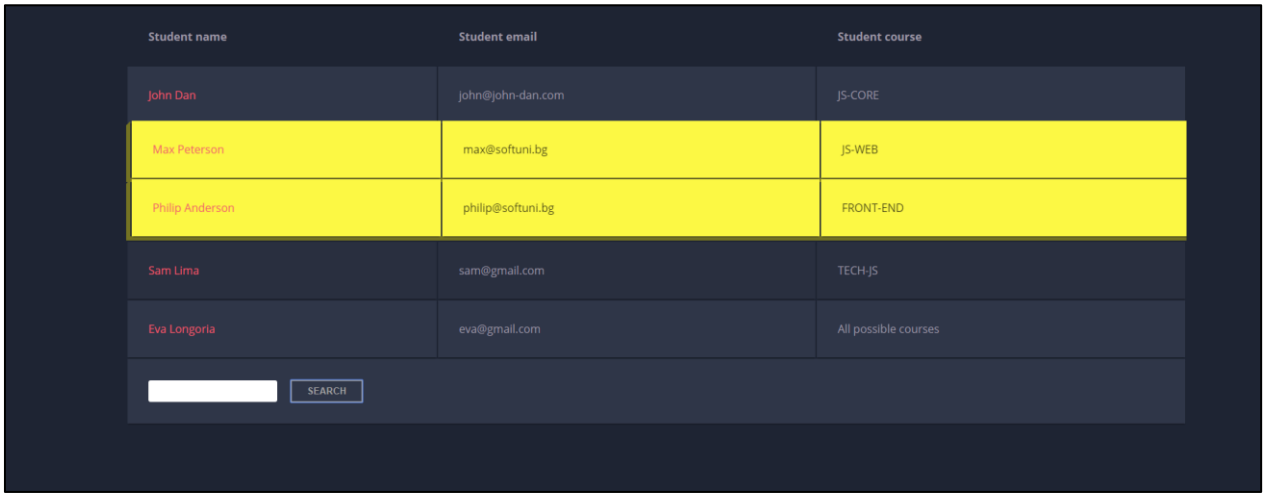
For instance, if we try to find **eva:**



The result should be:



If we try to find all students who have email addresses in **softuni** domain, the expected result should be:



6. Format the Text

Create a functionality that gets a text from **textarea**, formats the given **text** - you need to find out how many **sentences** there are in the text, simply **split** the whole text by **'.'**
Also, every sentence must have at **least 1 character**.

```
<body>
    <h4>Create a functionality which formats the given text into paragraphs</h4>
    <div id="exercise">
        <textarea id="input" cols="30" rows="12"></textarea>
        <button type="button" id="formatItBtn" onclick="solve()">Format</button>
        <div id="output"></div>
    </div>
</body>
```

Generate HTML paragraphs as a string (Use interpolation **string** to create paragraph element: **`<p> {text} </p>`**) and append it to the div with an **id = "output"**.

```
<div id="output">
    <p>JavaScript, often abbreviated as JS, is a high-level, interpreted programming language.It is a
        language which is also characterized as dynamic, weakly typed, prototype-based and
        multi-paradigm.Alongside
        HTML and CSS, JavaScript is one of the three core technologies of the World Wide Web.
    </p>
    <p>JavaScript enables interactive web pages and thus is an essential part of web applications.
        The vast majority of websites use it, and all major web browsers have a dedicated JavaScript
        engine to execute it.As a multi-paradigm language, JavaScript supports event-driven, functional,
        and imperative (including object-oriented and prototype-based)programming styles.
    </p>
    <p>It has an API for working with text, arrays, dates, regular expressions, and basic
        manipulation of the DOM, but the language itself does not include any I/O, such as networking,
        storage, or graphics facilities, relying for these upon the host environment in which it is
        embedded.
    </p>
</div>
```

When the [**Format**] button is **clicked**, get the text inside the **textarea** with an **`id="input"`** and **format it**. The formatting is **done** as **follows:**

- Create a **new paragraph element** that holds no more than **3 sentences** from the given input**.**
- **Hint: Use interpolation string to create paragraph element. (`<p> {text} </p>`)**
- If the given input contains **less** or **3 sentences**, you need to create only 1 paragraph, fill it with these sentences and append this paragraph to the div with an **`id="output"`**.

Otherwise, when you have more than 3 sentences**,** create enough paragraphs to get all sentences from the **textarea.**

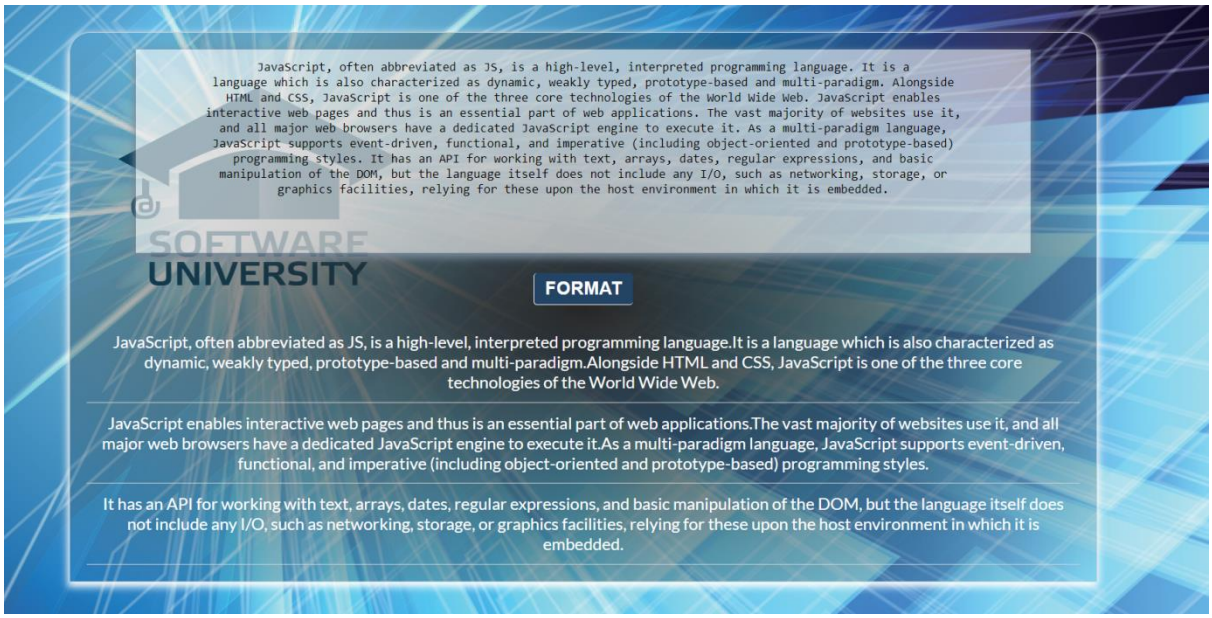
Just remember to **restrict** the **sentences** in **each paragraph to 3.**

Example:

- If the input textarea **contains 2 sentences**, create only **1 paragraph** with these 2 sentences

- If the input textarea **contains 7 sentences,** create **3 paragraphs**
  - The **first paragraph** must contain **the first 3 sentences**

- The **second paragraph** must contain **the other three sentences** of the whole text
- The **third paragraph** will contain **only the last sentence**



Output

Input	Output
JavaScript, often abbreviated as JS, is a high-level, interpreted programming language. It is a language which is also characterized as dynamic, weakly typed, prototype-based and multi-paradigm.	JavaScript, often abbreviated as JS, is a high-level, interpreted programming language. It is a language which is also characterized as dynamic, weakly typed, prototype-based and multi-paradigm.
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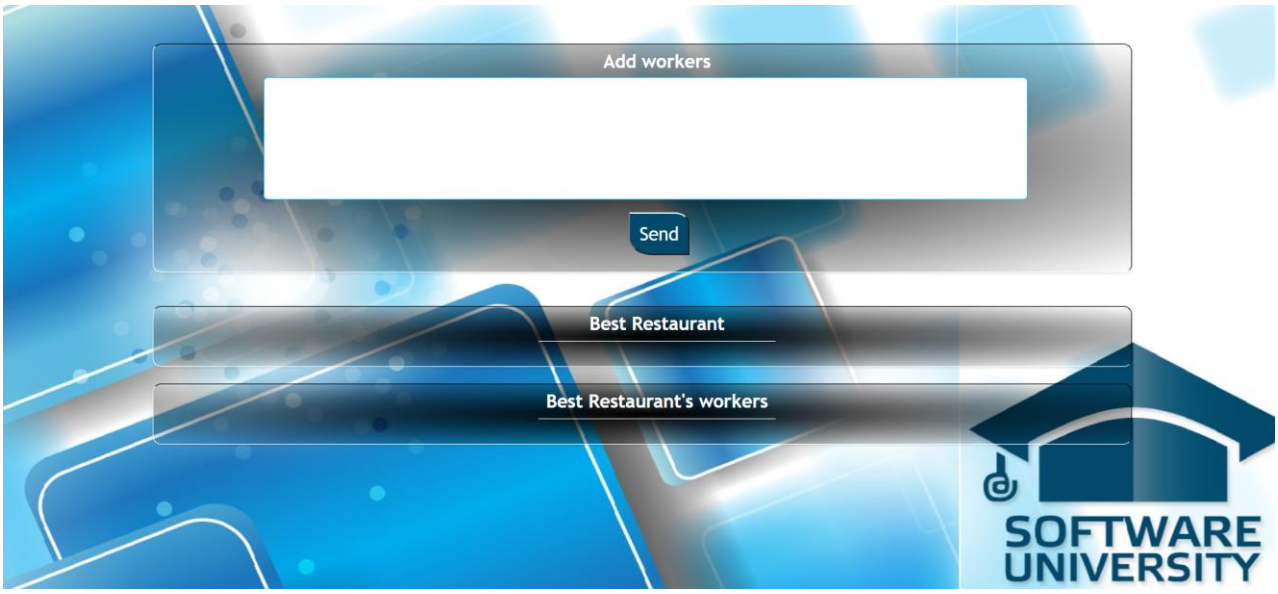
embedded.	arrays, dates, regular expressions, and basic manipulation of the DOM, but the language itself does not include any I/O, such as networking, storage, or graphics facilities, relying for these upon the host environment in which it is embedded.</p>

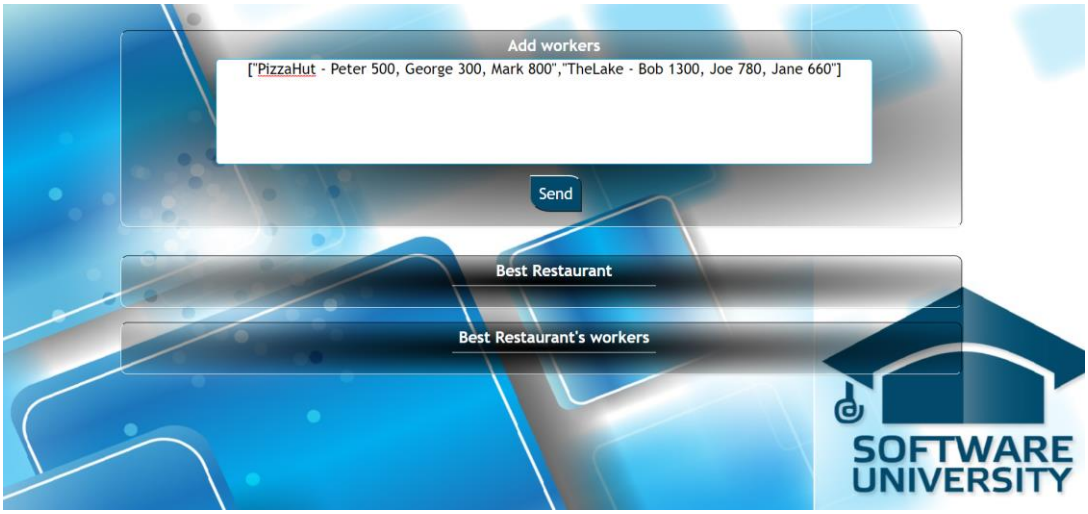
7. Hell's Kitchen

You will be given an **array of strings**, which represents a **list** of **all** the **restaurants** with their workers.



When the [**Send**] button is clicked:

- Display the **best restaurant** of all the **added restaurants** with its **average salary** and **best salary**.
- If there is a restaurant in the input array that is added more than once, you need to add new workers to the old ones and **update** the values of the **average salary** and the **best salary**.
- The best restaurant is the restaurant with the **highest average** salary. If two restaurants have the **same** average salary the best restaurant is the **first** one added.
- Display **all** workers in the **best restaurant** with their **salaries**.
  The best restaurant's workers should be **sorted** by their **salaries** in **descending** order.



Input

The input will be received from the given **textarea** in the form of an **array** of **strings**. Each string represents a **restaurant** with its **workers**: **["Mikes - Steve 1000, Ivan 200, Paul 800", "Fleet - Maria 850, Janet 650"]**

```
<div id="inputs">
  <h2>Add workers</h2>
  <textarea></textarea>
  <br>
  <button type="submit" id="btnSend">Send</button>
</div>
```

Output

- Output contains **two strings**
  - The first one is **the best restaurant** in the format:

    `Name: {restaurant name} Average Salary: {restaurant avgSalary} Best Salary: {restaurant bestSalary}`

    avgSalary and **bestSalary** must be formatted to the **second decimal point.**

- The second one is all the workers in that restaurant in the following format:

`Name: {worker name} With Salary: {worker salary} Name: {worker2 name} With Salary: {worker2 salary} Name: {worker3 name} With Salary: {worker3 salary}…`

Output strings must be set like **text content** in the following elements:

```
<div id="outputs">
    <div id="bestRestaurant">
        <h2>Best Restaurant</h2>
        <span></span>
        <p></p>
    </div>
    <div id="workers">
        <h2>Best Restaurant's workers</h2>
        <span></span>
        <p></p>
    </div>
</div>
```

Constraints

- The workers will be always **unique**

Examples

Input	Output	Comment
["PizzaHut - Peter 500, George 300, Mark 800", "TheLake - Bob 1300, Joe 780, Jane 660"]	Name: TheLake Average Salary: 913.33 Best Salary: 1300.00 Name: Bob With Salary: 1300 Name: Joe With Salary: 780 Name: Jane With Salary: 660	The added restaurants are: TheLake and PizzaHut. TheLake has average salary: (1300+780+660)/3= 913.33, and PizzaHub has average salary: (500+300+800)/2=533.33. So the best restaurant is TheLake.
["Mikes - Steve 1000, Ivan 200, Paul 800","Fleet - Maria 850, Janet 650"]	Name: Fleet Average Salary: 750.00 Best Salary: 850.00 Name: Maria With Salary: 850 Name: Janet With Salary: 650	

8. Generate Report

You will be given a **web page**, containing a **table** and **output area**.

Employee	Department	Status	Date Hired	Benefits	Compensation	Rating
Poole, Tracy	Facilities/Engineering	Full Time	15.7.2019	R	71 670	4
Ramos, Jan	Human Resources	Full Time	17.6.2017	DMR	66 740	2
Jennings, Gary	Account Management	Full Time	4.8.2009	DM	45 100	2
Ortega, Jeffrey	Quality Control	Contract	20.3.2018		26 020	5
Shields, Robert	Product Development	Contract	23.11.2016		45 830	4
Gregory, Jon	Human Resources	Full Time	6.5.2017	R	79 150	2
Sheppard, Curtis	Quality Control	Full Time	15.3.2006	D	61 850	2
Williamson, Sumed	Manufacturing	Contract	10.2.2018		57 110	3
Moreno, Chris	Quality Assurance	Full Time	29.9.2015	R	72 060	2
Munoz, Michael	Quality Assurance	Full Time	17.3.2010	DMR	29 210	5
Kirby, Michael	Account Management	Half-Time	22.11.2005	R	22 475	4
Jenkins, Scott	Account Management	Full Time	16.8.2016	DMR	54 190	4
Ross, Janice	Marketing	Half-Time	25.4.2006	R	26 790	2
Kelley, Nancy	Quality Control	Contract	20.10.2013		64 263	3
Blackwell, Brandon	Quality Control	Contract	29.10.2005		58 250	2
Bowers, Tammy	Sales	Half-Time	20.12.2016	DMR	49 405	4
Fleming, Irv	Environmental Compliance	Half-Time	7.2.2013	DMR	11 025	1
Skinner, Jason	IT	Full Time	15.2.2014	R	73 030	5
Wade, Kevin	Green Building	Full Time	29.7.2014	DMR	71 120	4
Barrett, John	Quality Control	Full Time	20.10.2006	R	35 460	1

Generate Report

When the **"Generate Report"** button is **pressed**:

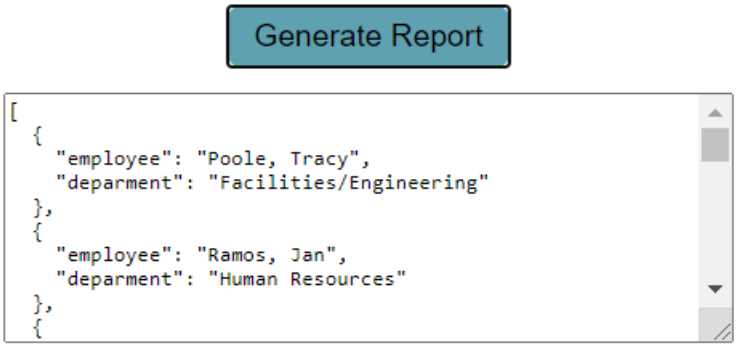
- You must generate a **JSON report** from the data inside the table, by **only taking the columns**, which are **selected**.

Each table header has a **checkbox**. If the checkbox is **checked**, then the data from this column must be included in the **report**. **Unchecked** columns must be **omitted**.

```
<th>
  "Employee "
  <input type="checkbox" name="employee">
</th>
```

For **every row** (excluding the header):

- Create an **object** with **properties for each** of its columns.
- The name of each property is the name attribute of the column's header, and the value is the text content of the cell.
- Store the result in an array and output it as a JSON string display it inside the **<textarea>** with **id** "**output**". See the example for details.



Input/Output

There will be input, your program must execute based on the page content. The output must be a **JSON string**, displayed in the **<textarea>** with **id** "**output**".

```
<div>
  <textarea id="output"></textarea>
</div>
```

Example

Employee	Department	Status	Date Hired	Benefits	Compensation	Rating
Poole, Tracy	Facilities/Engineering	Full Time	15.7.2019	R	71 670	4
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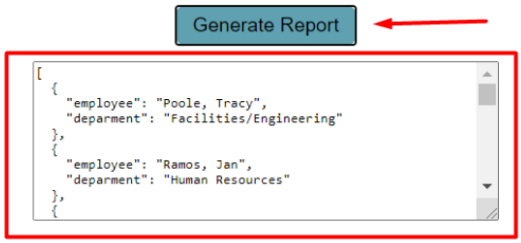
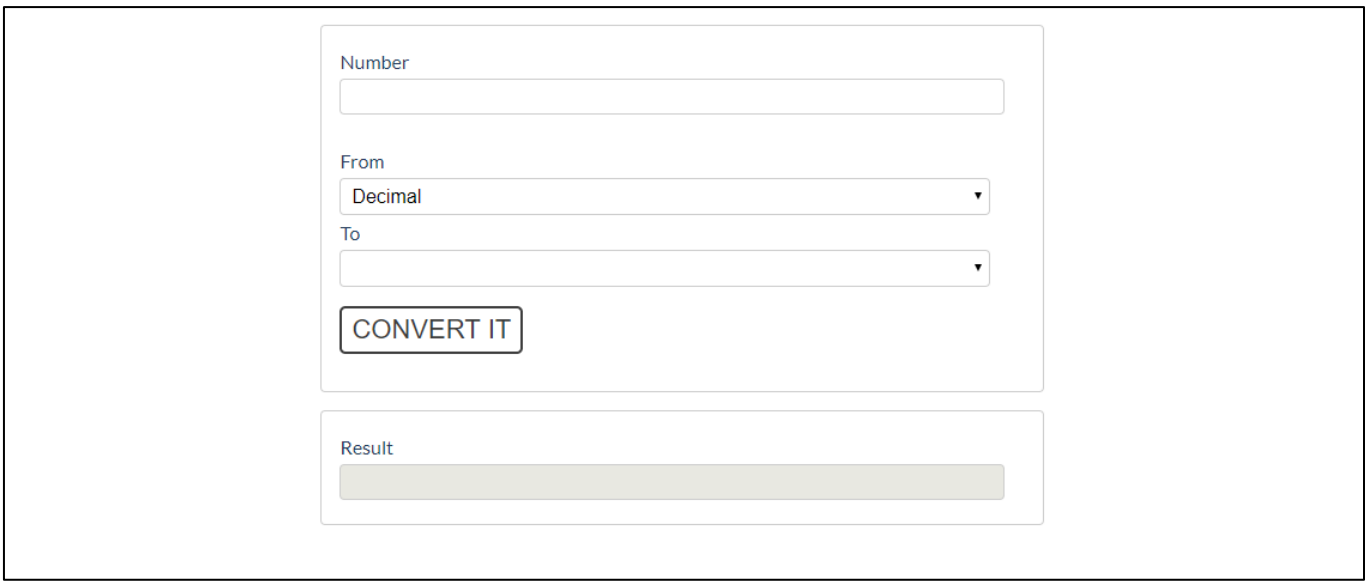


9. *Number Convertor

Write a function that **converts** a **decimal number** to **binary** and **hexadecimal**.



The given number will always be in **decimal format.** The "**From**" select menu will only have a **Decimal** option,

but the "**To**" select menu will have **two options**: **Binary** and **Hexadecimal**.

This means that our program should have the functionality to **convert decimal** to **binary** and **decimal** to **hexadecimal**. When you convert to **hexadecimal** it must be **upper case**.

Note that "**To" select menu** by default is empty. You have to insert the two options (**`'Binary'`** and **`'Hexadecimal'`**) inside before continue. Also, they should have **values** ('**`binary`**' and '**`hexadecimal`**').

- When the [**`Convert it`**] button is **clicked**, the expected result should appear in the [**`Result`**] input field.