

# Lab: Arrays Advanced

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

Submit your solutions in the SoftUni judge system at: <https://judge.softuni.org/Contests/1254>

## 1. Sum First and Last

Write a function that calculates and prints the **sum** of the **first** and the **last** elements in an array.

The **input** comes as an array of string elements holding numbers.

The **output** is printed on the console.

### Examples

Input	Output
['20', '30', '40']	60

Input	Output
['5', '10']	15

## 2. Negative or Positive Numbers

Write a function that processes the elements in an **array** one by one and produces a **new** array. **Prepend** each **negative** element at the front of the array (**as the first element**) and **append** each **positive** (or **0**) element at the end of the array.

The **input** comes as an array of string elements holding numbers.

The **output** is printed on the console, each element on a new line.

### Examples

Input	Output
['7', '-2', '8', '9']	-2 7 8 9

Input	Output
['3', '-2', '0', '-1']	-1 -2 3 0

### Hints

- Write a function that receives an array as an argument.
- Declare variable named **result** that will keep the array.

```
function solve(arr) {  
  
    let result = [];  
  
}
```

- You can use **for** loop to go around the items one by one.

- If the current element is a **negative number**, you can use the **unshift()** method to add the number at the **beginning** of the array.

```
for (let i = 0; i < arr.length; i++) {
    if (arr[i] < 0) {
        result.unshift(arr[i]);
    } else {
        result.push(arr[i]);
    }
}
```

- Otherwise, if the current element is a **positive number (or 0)**, use a **push()** method to add the number to the **end** of the array.
- Print on the console, each element of the array on a new line.

```
console.log(result.join('\n'));
```

### 3. First and Last K Numbers

Write a function that prints the first **k** and the last **k** elements from an **array of numbers**.

The **input** comes as an **array of number** elements. The first element represents the number **k**, all other elements are from the array that needs to be processed.

The **output** is printed on the console on two lines. On the first line, print the **first k** elements, separated by space. On the second line, print the **last k** elements, separated by space.

#### Examples

Input	Output
[2, 7, 8, 9]	7 8 8 9

Input	Output
[3, 6, 7, 8, 9]	6 7 8 7 8 9

#### Hints

- Use **slice()** to split the array into two parts

### 4. Last K Numbers Sequence

You are given two integers **n** and **k**. Write a function that generates and prints the following sequence:

- The first element is **1**.
- Every following element equals the sum of the previous **k** elements.
- The length of the sequence is **n** elements.

The **input** comes as two number arguments. The first element represents the number **n**, and the second – the number **k**.

The **output** is printed on the console on a single line, separated by space.

## Examples

Input	Output
6, 3	1 1 2 4 7 13

Input	Output
8, 2	1 1 2 3 5 8 13 21

## Hints

The 2<sup>nd</sup> element (1) is the sum of the 3 elements before it, but there is only 1, so we take that. The third element is the sum of the first 2 (1 and 1), and the 4<sup>th</sup> – the sum of 1, 1, and 2. The 5<sup>th</sup> element is the sum of the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> (1, 2, and 4) and so on.

## 5. Process Odd Numbers

You are given an **array of numbers**. Write a function that prints the elements at **odd positions** from the array, **doubled** and in **reverse** order.

The **input** comes as an array of number elements.

The **output** is printed on the console on a single line, separated by space.

## Examples

Input	Output
[10, 15, 20, 25]	50 30

Input	Output
[3, 0, 10, 4, 7, 3]	6 8 0

## Hints

- Counting in arrays starts from 0
- For example –we receive 10, 15, 20, 25
- The elements at odd positions are 15 (index 1) and 25 (index 3)
- We need to take these two elements and multiply them \* 2
- Finally, we print them on the console in reversed order

## 6. Smallest Two Numbers

Write a function that prints the **two smallest** elements from an **array of numbers**.

The **input** comes as an array of number elements.

The **output** is printed on the console on a single line, separated by space.

## Examples

Input	Output
[30, 15, 50, 5]	5 15

Input	Output
[3, 0, 10, 4, 7, 3]	0 3

## Hints

- You can use the following function to sort the numbers in the array:

```
let sortedInAscending = input.sort((a, b) => {
    return a - b;
});
```

- Afterward the **first two** elements in the array are the **smallest**
- You can use **slice()** to take the first two numbers

## 7. List of Products

You will receive an **array of products**. Print a **numbered array** of all the products **ordered by name**.

### Example

Input	Output
['Potatoes', 'Tomatoes', 'Onions', 'Apples']	1.Apples 2.Onions 3.Potatoes 4.Tomatoes
['Watermelon', 'Banana', 'Apples']	1.Apples 2.Banana 3.Watermelon

### Hints

- The **sort function** rearranges the array in ascending order

```
let sorted = input.sort();
```

- Finally, we have to **print our sorted** array. To do that we **loop through the array**

```
for (let i = 0; i < sorted.length; i++) {
    console.log(`${i + 1}.${sorted[i]}`);
}
```

- We use **i + 1**, because we want to **start counting from 1**

## 8. Array Manipulations

Write a function that manipulates an **array of numbers**.

- **Add {number}**: add a number to the **end** of the array
- **Remove {number}**: remove **all occurrences** of a particular **number** from the array
- **RemoveAt {index}**: removes number at a **given index**
- **Insert {number} {index}**: inserts a number at a **given index**

**Note: All the indices will be valid!**

The **input** comes as an **array of strings**. The first element will be a string containing the **array to manipulate**. Every other **command** you receive will also be a string.

The **output** is the manipulated array printed on the console on a single line, **separated by space**.

## Example

Input	Output
<code>['4 19 2 53 6 43', 'Add 3', 'Remove 2', 'RemoveAt 1', 'Insert 8 3']</code>	<code>4 53 6 8 43 3</code>
<code>['6 12 2 65 6 42', 'Add 8', 'Remove 12', 'RemoveAt 3', 'Insert 6 2']</code>	<code>6 2 6 65 42 8</code>

## Hints

First, we receive the whole input:

```
function solve(commands)
```

- After that we take the **first** element from the commands and **convert** it to an **array of numbers**:

```
let arr = commands  
  .shift()  
  .split(' ')  
  .map(Number);
```

- Then we loop through the commands array, obtain each element from the command, and cast both numbers. This event is called destructuring:

```
for (let i = 0; i < array.length; i++) {  
  let [command, firstNum, secondNum]  
    = commands[i].split(' ');  
  
  firstNum = Number(firstNum);  
  secondNum = Number(secondNum);
```

- We check if the command is equal to one of the given: "**Add**", "**Remove**", etc.

```
switch (command) {  
  case "Add":  
    break;  
  case "Remove":  
    break;  
  case "RemoveAt":  
    break;  
  case "Insert":  
    break;  
}
```

- To add an element at the end, use **push()**

```
function add(el){  
  arr.push(el);  
}
```

- To remove **all occurrences** of a particular element from the array, you can use **filter()**

```
function remove(num) {  
  arr = arr.filter(el => el !== num);  
}
```

- To remove or insert at an index, you can use **splice()**

```
function removeAt(index) {  
  arr.splice(index, 1);  
}  
  
function insert(num, index) {  
  arr.splice(index, 0, num);  
}
```

**Note:** Removing elements with **splice()** receives two parameters:

- Start Index
- Count of elements you want to remove

**Note:** Inserting elements with **splice()** receives three parameters:

- Start Index
- Count of elements to remove – if none enter 0
- Elements to insert at that position