Lab: Arrays

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

Submit your solutions in the SoftUni judge system at: https://judge.softuni.org/Contests/1243

1. Sum First and Last Array Elements

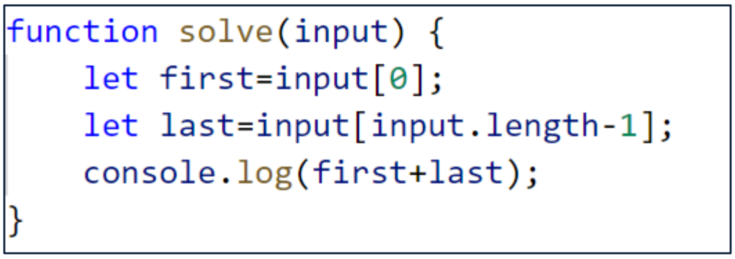
Write a function that receives an **array of numbers** and prints the sum of the **first** and **last** element in that array.

Examples

Input	Output
`[20, 30, 40]`	`60`
`[10, 17, 22, 33]`	`43`
`[11, 58, 69]`	`80`

Hints

- You can access the **last element** in an array by subtracting 1 from **its length**:



```
function solve(input) {
    let first=input[0];
    let last=input[input.length-1];
    console.log(first+last);
}
```

2. Day of Week

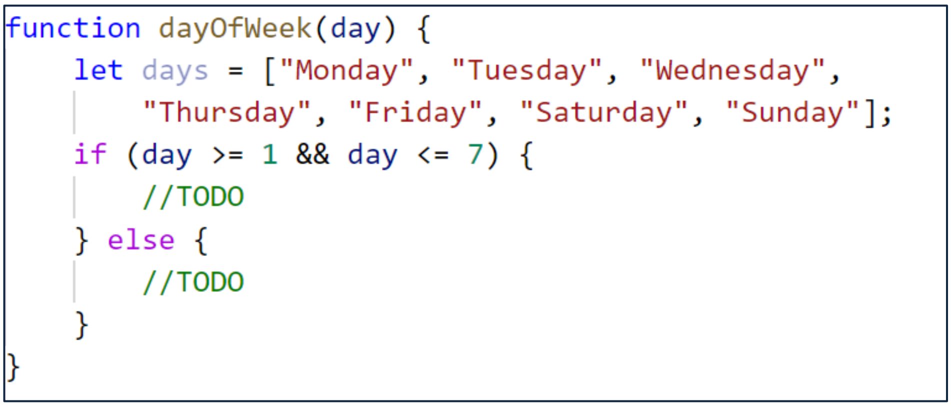
Write a program, which receives a **number** and prints the corresponding **name** of the **day** of the week (in English).

If the number is **NOT** a valid day, print: **`"Invalid day!"`**.

Examples

Input	Output
3	`Wednesday`
6	`Saturday`
11	`Invalid day!`

Hints



```
function dayOfWeek(day) {
    let days = ["Monday", "Tuesday", "Wednesday",
        "Thursday", "Friday", "Saturday", "Sunday"];
    if (day >= 1 && day <= 7) {
        //TODO
    } else {
        //TODO
    }
}
```

3. Reverse an Array of Numbers

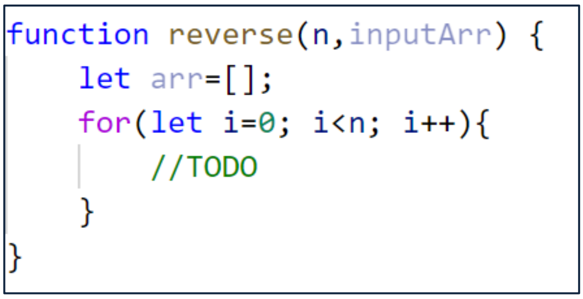
Write a program, which receives a number **n** and an **array** of elements. Your task is to **create** a new array with **n** numbers from the original array, **reverse** it and print its elements on a single line, space-separated.

Examples

Input	Output
`3, [10, 20, 30, 40, 50]`	`30 20 10`
`4, [-1, 20, 99, 5]`	`5 99 20 -1`
`2, [66, 43, 75, 89, 47]`	`43 66`

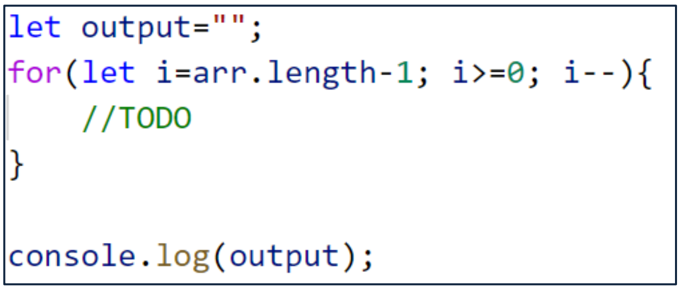
Hints

- Use **push()** to add elements inside the new array



```
function reverse(n,inputArr) {
    let arr=[];
    for(let i=0; i<n; i++){
        //TODO
    }
}
```

- Use **string interpolation** for the output



```
let output="";
for(let i=arr.length-1; i>=0; i--){
    //TODO
}

console.log(output);
```

4. Reverse In Place

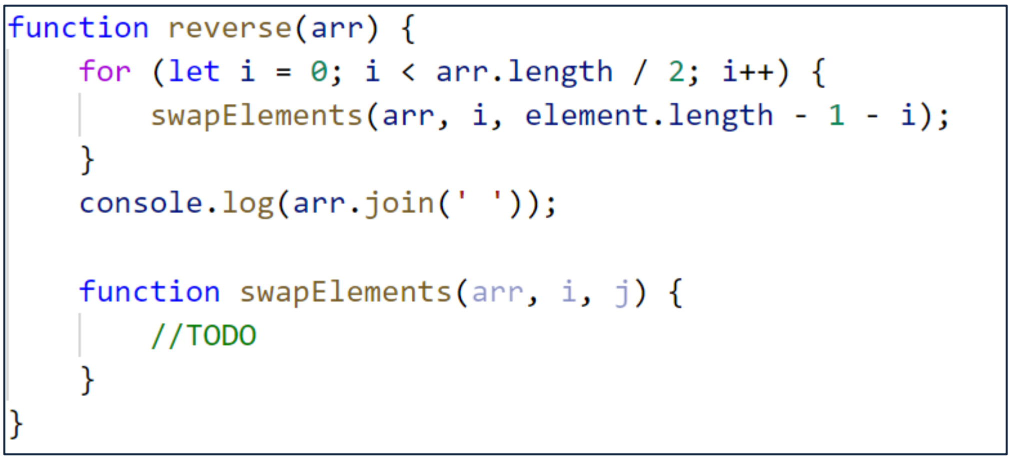
Write a program, which receives an **array of strings**. Your task is to **reverse** the array **without** creating a new array. **Print** the resulting elements on a single line, space-separated.

Examples

Input	Output	Comments
['a', 'b', 'c', 'd', 'e']	e d c b a	The first element should be **last**, and the last element should be **first**.
['abc', 'def', 'hig', 'klm', 'nop']	nop klm hig def abc	
['33', '123', '0', 'dd']	dd 0 123 33	

Hints

- Loop to the **half-length** of the array
- Create a function to swap **two elements** inside an array



```
function reverse(arr) {
    for (let i = 0; i < arr.length / 2; i++) {
        swapElements(arr, i, element.length - 1 - i);
    }
    console.log(arr.join(' '));

    function swapElements(arr, i, j) {
        //TODO
    }
}
```

5. Sum Even Numbers

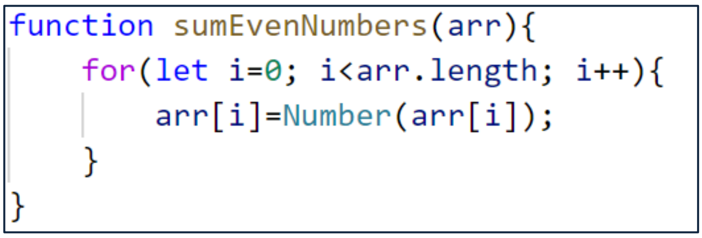
Write a program, which receives an **array** of strings**, parse** them into numbers, and **sum** only the **even** numbers.

Examples

Input	Output
['1','2','3','4','5','6']	12
['3','5','7','9']	0
['2','4','6','8','10']	30

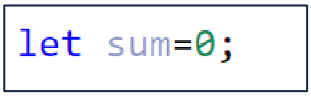
Hints

- Parse each string to number



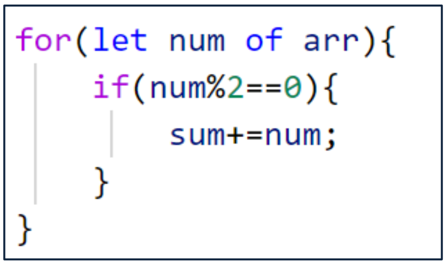
```
function sumEvenNumbers(arr){
    for(let i=0; i<arr.length; i++){
        arr[i]=Number(arr[i]);
    }
}
```

- Create a variable for the sum



```
let sum=0;
```

- Iterate through all elements in the array with a **`for-of`** loop
- Check if the number is **even**



```
for(let num of arr){
    if(num%2==0){
        sum+=num;
    }
}
```

- Print the total sum

6. Even and Odd Subtraction

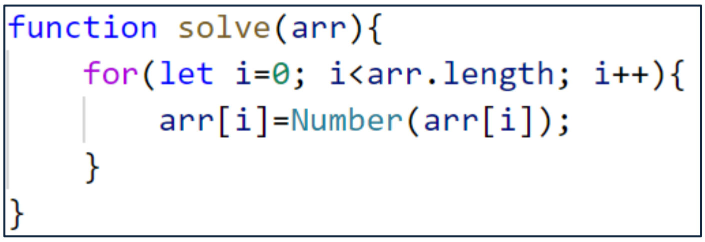
Write a program that calculates the **difference** between the sum of the **even** and the sum of the **odd** numbers in an array.

Examples

Input	Output	Comments
[1,2,3,4,5,6]	3	2 + 4 + 6 = 12, 1 + 3 + 5 = 9, 12 - 9 = 3
[3,5,7,9]	-24	
[2,4,6,8,10]	30	

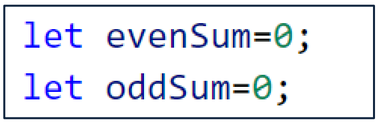
Hints

- Parse each string to number



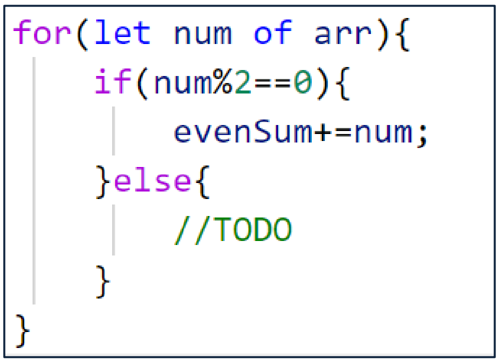
```
function solve(arr){
    for(let i=0; i<arr.length; i++){
        arr[i]=Number(arr[i]);
    }
}
```

- Create two variables - for **even** and **odd** sum



```
let evenSum=0;
let oddSum=0;
```

- Iterate through all elements in the array with **`for-of`** loop and check if the number is odd or even



```
for(let num of arr){
    if(num%2==0){
        evenSum+=num;
    }else{
        //TODO
    }
}
```

- Print the difference

7. Equal Arrays

Write a program, which receives two **string** arrays containing number representations, and prints on the console whether they are **identical**.

Arrays **are identical** if their elements at same indexes are **equal**. If they are identical, find the **sum** of the first array and print the following message:

`Arrays are identical. Sum: {sum}`

If the arrays are **NOT identical,** find the **first index** where the arrays **differ** and print the following message:

`Arrays are not identical. Found difference at {index} index`

Examples

Input	Output

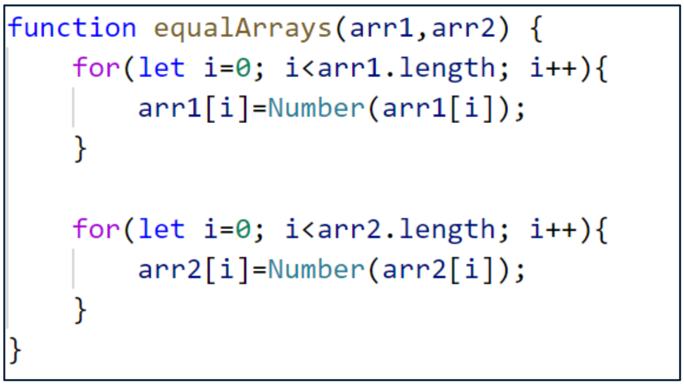
`['10','20','30'],`
`['10','20','30']`
	`Arrays are identical. Sum: 60`

`['1','2','3','4','5'],`
`['1','2','4','4','5']`
	`Arrays are not identical. Found difference at 2 index`

`['1'], ['10']`	`Arrays are not identical. Found difference at 0 index`

Hints

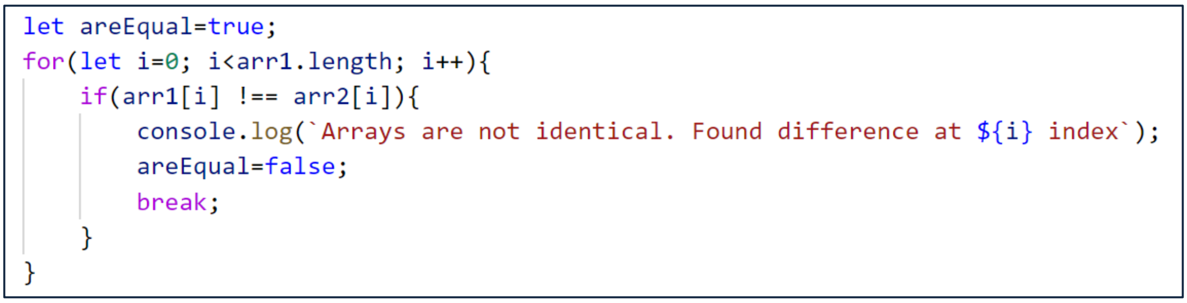
- First, we receive **two** arrays of strings and parse them.



```
function equalArrays(arr1,arr2) {
    for(let i=0; i<arr1.length; i++){
        arr1[i]=Number(arr1[i]);
    }

    for(let i=0; i<arr2.length; i++){
        arr2[i]=Number(arr2[i]);
    }
}
```

- Iterate through the arrays and **compare all elements**. If the elements are **NOT equal,** print the required message and break the loop.



```
let areEqual=true;
for(let i=0; i<arr1.length; i++){
    if(arr1[i] !== arr2[i]){
        console.log(`Arrays are not identical. Found difference at ${i} index`);
        areEqual=false;
        break;
    }
}
```

- Think about how to solve the other part of the problem.

8. Condense Array to Number

Write a program, which receives an array of numbers, and **condenses** them by **summing** adjacent couples of elements until a **single number** is obtained.

Examples

For example, if we have 3 elements **`[2, 10, 3]`**, we sum the first two and the second two elements and obtain **{2+10, 10+3} = {12, 13}**, then we sum again all adjacent elements and obtain **{12+13} = {25}.**

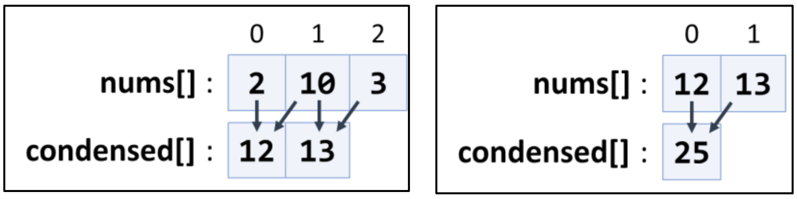
Input	Output	Comments
`[2,10,3]`	`25`	`2 10 3 → 2+10 10+3 → 12 13 → 12 + 13 → 25`
`[5,0,4,1,2]`	`35`	`5 0 4 1 2 → 5+0 0+4 4+1 1+2 → 5 4 5 3 → 5+4 4+5 5+3 → 9 9 8 → 9+9 9+8 → 18 17 → 18+17 → 35`
`[1]`	`1`	`1 is already condensed to number`

Hints

While we have more than one element in the array **`nums[]`**, repeat the following:

- Allocate a new array **`condensed[]`** of size **`nums.Length-1`**.
- Sum the numbers from **`nums[]`** to **`condensed[]`**:
  - **`condensed[i] = nums[i] + nums[i+1]`**
- **`nums[] = condensed[]`**

The process is illustrated below:


0 1 2
nums[] :
2 10 3
condensed[] :
12 13
0 1
nums[] :
12 13
condensed[] :
25