Lab: Arrays

Problems for exercises and homework for the "Programming Fundamentals" course @ SoftUni.

You can check your solutions in Judge.

1. Day of Week

Enter a **day** number and print the **day name** (in English) or "**`Invalid day!`**". Use an **array of strings**.

Examples

Input	Output
1	Monday
2	Tuesday
7	Sunday
0	Invalid day!

Hints

- Use an **array of strings** holding the day names: {"**Monday**", "**Tuesday**", "**Wednesday**", "**Thursday**", "**Friday**", "**Saturday**", "**Sunday**"}.
- Print the element at index (**day-1**) when it is in the range **[1…7]** or "**`Invalid Day!`**" otherwise.

2. Print Numbers in Reverse Order

Read n numbers and print them in reverse order.

Examples

Input	Output
3 10 20 30	30 20 10
3 30 20 10	10 20 30
1 10	10

Solution

First, we need to read **n** from the console.

```
public class PrintNumbersInReversedOrder {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        int n = Integer.parseInt(scanner.nextLine());
    }
}
```

Create an **array of an integer** with **n** size.

```
public class PrintNumbersInReversedOrder {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        int n = Integer.parseInt(scanner.nextLine());

        int[] numbers = new int[n];
    }
}
```

Read **n** numbers using for loop and fill the array.

```
for (int i = 0; i < n; i++) {
    int number = Integer.parseInt(scanner.nextLine());
    numbers[i] = number;
}
```

Print the array in reversed order.

```
for (int i = number.length - 1; i >= 0 ; i--) {
    System.out.print(number[i] + " ");
}
```

3. Sum Even Numbers

Read an array from the console 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

Solution

First, we need to read the array.

```
int[] numbers = Arrays
        .stream(scanner.nextLine().split( regex: " "))
        .mapToInt(e -> Integer.parseInt(e))
        .toArray();
```

We will need a variable for the sum.

```
int sum = 0;
```

Iterate through all elements in the array with for loop. If the number is even, add it to the sum.

```
for (int i = 0; i < numbers.length; i++) {
    if (numbers[i] % 2 == 0) {
        sum += numbers[i];
    }
}
```

Print the total sum.

4. Reverse an Array of Strings

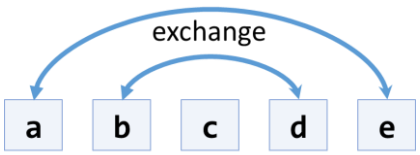
Write a program to read **an array of strings**, **reverse** it and **print** its elements. The input consists of a sequence of space-separated strings. Print the output on a single line (space separated).

Examples

Input	Output
a b c d e	e d c b a
-1 hi ho w	w ho hi -1

Hints

- Read the array of strings.
- **Exchange** the **first** element (at index 0) with the **last** element (at index n-1).
- **Exchange** the **second** element (at index 1) with the element **before the last** (at index n-2).
- Continue the same way until the middle of the array is reached.



5. 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	

Solution

First, we need to read the array.

```
int[] numbers = Arrays
        .stream(scanner.nextLine().split( regex: " "))
        .mapToInt(e -> Integer.parseInt(e))
        .toArray();
```

We will need two variables – even and odd sum.

```
int evenSum = 0;
int oddSum = 0;
```

Iterate through all elements in the array. Check the current number – if it is even, adds it to the even sum, otherwise, add it to the odd sum.

```
for (int number : numbers) {
    if (number % 2 == 0) {
        evenSum += number;
    } else {
        oddSum += number;
    }
}
```

Print the difference.

```
int diff = evenSum - oddSum;
System.out.println(diff);
```

6. Equal Arrays

Read two arrays and print on the console whether they are identical or not. Arrays are identical if their elements are equal. If the arrays are identical, find the sum of the first one and print on the console the following message: "**Arrays are identical. Sum: {sum}**", otherwise find the first index where the arrays differ and print on the console 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 3 5	Arrays are not identical. Found difference at 2 index.
1 10	Arrays are not identical. Found difference at 0 index.

Hints

First, we need to read two arrays.

```
Scanner scanner = new Scanner(System.in);

int[] firstArr = Arrays
        .stream(scanner.nextLine().split( regex: " "))
        .mapToInt(e -> Integer.parseInt(e))
        .toArray();

int[] secondArr = Arrays
        .stream(scanner.nextLine().split( regex: " "))
        .mapToInt(Integer::parseInt)
        .toArray();
```

Iterate through arrays and compare elements. If the elements are not equal, print the required message and break the loop.

```
for (int i = 0; i < maxLength; i++) {
    sum+=firstArr[i];
    if (firstArr[i] != secondArr[i]) {
        System.out.printf("Arrays are not identical. Found difference at %d index.", i);
        break;
    }
}
```

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

7. Condense Array to Number

Write a program to read **an array of integers** and **condense** them by **summing** adjacent couples of elements until a **single integer** is obtained. 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}.

Examples

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: