

## Exercise: Functions

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/1262>

### 1. Smallest of Three Numbers

Write a function that receives **three integers** and prints the **smallest** number. Use an appropriate name for the function.

#### Examples

| Input               | Output |
|---------------------|--------|
| 2,<br>5,<br>3       | 2      |
| 600,<br>342,<br>123 | 123    |
| 25,<br>21,<br>4     | 4      |
| 2,<br>2,<br>2       | 2      |

### 2. Add and Subtract

You will receive **three integer numbers**.

Write a function **sum()** to calculate the sum of the first **two** integers and a function **subtract()**, which subtracts the result of the function the **sum()** and the **third** integer.

#### Examples

| Input           | Output |
|-----------------|--------|
| 23,<br>6,<br>10 | 19     |
| 1,<br>17,<br>30 | -12    |
| 42,             | 0      |

|            |  |
|------------|--|
| 58,<br>100 |  |
|------------|--|

### 3. Characters in Range

Write a function that receives **two characters** and prints on a single line all the characters in between them according to the **ASCII** code. Keep in mind that the second character code might be **before** the first one inside the **ASCII** table.

#### Examples

| Input       | Output   |
|-------------|--|
| 'a',<br>'d' | b c  |
| '#',<br>':' | \$ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9                   |
| 'C',<br>'#' | \$ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B |

### 4. Odd and Even Sum

You will receive a **single number**. You have to write a function, that returns the **sum** of **all even** and **all odd** digits from that number.

#### Examples

| Input            | Output                      |
|------------------|-----------------------------|
| 1000435          | Odd sum = 9, Even sum = 4   |
| 3495892137259234 | Odd sum = 54, Even sum = 22 |

### 5. Palindrome Integers

A palindrome is a number, which reads the same **backward as forward**, such as 323 or 1001. Write a function, which receives an **array of positive integers** and checks if each integer is a palindrome or not.

#### Output

- If the current integer is a palindrome, print: **"true"**
- Otherwise, print: **"false"**

#### Examples

| Input | Output | Input | Output |
|-------|--------|-------|--------|
|-------|--------|-------|--------|

|                   |       |                 |       |
|-------------------|-------|-----------------|-------|
| [123,323,421,121] | false | [32,2,232,1010] | false |
|                   | true  |                 | true  |
|                   | false |                 | true  |
|                   | true  |                 | false |

## Hints

- Read more about palindromes: <https://en.wikipedia.org/wiki/Palindrome>

## 6. Password Validator

Write a function that checks if a given password is valid. Password validations are:

- The **length** should be **6 - 10** characters (inclusive)
- It should consist **only of letters** and **digits**
- It should have **at least 2** digits

If a password is a valid print: **"Password is valid"**.

If it is **NOT** valid, for every unfulfilled rule print a message:

- "Password must be between 6 and 10 characters"**
- "Password must consist only of letters and digits"**
- "Password must have at least 2 digits"**

## Examples

| Input       | Output   |
|-------------|--|
| 'logIn'     | Password must be between 6 and 10 characters<br>Password must have at least 2 digits     |
| 'MyPass123' | Password is valid  |
| 'Pa\$\$s\$' | Password must consist only of letters and digits<br>Password must have at least 2 digits |

## 7. NxN Matrix

Write a function that receives a single integer number **n** and prints **nxn** matrix with that number.

## Examples

| Input | Output   |
|-------|--|
| 3     | 3 3 3<br>3 3 3<br>3 3 3  |
| 7     | 7 7 7 7 7 7 7<br>7 7 7 7 7 7 7<br>7 7 7 7 7 7 7<br>7 7 7 7 7 7 7 |

|   |   |
|---|---|
|   | 7 7 7 7 7 7 7<br>7 7 7 7 7 7 7<br>7 7 7 7 7 7 7 |
| 2 | 2 2<br>2 2                                      |

## 8. Perfect Number

Write a function that receives a **number** and checks if that number is perfect or NOT.

A perfect number is a **positive** integer that is equal to the **sum** of its **proper positive divisors**. That is the sum of its positive **divisors** excluding the number itself (also known as its **aliquot sum**).

### Output

- If the number is perfect, print: "We have a perfect number!"
- Otherwise, print: "It's not so perfect."

### Examples

| Input   | Output                    | Comments           |
|---------|---------------------------|--------------------|
| 6       | We have a perfect number! | 1 + 2 + 3          |
| 28      | We have a perfect number! | 1 + 2 + 4 + 7 + 14 |
| 1236498 | It's not so perfect.      |                    |

### Hint

Equivalently, a perfect number is a number that is **half the sum** of all of its positive divisors (including itself) => 6 is a perfect number because it is the sum of 1 + 2 + 3 (all of which are divided without residue).

- Read about the Perfect number here: [https://en.wikipedia.org/wiki/Perfect\\_number](https://en.wikipedia.org/wiki/Perfect_number)

## 9. Loading Bar

You will receive a **single number** between **0** and **100**, which is divided with 10 without residue (0, 10, 20, 30...).

Your task is to create a function that visualizes a **loading bar** depending on the number you have received in the input.

### Examples

| Input | Output                              |
|-------|-------------------------------------|
| 30    | 30% [%%.....]<br>Still loading...   |
| 50    | 50% [%%%%.....]<br>Still loading... |
| 100   | 100% Complete!                      |

|  |                |
|--|----------------|
|  | [ %%%%%%%%%% ] |
|--|----------------|

## 10. Factorial Division

Write a function that receives **two** integer numbers. Calculate the **factorial** of each number. Divide the first result by the second and print the division formatted to the **second decimal** point.

### Examples

| Input   | Output | Input   | Output |
|---------|--------|---------|--------|
| 5,<br>2 | 60.00  | 6,<br>2 | 360.00 |

### Hints

- Read more about factorial here: <https://en.wikipedia.org/wiki/Factorial>
- You can use [recursion](#)