# Exercise: Functions

Problems for exercise and homework for the "JS Fundamentals" Course @ SoftUni.
Submit your solutions in the SoftUni judge system at: https://judge.softuni.bg/Contests/1262

## 1. Smallest of Three Numbers

Write a function which receives **three integer** numbers to print the **smallest**. Use 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. Add and Subtract

You will receive **three integer numbers.**

Write a function **`sum()`** to get the sum of the first **two** integers and **`subtract()`** function that subtracts the **third** integer from the result.

### Examples

| Input | Output |
|---|---|
| 23,<br>6,<br>10 | 19 |
| 1,<br>17,<br>30 | -12 |
| 42,<br>58,<br>100 | 0 |

## 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', 'd' | b c |
| '#', ':' | $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 |
| 'C', '#' | $ % & ' ( ) * + , - . / 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 integer** and checks if each integer is a palindrome or not.

### Examples

| Input | Output |
|---|---|
| [123,323,421,121] | false<br>true<br>false<br>true |

| Input | Output |
|---|---|
| [32,2,232,1010] | false<br>true<br>true<br>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 consists **only of letters** and **digits**
- It should have **at least 2** digits

If a password is 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$s$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<br>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 receive a **number** and return if this 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**).

### 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

## 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 visualize a **loading bar** depending on that number you have received in the input.

### Examples

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

## 10. Factorial Division

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

### Examples

| Input | Output |
|---|---|
| 5<br>2 | 60.00 |

| Input | Output |
|---|---|
| 6<br>2 | 360.00 |

## Hints

- Read more about factorial here: https://en.wikipedia.org/wiki/Factorial
- You can use recursion