# Exercises: Methods

Problems for exercises and homework for the ["Programming Fundamentals" course @ SoftUni](https://softuni.bg/trainings/3951/programming-fundamentals-with-java-january-2023).

You can check your solutions in [Judge.](https://judge.softuni.org/Contests/1286)

## Smallest of Three Numbers

Write a method to print the smallest of three integer numbers. Use an appropriate name for the method.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2  5  3 | 2 |
| 600  342  123 | 123 |
| 25  -21  4 | -21 |

## Vowels Count

Write a method that receives a single string and prints the count of the vowels. Use an appropriate name for the method.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| SoftUni | 3 |
| Cats | 1 |
| JS | 0 |

## Characters in Range

Write a method that receives two characters and prints all the characters in between them on a single line according to ASCII.

### 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 |

## Password Validator

Write a program that checks if a given password is valid. Password rules are:

* 6 – 10 characters **(inclusive)**;
* Consists only of **letters** and **digits**;
* 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  Password must have at least 2 digits |
| MyPass123 | Password is valid |
| Pa$s$s | Password must consist only of letters and digits  Password must have at least 2 digits |

### Hints

Write a method for each rule.

## Add and Subtract

You will receive 3 **integers.** Write a method sum to get the sum of the first two integers and subtractthemethod that subtracts the third integer from the result from the sum method.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 23  6  10 | 19 |
| 1  17  30 | -12 |
| 42  58  100 | 0 |

## Middle Characters

You will receive a single string. Write a method that prints the middle character. If the length of the string is even, there are two middle characters.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| aString | r |
| someText | eT |
| 3245 | 24 |

## NxN Matrix

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

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3 | 3 3 3  3 3 3  3 3 3 |
| 7 | 7 7 7 7 7 7 7  7 7 7 7 7 7 7  7 7 7 7 7 7 7  7 7 7 7 7 7 7  7 7 7 7 7 7 7  7 7 7 7 7 7 7  7 7 7 7 7 7 7 |
| 2 | 2 2  2 2 |

## Factorial Division

Read two integer numbers. Calculate the [factorial](https://en.wikipedia.org/wiki/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  2 | 60.00 |  | 6  2 | 360.00 |

## Palindrome Integers

A **palindrome** is a number that reads the same backward as forward, such as 323 or 1001. Write a program that reads a positive integer number until you receive "**END**". For each numbered print, whether the number is palindrome or not.

### Examples

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |
| 123  323  421  121  END | false  true  false  true |  | 32  2  232  1010  END | false  true  true  false |

## Top Number

Read an **integer** n from the console. Find all top numbers in the range **[1 … n]** and print them. A top number holds the following properties:

* Its **sum of digits is divisible by 8**, e.g. 8, 16, 88.
* Holds at least **one odd digit**, e.g. 232, 707, 87578.

### Examples

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Input** | **Output** |  | **Input** | **Output** |
| 50 | 17  35 |  | 100 | 17  35  53  71  79  97 |