# Exercises: Functions

This document defines the exercises for the ["C++ Fundamentals" course @ Software University](https://softuni.bg/trainings/3657/cpp-fundamentals-march-2022). Please submit your solutions (source code) of all below-described problems in [Judge](https://judge.softuni.org/Contests/2938/CPlusPlus-Functions).

## Center Point

You are given the coordinates of two points on a [Cartesian coordinate system](https://en.wikipedia.org/wiki/Cartesian_coordinate_system) - X1, Y1, X2, and Y2. **Create a method** that prints the point that is closest to the center of the coordinate system (0, 0) in the format (X, Y). If the points are at the same distance from the center, print only the first one.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2  4  -1  2 | (-1, 2) |
| 1  2  7  6 | (1, 2) |

## Operations

Write a program that receives two integer numbers and one of the following four instructions (as a single symbol): +, -, \*, / on the next line. The operations are as follows: + is addition, - is subtraction, \* is multiplication, and / is division. Create four functions (for each operation) and call the right one depending on the command.

The function should print:

* The calculated number
* "**Can't divide by zero.**" - on certain conditions

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 8 4  / | 2 |
| 2 3  - | -1 |
| 1 2  + | 3 |

## 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 |

## Print Name of Numbers

Write a program that, given an integer number in the range [0, 9999], prints the name of that number in English.

Simplifications:

* Use lowercase English letters only
* Don’t place "and" (e.g. 957 is nine hundred fifty-seven, NOT nine hundred and fifty-seven)
* Skip 0 digits, except for the number 0 (e.g. 0 -> zero; 101 -> one hundred one; 1001 -> one thousand one)
* Don’t print dashes (e.g. print 75 as seventy-five, NOT seventy-five)

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 0 | zero |
| 101 | one hundred one |
| 957 | nine hundred fifty seven |

## Multiply Evens Sum by Odds

Create a program that reads an **integer number** and **multiplies the sum of all its even digits** by **the sum of all its odd digits**:

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| 12345 | 54 | 12345 has **2 even digits** - 2 and 4. Even digits have a **sum of 6**.  Also, it has **3 odd digits** - 1, 3, and 5. Odd digits have a **sum of 9**.  **Multiply 6 by 9** and you get **54**. |
| -12345 | 54 |  |

# Additional Problem

# Operations\* (not included in the homework)

Write a program that receives two integer numbers from the console, then reads one of the following four instructions (as a single symbol): +, -, \*, / and performs the respective operation on the two numbers, with the first number as a left operand and the second number as a right operand (+ is addition, - is subtraction, \* is multiplication and / is a division).

If the user enters a symbol different than one of the four operations, the program should print try again, and allow the user to enter the operation again.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2 3  - | -1 |
| 12 5  ?  A  5  \* | try again  try again  try again  60 |