# Exercises:

Problems for exercises and homework for the [“C++ Fundamentals” course @ SoftUni](https://softuni.bg/opencourses/cplusplus-fundamentals). Submit your solutions in the SoftUni judge system at <https://judge.softuni.bg/Contests/1428/Classes-and-Objects>

Write C++ code for solving the tasks on the following pages.

Please follow the exact instructions on uploading the solutions for each task.

**Classes and Objects**

# Task 1 – Distance

Write a program to calculate the (Euclidean) distance between two points p1{x1,y1} and p2{x2,y2}.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3 4  6 8 | 5 |

**Task 2 - Area and Perimeter of Rectangle**

Write a program, make a Class Rectangle. For a given numbers the program should calculate the area and the perimeter of the Rectangle.

**EXAMPLE**:

The numbers are 3,4 ( Area is 12, Perimeter is 14 )

**Examples**

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  4 | 12  14 |
| 1  2 | 2  6 |

# Task 3 – Time Calculation

Write a program, use a class for a given HOURS:MINUTES:SECOND the program should calculate the TIME in

HOURS

MINUTES

SECONDS

**EXAMPLE:**

If we have 1 HOUR 1 MINUTE 1 SECONDS

In HOUR is – 1

in MINUTES is – 61

in SECONDS is - 3661

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 1  1  1 | 1  61  3661 |
| 1  2  3 | 1  62  3723 |

# Task 4 – Students Information

Write a program, use a class that has params:

Student Name

Student Surname

Total Average

The class should have Print method that for a given object prints all the information

Make a vector in main that for a given number ( passed thru user ) saves the objects

**EXAMPLE:**

Number of students – 2

Name – Maria

Surname – Ivanova

Average – 3.5

Name – Dragan

Surname – Ivanov

Average – 4.5

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2  Maria  Ivanova  3.5  Dragan Ivanov  4.5 | Maria Ivanova 3.5  Dragan Ivanov 4.5 |

# Task 5 – Total average of students

Write a program, use a class that has params:

Student Name

Student Surname

Total Average

The class should have Print method that for a given object prints all the information

Make a vector in main that for a given number ( passed thru user ) saves the objects

Make a function that calculates the Total AVERAGE of ALL students

**EXAMPLE:**

Number of students – 2

Name – Maria

Surname – Ivanova

Average – 3.5

Name – Dragan

Surname – Ivanov

Average – 4.5

**TOTAL AVERAGE** – ( 3.5 + 4.5 ) / 2 = 4

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2  Maria  Ivanova  3.5  Dragan  Ivanov  4.5 | Maria Ivanova 3.5  Dragan Ivanov 4.5  4 |