# C++ Fundamentals - ноември 2018

# STL Associative Containers 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/1409/STL-Associative-Containers>

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

Code should compile under the C++03 or the C++11 standard.

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

Task 1 – EVEN ODD in map

Write a program, use map, for a given number the map should insert automatically keys and the values should find if the key is EVEN or ODD

Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 5 | KEY: 0 VALUE: EVEN  KEY: 1 VALUE: ODD  KEY: 2 VALUE: EVEN  KEY: 3 VALUE: ODD  KEY: 4 VALUE: EVEN |

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2 | KEY: 0 VALUE: EVEN  KEY: 1 VALUE: ODD |

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3 | KEY: 0 VALUE: EVEN  KEY: 1 VALUE: ODD  KEY: 2 VALUE: EVEN |

Task 2 – Filter by Name or Age

Write a program use map, for given NAME the value should be AGE, write a program that fills the map with (names ages) and give the user choice of filter by NAME or AGE.

**Examples:**

Enter n:

2

Enter name :

Ivan

Enter age :

25

Enter name :

Hristiyan

Enter age :

20

Filter by name or age - enter 'name' or 'age'

name

Enter name that you want to filter :

Ivan

name : Ivan age : 25

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2  Ivan  25  Hristiyan  20  name  Ivan | name : Ivan age : 25 |

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  Ivan  20  Petkan  30  Dragan  30  age | name : Dragan age : 30  name : Petkan age : 30 |

Task 3 – Find POINT if inside or outside

Write a program use a vector<pair<int,int>> for a 2 given indexes in vector, you have a point (X , Y), by insert the 3-rd point make sure that the 3-rd point is INSIDE the rect or OUTSIDE

Examples

Enter point X:

2

Enter point Y:

5

Enter point X:

3

Enter point Y:

5

Enter point to check if inside:

Enter check point X:

1

Enter check point Y:

5

Check point is outside

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2  5  3  5  1  5 | Check point is outside |

|  |  |
| --- | --- |
| **Input** | **Output** |
| 5  5  6  6  5  5 | Check point is inside |

|  |  |
| --- | --- |
| **Input** | **Output** |
| 5  5  10  10  0  0 | Check point is outside |

Task 4 – Car program

Write a program, use a structure that hold { MADE MODEL YEAR }, after the input of the cars, the user should have a choice to filter by MADE or print all the cars

Examples

Enter how many cars you want to input:

2

Enter Made:

Volkswagen

Enter Model:

Golf

Enter Year:

2002

Enter Made:

Mercedes

Enter Model:

c220

Enter Year:

2004

Enter options:

1 - Search

2 - Print all

1

Input Made:

Mercedes

Mercedes c220 2004

|  |  |
| --- | --- |
| **Input** | **Output** |
| 2  Volkswagen  Golf  2002  Mercedes  c220  2004  1  Mercedes | Mercedes c220 2004 |

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  Audi  a3  2007  Mercedes  c63  2010  Ford  Ka  2005  2 | Audi a3 2007  Ford Ka 2005  Mercedes c63 2010 |