C++ Advanced – Exam 1 (07 Apr 2019)

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

Code should compile under the C++11 standard.

Submit your solutions here: https://judge.softuni.bg/Contests/1441/CPlusPlus-Advanced-Exam-07-Apr-2019

Any code files that are part of the task are provided under the folder **Skeleton**.

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

Task 3 – Hardware Store

You are given 4 files: main.cpp, Hardware.h, Laptop.h and Store.h.

You are given the `main()` function, which reads a single integer value of memory (N).

- The next N lines are special command strings;
  - "buy" command – creates new Laptop in the Hardware Store;
  - "remove" command – removes a Laptop from a given INDEX from the Hardware Store (provided indexes will always be valid);
  - "copy" command – copies the data from one index to another index in the Hardware Store;

Your task is to study the provided Skeleton and implement the missing functionalities for Store.cpp and Laptop.cpp files;

For Store.cpp – you should implement the missing functions.

For Laptop.cpp – you should implement everything required from the Laptop.h file with few things in mind;

- At the end of the **constructor** you should call printInfo() followed by printing " is being created" and a **newline**;
- At the end of the **destructor** you should call printInfo() followed by printing " is being destroyed" and a **newline**;
- At the end of the **copy-constructor** you should print "Copy construction for " followed by a call to printInfo() and a **newline**;
- At the end of the **copy-assignment** operator you should print "Copy assignment for " followed by a call to printInfo() and a **newline**;
- If a self-copy is detected you should print "Self-copy prevented for " followed by a call to printInfo() and a **newline**;

Important hint:

Remember what happens to a std::vector's elements when it is constantly growing with call to .push_back()/.emplace_back().

Also remember what happens to a std::vector's elements when an element is deleted from an index, which is not the last.

Last but, not least remember what happens to a std::vector's elements, when the vector is being destoyed.

Example:

3 commands:

- buy Acer 1200.14 15.6
- copy 0 0
- remove 0

output:

Model: Acer, price: 1200.14, monitorSize: 15.6 is being created

Self-copy prevented for Model: Acer, price: 1200.14, monitorSize: 15.6

Model: Acer, price: 1200.14, monitorSize: 15.6 is being destroyed

Your task is to study the code and implement the function so that the code accomplishes the task described.

You should submit a single **`.zip`** file for this task, containing **ONLY** the files you created.

The Judge system has a copy of the other files and will compile them, along with your file, in the same directory.

Restrictions

There are no restrictions.

Examples

Input	Output
2 buy Acer 1200.14 15.6 remove 0	Model: Acer, price: 1200.14, monitorSize: 15.6 is being created Model: Acer, price: 1200.14, monitorSize: 15.6 is being destroyed
3 buy Acer 1200.14 15.6 buy Toshiba 902.87 17.2 remove 1	Model: Acer, price: 1200.14, monitorSize: 15.6 is being created Model: Toshiba, price: 902.87, monitorSize: 17.2 is being created Copy construction for Model: Acer, price: 1200.14, monitorSize: 15.6 Model: Acer, price: 1200.14, monitorSize: 15.6 is being destroyed Model: Toshiba, price: 902.87, monitorSize: 17.2 is being destroyed Model: Acer, price: 1200.14, monitorSize: 15.6 is being destroyed
5 buy Acer 1200.14 15.6 buy Toshiba 902.87 17.2 copy 1 1 copy 1 0 remove 0	Model: Acer, price: 1200.14, monitorSize: 15.6 is being created Model: Toshiba, price: 902.87, monitorSize: 17.2 is being created Copy construction for Model: Acer, price: 1200.14, monitorSize: 15.6

	Model: Acer, price: 1200.14, monitorSize: 15.6 is being destroyed Self-copy prevented for Model: Toshiba, price: 902.87, monitorSize: 17.2 Copy assignment for Model: Toshiba, price: 902.87, monitorSize: 17.2 Copy assignment for Model: Toshiba, price: 902.87, monitorSize: 17.2 Model: Toshiba, price: 902.87, monitorSize: 17.2 is being destroyed Model: Toshiba, price: 902.87, monitorSize: 17.2 is being destroyed