Summary lesson 1 – 7

Implement an object oriented system in C++ for the description below. You must

- Use inheritance in an appropriate way
- Use overriding and dynamic binding where this is suitable
- Overloading the assignment operator in classes where this is needed to accomplish deep copying
- Define the copy-constructor in classes where this is needed to accomplish deep copying
- Implement a Container class that handles the competitors
- Use aggregation/composition

Furthermore the following must be fulfilled:

- All classes must be implemented in two files: .h (only declarations) and .cpp (definitions)
- All member variables must be private
- Declare member functions constant when possible
- Names must be descriptive (except for counters in loops)
- Names of variables and functions start with a lower-case letter
- Class names start with upper-case letter
- Every new word in a name starts with an upper-case letter
- Use only upper-case letters in name of constants

In a competition there are two categories of competitors: jumpers and runners. For all competitors it is relevant to register name and start number. When it comes to runners it is also important to register the result time of the race for the runner. For Jumpers, the results of all jumps the jumper have done in the competition have to be registered. Since the number of jumps can vary from competition to competition it must not be a fixed value. Instead this (the number of jumps to make) is also registered for a jumper.

In a competition the amount of competitors can vary. Because of that the number of competitors that a competition can handle must not be a fixed value.

The system must offer the possibility to:

1. Add a jumper
2. Add a runner
3. Remove a competitor given the start number
4. Show all competitors
5. Show only the jumpers
6. Show only the runners
7. Register a jump for a jumper given the start number of the jumper and the length of the jump
8. Register the result for a runner given the start number of the runner and the time of the race
9. Show the results of the jumpers and also the winner
10. Show the results of the runners and also the winner

The user of the system must be able to make choices from a menu (according to the list above).