

Corso di Laboratorio di Programmazione

Laboratorio 5 – Template, ereditarietà 16/12/2020

Nota: i quesiti e gli esercizi seguenti sono tratti (ma non tradotti) dal libro di testo.

Discussione

Rispondete alle seguenti domande (Review, cap. 19&14):

1. What is a template?
2. How can you make a class abstract?
3. What is a virtual function and how does it differ from a non-virtual function?
4. What is a base class?
5. What makes a class derived?
6. How does a pure virtual function differ from other virtual functions?
7. What does overriding mean?

Esercizi

1. Write a template function `f()` that adds the elements of one `vector<T>` to the elements of another; for example, `f(v1, v2)` should do `v1[i] += v2[i]` for each element of `v1`.
2. Define a class `Iterator` with a pure virtual function `next()` that returns a `double*`. Now derive `Vector_iterator` and `List_iterator` from `Iterator` so that `next()` for a vector iterator yields a pointer to the next element of a `vector<double>` and `List_iterator` does the same for a `list<double>`. You initialize a `Vector_iterator` with a `vector<double>` and the first call of `next()` yields a pointer to its first element, if any. If there is no next element, return 0. Test this by using a function `void print(Iterator&)` to print the elements of a `vector<double>` and a `list<double>`.
3. Define a class `Controller` with four virtual functions `on()`, `off()`, `set_level(int)` and `show()`. Derive at least two classes from `Controller`. One should be a simple test class where `show()` prints out whether the class is set to on or off and what is the current level. The second derived class should somehow control the line color of a `Shape`; the exact meaning of "level" is up to you.

Note: per gli esercizi 2 e 3 dovete attivare il controllo di versione usando Git e usare Cmake per compilare il progetto.

Git

I comandi da usare sono:

- `git init` (una sola volta all'inizio)
- `git add` per aggiungere i file al controllo di versione
- `git commit` per effettuare un salvataggio della versione corrente

Effettuate almeno quattro salvataggi durante lo sviluppo.