1. PROJECT DESCRIPTION

Overview

Bertrand Meyer uses in his class “Introduction to Programming” (for first term students) a teaching approach called the “Inverted Curriculum” [3,4] which gives students already at the beginning the opportunity to work with a large amount of software components (including multimedia and graphics) to activate their curiosity and help them to understand software in a different and more global way.

Guided by the book “TOUCH OF CLASS” [5], which is constantly in development, the students see software from a more and more detailed side by “revealing the magic” with each chapter they read.

This book contains many examples to help the students understand the basic principles of good software design and these examples are also the subject of this work.

For the success of the book, it is crucial that the examples are easy to understand and help the students to get the essence of the concepts.

Scope of the work

Most of the examples in TOUCH OF CLASS are not compatible with the current Traffic library [6] which makes it more difficult for the students to learn the taught concepts, because they work with Traffic most of the time. So the key goal of this semester thesis is to implement some of the examples as close as possible to the book without destroying the design of the Traffic library or – if it can't be achieved - to find and implement some new, more suitable examples covering the same concept. The hope and motivation of this work is to help students to understand the main concepts in a easy, comprehensible way.

Intended results

Result of the work should be 1 or 2 well designed examples which can be imitated by the students and which are easily integrated into Traffic library and match concepts introduced in the according chapters of the book. It is also intended that these examples come from chapters which are not already mentioned in other works.
2. BACKGROUND MATERIAL

Reading list


http://se.ethz.ch/~meyer/down/touch/

Other books that may help.

3. PROJECT MANAGEMENT

Objectives and priorities

- Write the project plan
- Read TOUCH OF CLASS and find suitable Examples
- Get familiar with traffic and check out if the examples can be implemented
- Define and implement 1 or 2 Examples for different chapters
- Write a report and update the Traffic Documentation

Criteria for success

The examples should be:
- Easy to understand
- Easy to use (try out)
- Based on the Traffic library (as close as possible) and conform with it
- Support explanation off all the concepts that are mentioned in the according chapter

Method of work

To get a good base for the work the first step is to read the book TOUCH OF CLASS and to look for some good examples more or less easy to implement. Along with the reading a study of the Traffic library will be done. This is important to get some intuition for “implementable” examples (there is no reason to mess up the traffic library).

After this “starting phase” I will work on 1 or 2 examples starting with the one having the lowest chapter number.

After each implementation of an example there will be a small test phase to detect and fix some possible bugs.
Quality management

Documentation

Because the examples are for first term students the documentation has to be easy to understand, precise and complete (but also as short as possible).
The documentation will be done continuously during implementation work.

Validation steps

A big testing phase at the end of the work is planned, along with the other smaller testing phases (see method of work) this should be enough to guarantee a stable working software.
There will be some meetings with Michela Pedroni in the future.

4. PLAN WITH MILESTONES

Project steps

– Reading of the Book
– Installation of the Software (Version / Compiler)
– Getting started (Look into existing examples / Library etc.)
– Project plan
– Design
– Implementation
– Testing
– Documentation

Deadline

End of November

Tentative schedule

| August: 2\textsuperscript{nd} + 3\textsuperscript{rd} week | Readings, installation, Getting started |
| August: 4\textsuperscript{th} week | Project plan |
| September: 1\textsuperscript{st} / 2\textsuperscript{nd} / 3\textsuperscript{rd} week | Design |
| September: 4\textsuperscript{th} October: 1\textsuperscript{st} / 2\textsuperscript{nd} / 3\textsuperscript{rd} | Implementation |
| October: 4\textsuperscript{th} | Testing |
| November: ... | Documentation in detail |

REFERENCES


Bertrand Meyer. Touch of Class - learning to programm well with object technology and design by contract. Available online under: [http://se.ethz.ch/~meyer/down/touch/](http://se.ethz.ch/~meyer/down/touch/).

The Traffic software, online under [http://se.inf.ethz.ch/traffic/](http://se.inf.ethz.ch/traffic/).