

Final Project

ETH Zurich

Hand-out: 20 December 2005

Due: 6 February 2006



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Please do **not** solve this assignment alone. Actually, you should do the project in **groups of two**. Try to form uniform groups according to your respective programming experience, so that you can choose a task that is equally challenging for both of you. Also, both members of a project group should be in the same exercise group.

1 The project(s)

As you will spend a considerable amount of time on the final project, we want you to be very happy with it. Therefore, we give you a lot of freedom. In short, you should provide **an extension to Traffic/Flathunt**.

By now, you have done several exercises with Flathunt, and probably you were annoyed about something, or you desperately missed a certain game feature. The time has come where you can extend Traffic (or Flathunt in particular) and give it your personal touch. You can do almost anything you want, provided that your assistant agrees with what you have in mind, and that your idea is worked out clearly. Here are some examples:

- Extend the 3D model of Traffic
- Add some graph algorithms
- Add information about events happening in the city (e.g. movies playing in cinemas)

As an alternative, you can also choose to extend EiffelMedia: the library that provides the graphical support for Traffic. Some examples for projects related to this are:

- program new themes for the widget toolkit (there exists an example and documentation on this; you can create more examples)
- create a screenshot factory (API used to save images of what is on the screen)

As a last resort, if you are not interested in extending either Traffic or EiffelMedia, and only in exceptional cases and if your request is well-founded, we will accept other project proposals too.

Another important point: **your project must not have any offensive content, and it should not use copyrighted material.**

2 The Tasks and Their Deadlines

2.1 Initial Description of the Idea

You must come up with a brief description (a few sentences) of what you want to do in the project until **23 December 2005**. Your assistant will approve or disapprove of this idea. As soon as you have a positive answer from your assistant, you can start working on the next tasks.

2.2 Project Description

You must come up with a thorough description of the requirements of the project by **10 January 2006**. This must also include a clear statement of how the work will be divided between the 2 group members.

2.3 Analysis and Design

Before you start to program your application, you should sit together with your partner and discuss how to best model your system.

- What should the final system look like?
- What are the advantages/drawbacks?
- How do the classes work together?

You must write a short report describing your design decisions and the overall architecture of your system. This report should include a BON diagram of your classes. Deadline for submitting this report: **17 January 2005**

2.4 Implementation and Documentation

Implement the system you designed. Make sure that your code is readable, well-commented and equipped with contracts. Then test your system to make sure that it works as specified in the requirements. You also have to write a (short) developer guide describing your system. You may reuse parts of the design document for this.

Deadline for submitting your code and the document: **6 February 2006**

3 The Presentations

In the exercise session

You will have to present your project in front of your group and assistant. You can do this either in the second exercise session of the 13th week of the semester (30 January - 3 February 2006), or in one of the exercise sessions in the last week of the semester (6 - 10 February 2006). The choice is up to you, but if you do the presentation in week 13, then your project might be selected to be presented in front of everyone during the last lecture - read more below. Your presentation in the exercise session should take no more than 10 minutes, and you are not only to show how your project works, but also to talk about your design decisions and your experiences during this project. Both group members should participate in the presentation.

If you choose to do the presentation in week 13, as this is before the final submission deadline, there can still be minor functions missing from your application, but the main functionality should be there.

In the lecture

In the last lecture of the semester (Tuesday, 7 February 2006) we will have an **object oriental bazaar**. This is the same as an oriental bazaar, but with objects :) This is what will happen:

- During the first hour, each group will have a "booth", i.e. a laptop on which you can demonstrate to the others what you have implemented. You will also walk around to look at others' projects.
- During the second hour, a set of selected projects will be demoed in front of everybody (Prof. Meyer, the assistants, and your colleagues). These projects will be selected by the assistants based on the presentations that you do in the exercise sessions of the 13th week.

4 Submission: What and How to Hand in

All the deliverables of the project will be uploaded to the wiki located at <http://wiki.se.inf.ethz.ch/info1.05/>. To access the wiki, use the following

- user name: *students*
- password: *info1*

Your assistant will instruct you on how to use the wiki. You will have to create a page for your project according to the template that you will be given. This page will contain the following sections:

- Project name: *state the name of the project here*
- Student names: *names of the 2 group members*
- Initial description of the idea: *a few sentences with a brief description of what you want to do in the project*
- Project description: *link to an uploaded PDF document with a detailed description of the requirements of the project and the division of work between the group members*
- Analysis and design: *link to an uploaded PDF document for the analysis and design phase*
- Implementation: *link to an uploaded .zip file containing the code*
- Developer guide: *link to an uploaded PDF file*

Note: The source code that you upload on the wiki should only contain .e files and the project ace file. Don't include any hard coded paths in the ace file. In other words, you should only have relative paths in the ace file.

To upload files to the wiki you will need to create a personal account. Create such an account with your full name as user name. Only the above-mentioned formats can be uploaded to the wiki.

5 The Assessment Criteria

- Design
 - Extendibility
 - Ease of use
- Functionality
 - Does the implementation satisfy the specification
- Quality of contracts
 - Preconditions
 - Postconditions
 - Class invariants
 - Loop invariants and variants
- Documentation
 - Project description
 - Design document
 - Developer guide

- Quality of code
 - Style guidelines
 - Quality of code
- Effort devoted to the project

6 Final Remark

This exercise gives a lot of freedom concerning the amount of work you invest. You may improve and upgrade the functionality of your application to any extent you want. Feel free to use your imagination! There are no limits. The main goal is to program and gain experience in extending/developing larger systems.