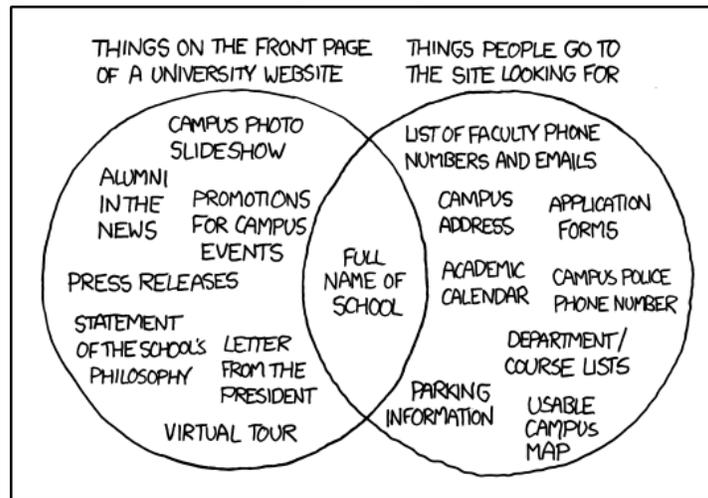


Assignment 1: Getting started

ETH Zurich

Handout: Monday, 14 September 2015



University Website © Randall Munroe (<http://xkcd.com/773>)

1 Welcome to ETH!

Goal

The goal of this task is to familiarize you with the infrastructure provided by ETH Zurich and to make sure that you have subscribed to this course.

To do

- Use your personal computer or log in to a computer in one of the ETH computer rooms.
- Log in to the n.ethz account administration page (<http://www.passwort.ethz.ch>). After logging in you will see the welcome screen. Click on “Passwort ändern” (top left of the screen), change your password¹ and log out. After this you can log on to the ETH web-mail interface (<https://mail.ethz.ch/exchange>) with your user name and your newly set password.

¹Your password should be simple enough for you to remember; yet it should be complex enough so that other people cannot guess it. See password recommendations at CERN: <http://security.web.cern.ch/security/passwords>.

- If you are using an ETH computer, try to find the Eiffel development environment - EiffelStudio - on it. If you are using your personal computer, follow the instructions in the next task to install EiffelStudio.
- Bookmark the Inforum: <http://forum.vis.ethz.ch>. The Inforum provides a platform for questions and discussions with your peers. Register and post a welcome message in the “Willkommen Erstis 2015!” thread.
- **IMPORTANT:** Make sure that you have subscribed to this course (and all the other courses you attend) on <https://www.lehrbetrieb.ethz.ch/myStudies/>.

Hint

You will find that your n.ethz login and password are very useful on many other ETH web pages, e.g. the <https://www.lehrbetrieb.ethz.ch/myStudies/> page mentioned above.

To hand in

There is nothing to hand in; the task is accomplished as soon as you have subscribed to the course.

2 EiffelStudio installation

Goal

In this task you will install the software development platform EiffelStudio. If you intend to work in a computer lab of ETH you will not need to install EiffelStudio. Proceed with task 3. We support the following operating systems:

- Windows
- Linux
- Mac OS X

If you encounter any problems during EiffelStudio installation please consult the troubleshooting page², the Inforum, or ask your assistant (in case you have not been assigned to an exercise group yet, ask any assistant).

In case you encounter a crash of the EiffelStudio development environment after installation (during normal use), please click the “Submit bug report” button and provide the following credentials: login *ethinfo1*, password *ethinfo1*. This will help the EiffelStudio developers to try and fix it.

To do

For Windows (tested on Windows 7 and 8)

1. Download EiffelStudio 15.08 from sourceforge: go to <http://sourceforge.net/projects/eiffelstudio/files/>, click on the folder icon labeled “Eiffel Studio 15.08” and then on the top build in the list (97862). Finally choose “Eiffel_15.08_gpl_97862-windows.msi” (32 bit) or “Eiffel_15.08_gpl_97862-win64.msi” (64 bit).
2. Start the installer and follow the instructions. When you open your first Eiffel project (see task 3), EiffelStudio will ask if the required libraries should be precompiled. Answer **yes**; precompilation will take some time, but it will speed up things later.

² <https://bitbucket.org/nadiapolikarpova/traffic/wiki/Troubleshooting>

For Linux (tested on Ubuntu 15.04)

If you use a Debian based distribution (such as Ubuntu), installing EiffelStudio is very simple. You only need to open a terminal and run the following commands:

```
sudo add-apt-repository ppa:eiffelstudio-team/ppa
sudo apt-get update
sudo apt-get install eiffelstudio
```

The first line adds the repository for EiffelStudio to your package sources, the second command updates the list of packages in your package manager and the last command finally installs Eiffelstudio 15.01. To start EiffelStudio, simply type `estudio` in the console.

If you use a distribution that is not based on Debian, or the previous approach did not work for you, you can use the following instructions. Please note that we assume a basic set of preinstalled tools and libraries, including tar, gcc, pkg-config, and others. We recommend installing EiffelStudio with the default locale (`en_US`).

1. Install the *development* versions of libgtk and libxtst libraries, if you don't have them yet (`libgtk2.0-dev` and `libxtst-dev` on Ubuntu).
2. Download EiffelStudio 15.08 from sourceforge: go to <http://sourceforge.net/projects/eiffelstudio/files/>, click on Eiffel Studio 15.08 and then on the top build in the list (97862). Finally choose "Eiffel_15.08_gpl_97862-linux-x86-64.tar.bz2". Let's suppose you downloaded it to your Downloads folder.
3. Extract it: `sudo tar -xvjf /Downloads/Eiffel_15.08_gpl_97862-linux-x86-64.tar.bz2 -C /opt`
4. Set the environment variables mentioned below (note that how and where to change environment variables depends on which distribution you use). Make sure you set these permanently and system-wide!

To set the variables, create a new file `sudo gedit /etc/profile.d/set_eiffel_environment.sh` and add the following lines:

```
export ISE_EIFFEL=/opt/Eiffel_15.08
export ISE_PLATFORM=linux-x86-64
export PATH=$PATH:$ISE_EIFFEL/studio/spec/$ISE_PLATFORM/bin
```

5. Reboot.
6. To start EiffelStudio type `estudio` in the console. When you open your first Eiffel project (see task 3), EiffelStudio will ask if the required libraries should be precompiled. Answer **yes**; precompilation will take some time, but it will speed up things later.

As an additional option, if you want to install EiffelStudio on a Linux distribution that does not provide a package for it, you can try an installation script on github at <https://gist.github.com/ntruessel/f7a578a680af43fdcf9d>. Be aware that you have to install the dependencies yourself (gcc, glibc, gtk2, libxtst,...). The script was tested successfully on Debian (64bit), Fedora (64bit) and OpenSUSE (64bit). In case you find a bug or want to improve the script, feel free to either write Nicolas Truessel (one of the TAs) an email or fork/comment on github.

For Mac OSX

The installation has been tested on OS X 10.9 (Mavericks). We support EiffelStudio version 14.05.

1. Please follow the instructions on <http://dev.eiffel.com/EiffelOnMac> under section “Using Macports”. When giving the command `sudo port install eiffelstudio`
2. After having installed and compiled EiffelStudio, as indicated by the message at the end of the installation process, you will have to update some configuration files. To achieve a consistent setup for `bash` and `X11`, we recommend to edit the following files located in your home directory: `.bashrc`, `.bash_profile` and `.profile`. If these files do not exist, create them. To edit the files, you can use for example the nano editor, as in `> nano .bashrc`. If they exist and already have content, add the following lines anywhere:
3. First you need to edit `.bashrc` according to the instructions you get after a successful installation. The following is an example:

```
export ISE_PLATFORM=macosx-x86-64
export ISE_EIFFEL=/Applications/MacPorts/Eiffel_14.05
export PATH=$PATH:$ISE_EIFFEL/studio/spec/$ISE_PLATFORM/bin
```

Copy your individual output to `.bashrc` or modify the above given example to your needs.

4. Then you should modify `.bash_profile` to link to `.bashrc`:

```
. ~/.bashrc
ENV=$HOME/.bashrc
export ENV
```

5. Finally, you should modify `.profile` to link to `.bash_profile`. This step is necessary to propagate the environmental settings to the X11 X-window system:

```
. ~/.bash_profile
```

6. To launch EiffelStudio, type `estudio` in a bash terminal window.

To hand in

There is nothing to hand in.

3 Your first Traffic program

In this task you will download Traffic and experiment with some feature calls. You need to have EiffelStudio installed (see task 2).

To do

1. First you have to download the EiffelBase2 library, which you will need in this and other assignments. Download http://se.inf.ethz.ch/courses/2015b_fall/eprog/assignments/base2.zip and unzip it into `$ISE_EIFFEL/library/`, where `$ISE_EIFFEL` is the directory where you installed EiffelStudio (for example `C:\Program Files\Eiffel Software\EiffelStudio 15.08 GPL\` on Windows and `usr/lib/EiffelStudio-15.08/library` if you are using Ubuntu). **Note:** it is important that you use this directory; to make sure everything is correct, check that you have the file `$ISE_EIFFEL/library/base2/base2.ecf` on your machine.

2. Download http://se.inf.ethz.ch/courses/2015b_fall/eprog/assignments/01/traffic.zip and unzip it to a folder of your choice.

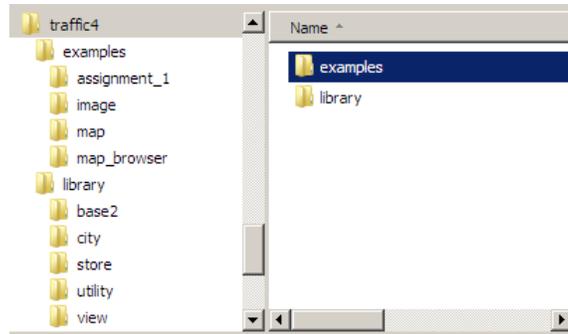


Figure 1: Directory structure of Traffic.

3. Figure 1 shows the directory structure of the archive. The top-level directory `library` contains the core of Traffic: Eiffel class files that model the transportation system in a city and support its visualization. The other top-level directory `example` contains some applications that use the Traffic library. For instance, `map_browser` allows you to browse the map of Zurich and display information about the city objects. Directory `assignment_1` contains the application that you will explore in this assignment. During the semester we will add more application examples (in particular, other assignments).
4. Start EiffelStudio: you will see the dialog of figure 2. If this does not happen automatically, go to `File > Open project` and it should appear.
5. Click on `Add project` and choose the file found under the directory where you unpacked Traffic, at `examples/assignment_1/assignment_1.ecf`. Click `Open`. This will compile the application. If EiffelStudio asks to precompile libraries, answer `yes`.
6. Launch the program by clicking on the green Start button (see figure 3); you will see a map of Zurich center. You can move the map by dragging and zoom it with the mouse wheel: just like in Google Maps. Notice that some items on the map are highlighted (namely, the ones that depict Polybahn and its two stops) and the console at the bottom of the window displays information about Polybahn. After a couple of seconds, a cable car will appear and start moving along Polybahn. Close the application by clicking on the stop button (the red square) in EiffelStudio or just close the application window.
7. Open the class `PREVIEW`. In the feature `explore`, between the `do` and the `end` you will find the following text:

```
Central_view.highlight  
Polyterrasse_view.highlight  
Polybahn_view.highlight  
console.output (Polybahn)  
  
wait (3)  
  
Zurich.add_public_transport (Polybahn_line_number)  
Zurich_map.update  
Zurich_map.animate
```

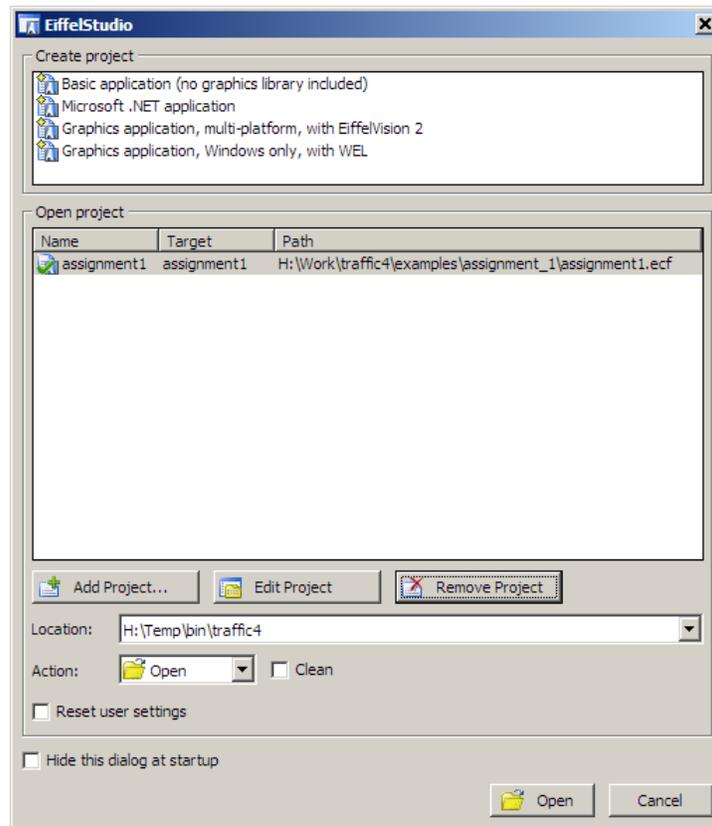


Figure 2: Open an Eiffel project

- Using two dashes (--) at the start of each line, turn the first three lines starting from *central_map.highlight* into comments. By doing so, you are telling the machine not to take them into consideration. Save, recompile the project (by clicking on the compile button in EiffelStudio) and launch it again. You will see that Polybahn is not highlighted anymore. This makes sense, because as we just said, the commented instructions are not part of the code that will be executed anymore.
- Now, without uncommenting the previously commented lines, try writing the instructions all by yourself. You may want to try writing one line at the time, then compile and execute to see the effect. Notice that when you write an object name (the first part of the instruction, before the dot) and then the dot, the “completion” feature of EiffelStudio jumps in and lets you choose between the available features that you can invoke on that object.
- If you haven’t done it yet, please read through sections 2.1 and 2.2 of chapter 2 of Touch of Class. Note that examples in the book use an older version of the Traffic library. If you want to try out these examples, you can download Traffic 3 from https://bitbucket.org/nadiapolikarpova/traffic/downloads/traffic_3.zip.

To hand in

There is nothing to hand in.

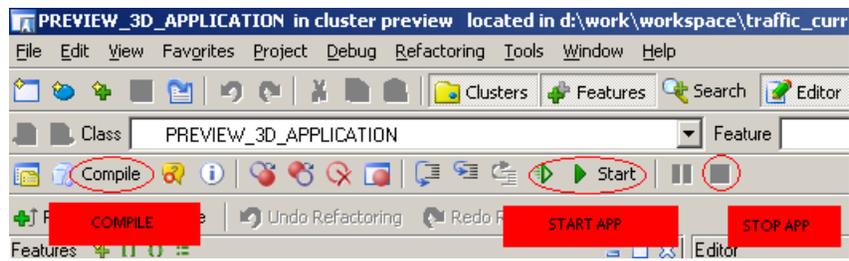


Figure 3: Compiling a project, starting and stopping an application