

***Assignment for teams in any location except
Australia and Brazil***

Distributed and Outsourced Software Engineering

***Assignment 3 (Devs): API Design
using Design-by-Contract***

Deadline: November 7th - 5 pm (Zurich time)

1. Install EiffelStudio

We use the EiffelStudio IDE as the main development environment in this course. Install EiffelStudio on your machine by following the instruction PDF:

https://github.com/DOSE-ETH/dose2013/wiki/resources/eiffelstudio_installation.pdf

Make sure you are using the exact version as stated in the PDF. Otherwise, you might not be able to compile the code of others. Send questions about the installation to the course's student email-list:

se-dose-students@lists.inf.ethz.ch

Setup the EiffelStudio IDE as soon as possible. We cannot guarantee support related to installing problems after October 31st.

2. Familiarize yourself with Eiffel

If you are not very familiar with the Eiffel language, study the slides that compare Eiffel with Java:

https://github.com/DOSE-ETH/dose2013/wiki/resources/intro_eiffel.pdf

We recommend that you perform the small exercise from the different "Let's code..." slides. Furthermore, you can also take a look at the other learning material we provide on the Wiki's *resource* page:

<https://github.com/DOSE-ETH/dose2013/wiki/resources>

3. Checkout the DOSE game project

All groups will be working on the same EiffelStudio project. We provide Main-GUI that allows launching the different games and comes with two small demos on how to program with Eiffel.

We provide a directory structure for the games that looks as follows:

```
src/dose/images          -- contains images for different games
src/dose/description     -- contains the descriptions for the Main-UI
src/dose/group_1/       -- game source code of group 1
...
src/dose/group_12/      -- game source code of group 12
```

Each group must select a class prefix for their components. This is a two-letter code, which you will use as a prefix for each class name of your game. The prefix is needed to avoid name clashes between the class names of the different groups.

Task: Checkout the DOSE Github repository and open the project (open the *src/dose.ecf* file) in EiffelStudio. Compile and run the project so that you can see the Main-GUI. Update the description of your game that's show in the Main-GUI. To do this, you create a file *group_n.txt* in the *description* folder, where n is your group number. Furthermore, you should rename "Game n" in the class MAIN_WINDOW, feature *Game_entries* with the name of your game. Commit and push these changes to Github.

Important: since everybody is working on the same project, you should take extra care to make sure your code compiles before committing it to the repository. Also, write a log message for each commit!

4. API design with Design-by-Contract

All groups have to develop the API of their game. In particular, each team has to define the API of their component. The APIs have to be written in Eiffel using Design by Contract¹. Use contracts to improve interface specifications by providing meaningful pre-, post-conditions and invariants. The API, in the form of Eiffel classes, has to be added to the project in your group's src folder:

https://github.com/DOSE-ETH/dose2013/tree/master/src/dose/group_n

where n is your group number.

Make sure that all teams in your group agree on the interfaces defined by the contracts.

¹ See: http://en.wikipedia.org/wiki/Design_by_contract
http://www.eiffel.com/developers/design_by_contract.html