SPLE'19 – Lab class 1

Software Product Line Engineering SS 19

Stefan Mühlbauer

April 12, 2019

Bauhaus-Universität Weimar

Intelligent Software Systems Group

Lab classes

- Weekly on Friday, 11:00 to 12:30 at HK7 (here, you found it!)
- Class in biweekly rhythm:
  1) Discussion of previous assignment, presentation of new one
  2) Room for your questions, problems, or additional information (detours)

Lab classes - outline

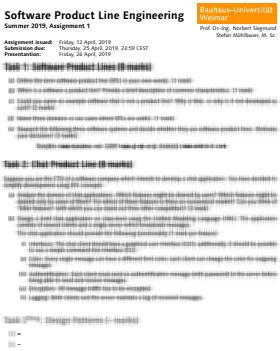
Calendar Week	Description
15	Assignment 1
16	*no lab class*
17	Assignment 2
18	*
19	Assignment 3
20	*
21	Assignment 4

Calendar Week	Description
22	*
23	Assignment 5
24	*
25	Assignment 6
26	*
27	Discussion A'6
28	Exam Prep Session

* = Room for questions, quizzes, detours, tool support etc.

Assignments

- One assignment every two weeks
  - Theoretical tasks: Repetition and Applications
  - Practical tasks: Implementation of a sample SPL
- **Successful participation = Exam prerequisite!**
  - Do assignments individually, **no group work!**
  - Get 50 % or more on each assignment
  - DE students: one additional task per assignment
- Submission
  - Fixed **deadlines**! (see assignment sheets)
  - Via email as PDF and jar file + source code
  - Provide name, matriculation number, and degree programme



Software Product Line Engineering
Summer 2019, Assignment 1

Bauhaus-Universität Weimar

Prof. Dr.-Ing. Norbert Siegmund
Stefan Mühlbauer, M. Sc.

Assignment Issued: Friday, 12 April, 2019
Submission due: Thursday, 25 April, 2019, 23:59 CEST
Presentantion: Friday, 26 April, 2019

Task 1: Software Product Lines (8 marks)

(i) Define the term software product line (SPL) in your own words. (1 mark)

(ii) What is a software product line? Provide a brief description of common characteristics. (1 mark)

(iii) Could you name an example software that is not a product line? Why is that, or why is it not developed as SPL? (2 marks)

(iv) Name three domains in use cases where SPLs are useful. (1 mark)

(v) Research the following three software systems and decide whether they are software product lines. Motivate your decision! (3 marks)

Mozilla (www.mozilla.org), LLVM (www.llvm.org), Android (www.android.com)

Task 2: Chat Product Line (8 marks)

Suppose you are the CTO of a software company which intends to develop a chat application. You have decided to comply development using SPL concept.

(i) Analyze the domain of chat applications. Which features might be desired by users? Which features might be desired only by some of them? Do which of these features is there an commercial value? Do you think of "killer features" with which you can stand out from other competitors? (3 marks)

(ii) Design a brief chat application as a product line using the Feature Modeling Language (FML). The application should provide the following functionality (1 mark per feature):

- Introduce: The chat client should have a graphical user interface (GUI) additionally. It should be possible to use a simple command line interface (CLI).
- Color: Every night message can have a different text color; each client can change the color for outgoing messages.
- Authentication: Each client must send an authentication message (with password) to the server before being able to send and receive messages.
- Encryption: All message traffic has to be encrypted.
- Logging: Both clients and the server maintain a log of received messages.

Task 3 (***): Design Patterns (– marks)

(i) –

(ii) –

Programming: Java and Eclipse

Programming assignments will be developed in Java with Eclipse IDE.

- Java
  - Object-oriented programming language
  - For compatibility, we will use **version 1.8**

[1] `eclipse.org/downloads/packages/release/oxygen/3a/eclipse-ide-java-developers`

Programming: Java and Eclipse

Programming assignments will be developed in Java with Eclipse IDE.

- Java
  - Object-oriented programming language
  - For compatibility, we will use **version 1.8**
- Eclipse IDE
  - IDE platform for various programming languages
  - Highly customizable with plugins, such as *FeatureIDE*
  - For compatibility, we will use **version 4.7 ("Oxygen")**[1]

[1] `eclipse.org/downloads/packages/release/oxygen/3a/eclipse-ide-java-developers`

Additional Java Tutorial

- Tutorial for programming in Java
  - Basics: Data types, If-Conditions, ...
  - Advanced: Threads, Client-Server Architecture, ...
- Kick-off meetings **today** (12 April) at the LiNT-Pool, B11
  - Basics: 3:15 p.m.
  - Advanced: 5:00 p.m.
- Contact: Nathalie Jolanthe Dittrich
  (`nathalie.jolanthe.dittrich@uni-weimar.de`)

Assignment 1 / Demo

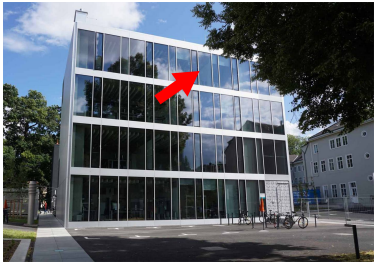
- Client-Server chat application with socket communication

Contact / Questions

Announcements via mailing-lists[2] (e.g., `bmiall/mmiall`, `deall`, `mhciall`, ...)

Questions during lab class, per mail, or by appointment

- Digital Bauhaus Lab (B9a), 3rd floor, Room 307
- `stefan.muehlbauer@uni-weimar.de`



[2] `https://listserv.uni-weimar.de/mailman/listinfo`