JKU

JOHANNES KEPLER
UNIVERSITY LINZ

Institut fuer Wirtschatsinformatik
Software Engineering

Praktikum Software Engineering

Antonio Garmendia

Unit 0 - Introduction & Preliminary Discussion

Agenda

- Introduction
- Grouping
- Evaluation
- Tools
- Task assigment for Workshop on 18.03

Goal of the Internship

- **Development of an application in a team**
  - Specify, plan and design a software product
  - Object-oriented programming and Testing (Unit tests & Code quality)
  - Work in a team
  - Application of SE tools
    - Version management (Repositories, GitHub)
    - Project management (GitHub Projects, Zenhub)
    - Build / Continuous Delivery (Maven + CircleCi)
  - Planning of the Sprints and Release Versions
  - Create of System Documentation (Architecture, Code, Test cases)

Topic: Researchers' Analyser

Development of a new Scientific Analyser Tool using Java and compatible libraries to develop either a desktop or a web application (e.g., Google Scholar)

A team of three developers should implement this project in several sprints over a period of 4 months creating all the necessary artifacts, such as: Software, Tests, Documentation, etc.

- Create, Read, Update and Delete (CRUD operations)
- Database Storage Solution
- Filter, Sort and Analyse
- Reports

Requirements

- **High-Level Requirements**
- **Programming Language: Java**
- **Technology**
  - Backend: Java
  - Frontend: Swing, JavaFX. It is also possible the development of a web-based application. This is recommended if team members are familiar with web technologies.

Organization

- Working in teams of 3 students
- Tasks should be equally distributed considering the amount of effort
- Effort: 6 ECTS (~ 150 working hours) intership and group appointments included
- LVA-leader is your Client and Advisor
- Recommendation: Completion of the Software Engineering courses (Soft1, Soft2)

Each team member must participate in the implementation of the application – Equally distributed implementation tasks!

Time Schedule

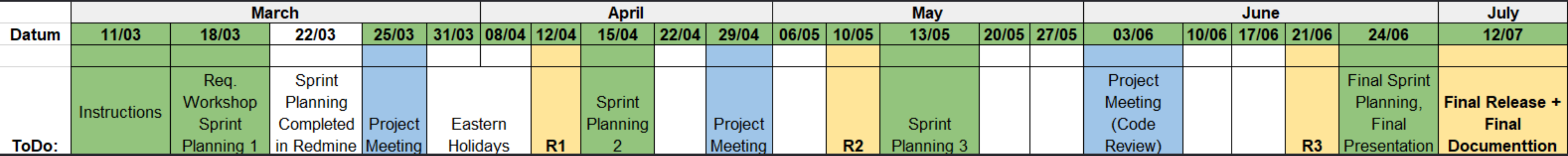
- **The Software Product is being developed in three releases**
  - *Release 1*: April 08. 2020 (12.00 o'clock)
  - *Release 2*: May 12. 2020 (12.00 o'clock)
  - *Release 3*: June 24. 2020 (12.00 o'clock)
  - *Final Product Delivery*: July 12. 2020

- **Submission <u>per Release</u>:** Branch in Git with all the Documentation + Code
- **<u>Final Submission</u> should be uploaded no later than 12. July 2020**

Appointments - Sprint Meetings

- **3 Sprint Planning Meetings**
  - Mandatory attendance of the entire team
  - 10 minutes presentation (Slide-Template)
  - Each member should participate in the presentation
  - Discussion, Status, Next Steps…

- **Three individual appointments (25.03, 29.04 and 3.06) per Team**
  - Feedback & Questions (30 Minutes)



	March					April					May					June					July
Datum	**11/03**	**18/03**	**22/03**	**25/03**	**31/03**	**08/04**	**12/04**	**15/04**	**22/04**	**29/04**	**06/05**	**10/05**	**13/05**	**20/05**	**27/05**	**03/06**	**10/06**	**17/06**	**21/06**	**24/06**	**12/07**
ToDo:	Instructions	Req. Workshop Sprint Planning 1	Sprint Planning Completed in Redmine	Project Meeting	Eastern Holidays		**R1**	Sprint Planning 2		Project Meeting		**R2**	Sprint Planning 3			Project Meeting (Code Review)			**R3**	Final Sprint Planning, Final Presentation	**Final Release + Final Documenttion**

Agile Software Development

- **Iterative development (Sprints)**
  - 1 Week to max. 1 Month
- **Prioritize a set of requirements, the Team decides which ones must be implemented in each sprint**
- **Result of a Sprint = New version of the product**
- **No dedicated roles in the team**
  - Between 5 and 9 developers per Team
- **High level of self-organization**

Release 1

- **Goal: UI Prototype und OO Design**
- **Deliverables:**
  - First concept for building the application (wich Features, Components,..)
  - UML Class Diagram with the most important classes (Class names, Hierarchies, Methodology, Patterns…) with a UML Tool!
  - UI Prototype
  - Continuos Integration in CircleCI
  - Presentation of the Project Status 1 (for Sprint Planning Meeting)

Release 2

- **Goal: Prototype Implementation und Unit Tests**
- **Deliverables:**
  - Extended/updated UML Diagrams
  - Prototype Implementation:
    - First version of the User Interface
    - Some implemented functionality
  - Unit Tests for individual (important) classes
  - Use Case Description (see Use Case Template)
  - Presentation of the Project Status 2 (for Sprint Planning Meeting)

Release 3

- **Goal: Documentation & Code Quality**
- **Deliverables:**
  - Extended/updated UML Diagrams
  - Extended Unit Tests
  - Implementation:
    - User Interfaces
    - Implemented most of the functionalities (all Features availables)
  - Code Quality Analysis with PMD, Findbugs, etc.
  - First version of the project documentation
  - Presentation of the Project Status 3 (for Sprint Planning Meeting)
  - Live Demo/Screencast of the Application

Final Product

- **Deliverables:**
  - Final Project documentation
  - Executable, final version of the application
  - Github Documentation (Readme with Installation Instructions, etc.)
  - Javadoc for important classes, Interfaces and Methods

Evaluation

- **The criteria for assessment as follows:**
  - Functionality of the product
  - External Quality of the Product (Stability, Efficiency, User Interface)
  - Internal Quality of the Product (Quality of the design, Programming Quality, API-Documentation)
  - Widespread Unit Tests and Quality of the Unit Tests
  - Quality of the Documentation (Design, Test cases, Experience Report)
  - Presentations

Tools for the Course

- Github Projects, ZenHub
- Git (GitHub)
- Maven
- CircleCI
- UML Editor / UI Prototyping Tool
- Code Quality: Static Code Analyzer

Project Organisation with Github Projects

- **Implementation details (detailed specification) in Github Projects**
  - For each release: Requirements, Tasks, Bugs, etc.
  - Assign to each task a responsible and a cost in time! – The responsible must implement the source code (Code + Unit Tests)

- **Create a Release Planning (Roadmap) in Github projects**
  - At the end of each release, the respective tasks, requirements, bugs, etc must be completed and closed.

Source Code Management with Git

- **GitHub to manage Code and Documentation**
  - Code must be committed in Github at least 1 per Week
  - Always enter the respective id for each commit (#TaskNr). – Each team member must write some code and make commits!

- **Quality feedback – The source code must be kept clean**
- **Document the problems that are not be fixed accordingly**

The submission for each release must be committed in a separate Github branch

Shared Wiki

- **Documentation, Tutorials, Links….**

  https://github.com/jku-win-se/teaching.ss21.prse.prwiki.en

Next steps

- **Now:**
  - Build teams of 3 Personen - 1 “Team Leader” Email an antonio.garmendia@jku.at [Subject: PR_SE2021 Team] (Name, Matr.Nr, email, GitHub user)
  - Distribution of topics for the Workshop
- **For Next week (18.3.2020):**
  - Get familiar with the requirements and prepare questions for the Workshop
  - Plan the first version of the product and define the initial responsibilities for each member
  - Get familiar with GIT, Maven, Github Projects…
- **By 25.03.2020: Complete planning for Release 1 in Github Projects**

SE Tools Workshop: 18.3.2020

- **Topic-1: Git**
  - Git Functions and Markdown
  - Git in Eclipse
  - Tutorial: https://rogerdudler.github.io/git-guide/index.de.html
- **Topic-2: Github Projects, Zenhub**
- **Topic-3: Maven + CircleCI**
- **Topic-4: UML Tools / Editors**
- **Topic-5: UI Prototyping + Tools**