Cooperation courses TDDD96-TDDE46

Learning Outcomes TDDE46

1. Analyze the most common quality factors of software
2. Apply tools to improve product quality
3. Apply a description language of processes
4. Analyze processes in a programming project
5. Apply methods and tools to improve processes
6. Assess the product quality of a programming project
7. Assess the process quality of a programming project
8. Integrate quality evaluations in an ongoing programming project

Cooperation between TDDD96 and TDDE46

(We use singular nouns of the course codes to denote members of the course code.)

Important parts of quality work comprise:

- Plan the Software Quality Assurance (SQA) activities
- Define and work towards measurable quality requirements.
- Systematically define and gather quantitative data about products, processes, and resources
- Document the most important processes and/or practices used in the project.
- Improve processes and/or practices.
- Assess the process to determine if the improvement had desired effect.
- Assess the final product.

The courses TDDD96 and TDDE46 cooperate on the quality work in the allotted groups of TDDD96. The goal for TDDD96 is to get practical experience from quality work that can be applied in later projects. The goal of TDDE46 is to get practical experience in coaching members of a project and to show the ability to select and apply theoretical knowledge in a practically useful way.

The mode of operation is that TDDD96 suggests things that might be used and TDDE46 provides more ideas, helps in selection of ideas, and guides the practical implementation. There are scheduled meetings where TDDD96 sends two[1] representatives per group to the meetings with TDDE46. TDDE46 also provides reports of evaluations.

All material produced in the cooperation is owned by both courses, and TDDD96 can directly use translations of the reports from TDDE46 in its documentation and bachelor thesis. TDDE46 will submit a course report where they can use the empirical material obtained from TDDD96. It might be necessary to obfuscate some data if that proves to be sensitive information for the customers of TDDD96. If direct access is still not possible, TDDE46 instructs TDDD96 how the data will be obtained and then analyze the results together.

TDDD96 Projects and TDDE46 Groups.

All TDDE46 students will be assigned to a group of four students each. There will be four groups (we have total 16 students). Each group of TDDE46 will coach 3-4 unique projects of TDDD96. Previously

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[1] If there is a genuine interest, more people are welcome.

it was observed that TDDE46 students assign one TDDD96 project to each member of the group. **This practice is highly discouraged**. It is much better to work together will all assigned TDDD96 projects.

The total time of a meeting is 1:45 hours where the TDDE46 students will meet three or four groups from the TDDD96. TDDE46 students create a meeting schedule, and mail to the contact persons of TDDD96. One recommendation is to split the time in two slots and meet with 1-2 projects per slot. The reason for this is that TDDD96 can learn from each other, and that there might be things that are in common for both TDDD96 projects. Meeting with four projects simultaneously is not recommended since the idle time for TDDD96 projects will be too long.

In addition to this, you have to schedule separate meetings on your own.

Deliverables within the cooperation

TDDD96

1. A **software quality assurance plan** (SQAP) that is updated whenever needed. (first version due 2022-02-21)
2. **Three measurable product quality requirements** written with goals in the requirements specification. (first version due 2022-02-21) The fulfillment of the requirements is accounted for in the test report and the bachelor thesis. (first versions due 2022-03-11)
3. **A measurement program** that continuously measures process, product, and resources (including the measurable requirements above). This is used during the entire project. Time reports are submitted each week to the tutor and examiner. The measurement program is accounted for in the SQAP and the bachelor thesis.
4. **A process in focu**s. Define and describe a process that is used repeatedly in the project. The performance of the process is measured. The process shall be improved at least once during the project and the outcome of the improvement shall be measured. The result is accounted for in the bachelor report. There will be more processes documented, used, and evaluated, but we select only one to be in focus for the thorough cooperation between the courses. This will be accounted for in the bachelor report.
5. **Evaluation of the product that contains an evaluation made by TDDE46**. This is just one input, you will do more evaluations by testing, other measurements of the product, elicitation of stakeholder opinions, etc. Accounted for in the bachelor thesis.

TDDE46

1. Report 1 (deadline 2022-04-29)
   a. **Description of the process in focus** as an ESSENCE practice.
   b. **Suggestion of metrics** to use for process improvement.
   c. **Suggestion of improvements** of the process in focus.
   d. **Data collection and analysis** of the improvements.
2. Report 2 (deadline 2022-05-03)
   a. **Evaluation report** of the product.
3. Report 3 (deadline 2022-05-09)
   a. **Project report** from the coaching project.
   b. One **quality assessment report** per TDDD96 project group.
4. Report 4
   a. **Term paper** from TDDE46 students who opt for higher grades about selected topic.

The content of reports 1-3 are free to translate and reuse in the bachelor theses of TDD96.

Method of cooperation

The general task of TDDE46 is to help the TDDD96 to achieve the deliverables above. TDDE46 takes the initiative and chairs the meetings. You are free in method selection, but we strongly recommend a coaching approach where you formulate tasks together and comes with suggestions and advice. Leave all prestige at home, if TDDD96 comes with all good solutions, that is wonderful. Don't invent things to do.

TDDD96 has challenging deliverables and shall use this opportunity to get all the help possible. An open atmosphere where you take part in the discussion, provide data needed, and report problems. If you are smart, you make sure that the result of the cooperation is useful quality work and eases the writing of your documents. You get better advice if come prepared to meetings. Don't ask "what can we measure?" ask "we think of measuring number of changed code lines, can this help us?"

TDDD96 shares the outcome of the meetings internally within their group.

The course leader will eavesdrop the scheduled meetings and give formative feedback to both courses on their behaviors.

Timetable

The challenge in timing is twofold:

1. The process in focus must have run at least twice before the process report, and that report must come in time for TDD96 to use the findings in their bachelor thesis.
2. The product evaluation must be done in time for TDD96 to use the findings in their bachelor report. This will probably be a prototype delivered in mid-April.

The solution is to work iteratively, so that processes are repeated several times. In worst case, the full product might not be ready for evaluation before deadline. Then the latest version can be evaluated, giving you good, but not perfect, input. -It is still a course.

TDDD96	TDDE46	Deadline
Start thinking about what to include in the SQAP, select a process in focus, and three quantitative product quality requirements. Make sure you understand what such a requirement is. Sketch a suggestion in a PowerPoint or similar.	Study, metrics, IEEE 730 and ISO/IEC 25010 in the beginning. Determine a coaching method and your plan. Write an agenda.	Before Workshop 1
WORKSHOP 1 **Focus on:** Coaching meeting about how to write the SQA plan, how to select and formulate three quality requirements, and the process in focus. **Discuss:** TDDE96 quickly presents the project. TDDE46 interviews TDDD96 to get an idea of which process to document and improve. TDDE46 gives feed-back on suggested requirements and proposed content of SQAP. **Outcome:** After this meeting, you should have achieved: • **TDDD96 students:** o Three candidate quality requirements o An idea how to write a SQA plan		2022-02-04

o An idea about "process in focus" and how to document and improve it.
• **TDDD46 students:**
    Answer and reflect on the following:
    o What do you think about the quality requirements suggested by TDDD96?
    o What content is required to prepare SQAP?
    o What is (e.g., person hours, knowledge, more meetings) needed by TDDD96 to prepare the SQAP?
    o What "process in focus" is selected by TDDD96 students and how do they plan to improve it? Do you see any improvement?
    o What do we learn about coaching from this meeting? What should we do different to make it more productive next time?
    o To what extent does this meeting provide information that will help us write reports 1-3?		

Create and share first drafts of SQAP, SRS, and project plan. (2022-02-21) If not included above, document the process in focus and send to TDDE46.	Enter your reflections from the workshop in the logbooks, prepare a report for the seminar 2022-03-01.	
Create a 1st version of a metrics program.	Give feed-back to the documents.	2022-02-28

WORKSHOP 2
Focus on: Coaching meeting of how to set up and run a metrics program. TDDE46 helps in formulating metrics with ideas of how to collect data.
Follow up on the development of previous subjects: requirements, SQAP, process in focus.
Outcome: Decision about the quality requirements, and process inf focus. You know what remains to make a complete 2nd version SQAP.
 	
After this meeting, you should reflect on the following:
1. **TDDD96 students:**
    a. Why do we need a metrics program?
    b. What is needed to set up and run the metrics program on an appropriate ambition level?
    c. How can we evaluate the efficiency on metrics program?
2. **TDDD46 students:**
    a. How can a reasonably ambitious metrics program for TDDD96 students be designed?
    b. What will it take to set up, run, and evaluate the metric program in TDDD96 groups?
    c. What do we learn about coaching from this meeting? What should we do differently to make it more productive next time?
    d. To what extent did this meeting provide information that will help you to write reports 1-4 for the course?
		2022-03-04

Collect ideas for what to measure to assess process in focus, product, and resources.	Enter your reflections from the workshop in the logbooks, prepare a report for the seminar 2022-04-06.	

Finish the second version of SQAP with a metrics program description. Formulate the quality requirements in the SRS. Send to the course advisor and inform / share with TDDE46. (2022-03-11)	Prepare feed-back on the documentation received.	

WORKSHOP 3
Focus on: Coaching meeting of how to plan the data collection for the assessment. Who will have the access to the data? Which analyses will be made?
Discuss possible improvements of the process in focus.
Follow up on the development of previous subjects: requirements, SQAP, metrics program.
Outcome: Decision about the data collection for the assessment of product and processes.
 	
After this meeting, you should reflect on the following:
1. **TDDD96 students:**
   a. How can we collect data about product and processes?
   b. Can we give TDDE46 direct access to data or shall we send selected data?
   c. How can we improve the process in focus.?
2. **TDDD46 students:**
   a. Do we need more data besides the metrics to evaluate the effect of the process improvement? Interviews, other documents?
   b. How can we help TDDD96 the best given the data that we have/ are expected to have?
   c. What can we say so far about the quality work of TDDD96?
   d. What do we learn about coaching from this meeting? What should we do differently to make it more productive next time?
   e. To what extent did this meeting provide information that will help you to write reports 1-4 for the course?
		2022-04-06

	Entry reflections in the logbooks. Prepare a report on the seminar2022-04-19.	
Collect data for the metrics, carry out an improvement of the process in focus. Send info to TDDE46.	Receive data, give feedback on process improvement.	
Provide the data available about artifacts.	Receive data, start assessment work. Decide which data that remains to make an assessment.	

WORKSHOP 4
Focus on: What input remains until the reports 1 and 2 can be written by TDDE46. Oral feedback about process and product quality so far.
Outcome: After this meeting, you should have achieved:
1. **TDDD96 students:**
   a. A list of work-items to be done to provide the data needed.
2. **TDDD46 students:**
   a. Can you help TDDD96 in any way to get data for the assessments?
   b. Start writing on the reports.
		2022-04-22

c. What do we learn about coaching from this meeting? What should we do differently to make it more productive in future? d. To what extent did this meeting provide information that will help you to write reports 1-4 for the course?		
	Make the last reflection in the logbook.	2022-04-25
Receive text. Integrate the result in section 5.2 of the bachelor thesis whenever suitable.	Write report 1, assessing the process and its improvement. Send to TDDD96.	2022-04-29
Receive text. Integrate the result in section 5.1 of the bachelor thesis whenever suitable.	Assess the product, write report 2. Send to TDDD96.	2022-05-03
Deadline of complete bachelor thesis.		2022-05-06
	Write report 3. Send to TDD96 for information.	2022-05-09