TDDE46: Software Quality

Seminar 1

SOFTWARE QUALITY MODEL & METRICS

Objectives:

1. To understand the software metrics, their usages, advantages, and disadvantages concerning quality factors
2. To apply metrics or models on bachelor projects
3. A presentation about the topic, selected from the list.
4. A discussion about the challenges/issues/problems, faced by TDDE46 students in coaching

Seminar preparation:

1. All students must have made logbook entries. Prepare a five-minute presentation about one of them. Make sure that each of you have an unique study.
2. One group makes a little longer power-point presentation on an interesting topic. Each topic should cover 3-4 peer-reviewed papers.

During the seminar:

13:15-13:35 Individual presentation of your logbook entry within your own group focusing on.

1. What are the main findings of your studies?
2. What problems, challenges, advantages, solutions, etc. has shown in thestudy?
3. Mention two things you learned?

13:35-14:00 Discussion & Brainstorm

1. Do the result from the presentation trigger further topics that would be interesting to study? What would we like to know more about?
2. Can the outcome of the presentations be used in the coaching project?
3. What might be typical quality factors of the bachelor projects?
4. How can these be measured with reasonable resources?

14:00-14:15 Break

14:15-14:35 Presentation of a chosen topic Try to answer the following questions:

1) Why does a selected topic require attention from researchers and practitioners?
2) Does the problem/issue/challenge relate to your circumstances such as during coaching, or reading literature, etc.
3) What is a suitable method, presented in paper or in your opinion, to address the problem/challenge?
4) What is a solution, presented in paper or in your opinion, to address the problem/challenge?

5) How can we use our knowledge from this presentation/reading towards improving the BS projects? (Important)
6) How can we use our knowledge from this presentation/reading towards improving our methods/ways for helping BS students? (Important)

14:35-15:00 Discussion about plans for the bachelor projects

Topics can include Coaching style, communication means, order of topics for the first meeting.

Reading List (Block 1):

1. T. Honglei, S. Wei and Z. Yanan, "The Research on Software Metrics and Software Complexity Metrics," *2009 International Forum on Computer Science-Technology and Applications*, Chongqing, 2009, pp. 131-136.
   doi: 10.1109/IFCSTA.2009.39
2. M. Saboe, "The use of software quality metrics in the materiel release process experience report," *Proceedings Second Asia-Pacific Conference on Quality Software*, Hong Kong, China, 2001, pp. 104-109.
   doi: 10.1109/APAQS.2001.990008
3. A. Tahir and S. G. MacDonell, "A systematic mapping study on dynamic metrics and software quality," *2012 28th IEEE International Conference on Software Maintenance (ICSM)*, Trento, 2012, pp. 326-335.
   doi: 10.1109/ICSM.2012.6405289
4. M. J. Ordonez and H. M. Haddad, "The State of Metrics in Software Industry," *Fifth International Conference on Information Technology: New Generations (itng 2008)*, Las Vegas, NV, 2008, pp. 453-458.
   doi: 10.1109/ITNG.2008.106
5. N. S. Awang Abu Bakar and N. Arsat, "Investigating the factors that influence the quality of open source systems," *The 5th International Conference on Information and Communication Technology for The Muslim World (ICT4M)*, Kuching, 2014, pp. 1-6.
   doi: 10.1109/ICT4M.2014.7020589
6. B. Edson, B. Hansen and P. Larter, "Software Reliability, Availability, and Maintainability Engineering System (SOFT-RAMES)," *Proceedings of 1996 Annual Reliability and Maintainability Symposium*, Las Vegas, NV, USA, 1996, pp. 306-311.
   doi: 10.1109/RAMS.1996.500680
7. H. Ogasawara, M. Aizawa and A. Yamada, "Experiences with program static analysis," *Proceedings Fifth International Software Metrics Symposium. Metrics (Cat. No.98TB100262)*, Bethesda, MD, USA, 1998, pp. 109-112.
   doi: 10.1109/METRIC.1998.731235
8. H. P. Siy, J. D. Herbsleb, A. Mockus, M. Krishnan and G. T. Tucker, "Making the software factory work: lessons from a decade of experience," *Proceedings Seventh International Software Metrics Symposium*, London, UK, 2001, pp. 317-326.
   doi: 10.1109/METRIC.2001.915539
9. L. H. Rosenberg and S. B. Sheppard, "Metrics in software process assessment, quality assurance and risk assessment," *Proceedings of 1994 IEEE 2nd International Software Metrics Symposium*, London, England, UK, 1994, pp. 10-16.
   doi: 10.1109/METRIC.1994.344233
10. T. Honglei, S. Wei and Z. Yanan, "The Research on Software Metrics and Software Complexity Metrics," *2009 International Forum on Computer Science-Technology and Applications*, Chongqing, 2009, pp. 131-136.
    doi: 10.1109/IFCSTA.2009.39
11. S. A. Mengel, "Software metrics: view from education, research and training," *Proceedings 12th Conference on Software Engineering Education and Training (Cat. No.PR00131)*, New Orleans, LA, USA, 1999, pp. 126-128.
    doi: 10.1109/CSEE.1999.755191

Reading List (Block 2):

1. Mei-Huei Tang, Ming-Hung Kao and Mei-Hwa Chen, "An empirical study on object-oriented metrics," *Proceedings Sixth International Software Metrics Symposium (Cat. No.PR00403)*, Boca Raton, FL, USA, 1999, pp. 242-249.
   doi: 10.1109/METRIC.1999.809745

2. A. Avritzer and E. J. Weyuker, "Investigating metrics for architectural assessment," *Proceedings Fifth International Software Metrics Symposium. Metrics (Cat. No.98TB100262)*, Bethesda, MD, USA, 1998, pp. 4-10. doi: 10.1109/METRIC.1998.731220
3. V. Wyatt, J. DiStefano, M. Chapman and E. Aycoth, "A metrics based approach for identifying requirements risks," *28th Annual NASA Goddard Software Engineering Workshop, 2003. Proceedings.*, Greenbelt, MD, USA, 2003, pp. 23-28. doi: 10.1109/SEW.2003.1270722
4. M. Iyapparaja and S. Sureshkumar, "Coupling and cohesion metrics in Java for adaptive reusability risk reduction," *IET Chennai 3rd International on Sustainable Energy and Intelligent Systems (SEISCON 2012)*, Tiruchengode, 2012, pp. 1-6. doi: 10.1049/cp.2012.2189
5. L. Shao, L. Zhang, J. Zhao, B. Xie and H. Mei, "Towards a User-perceived Service Availability Metric," *2008 IEEE International Conference on Services Computing*, Honolulu, HI, 2008, pp. 549-550. doi: 10.1109/SCC.2008.101
6. J. Lenhard and G. Wirtz, "Measuring the Portability of Executable Service-Oriented Processes," *2013 17th IEEE International Enterprise Distributed Object Computing Conference*, Vancouver, BC, 2013, pp. 117-126. doi: 10.1109/EDOC.2013.21
7. F. A. Talib, D. Giannacopoulos and A. Abran, "Designing a Measurement Method for the Portability Non-functional Requirement," *2013 Joint Conference of the 23rd International Workshop on Software Measurement and the 8th International Conference on Software Process and Product Measurement*, Ankara, 2013, pp. 38-43. doi: 10.1109/IWSM-Mensura.2013.16
8. E. Jonsson and L. Pirzadeh, "A framework for security metrics based on operational system attributes," *2011 Third International Workshop on Security Measurements and Metrics*, Banff, AB, 2011, pp. 58-65. doi: 10.1109/Metrisec.2011.19
9. S. Islam and P. Falcarin, "Measuring security requirements for software security," *2011 IEEE 10th International Conference on Cybernetic Intelligent Systems (CIS)*, London, 2011, pp. 70-75. doi: 10.1109/CIS.2011.6169137
10. J. Voas, A. Ghosh, G. McGraw, F. Charron and K. Miller, "Defining an adaptive software security metric from a dynamic software failure tolerance measure," *Proceedings of 11th Annual Conference on Computer Assurance. COMPASS '96*, Gaithersburg, MD, USA, 1996, pp. 250-263. doi: 10.1109/CMPASS.1996.507892
11. V. S. Sharma and K. S. Trivedi, 'Architecture based analysis of performance, reliability and security of software systems', in Proceedings of the 5th international workshop on Software and performance, New York, NY, USA, Jul. 2005, pp. 217–227, doi: 10.1145/1071021.1071046.