*:32/2I1041/2I4128 - Momentinformation Senast ändrad 2005-05-04

Utskrivet: onsdag 20/7

Momentnamn: Software Evolution and Maintenance

Poäng: 4

Datum: 2005-08-29 till 2005-10-21

Förkunskapskrav:

Mål

Goal

> To change or not to change
>
> that is the question?
>
> Or should we rather say
>
> change or perish!!!!!

How many systems do the software engineers start building from scratch today? Well, not many. How many systems do the software engineers support today? The majority. Therefore, the success of many software organisations will strongly depend on how well they may support (evolve and maintain) these systems. And YOUR SUCCESS will strongly depend on how well prepared you will be to face the evolution and maintenance challenge.

So, take the opportunity and learn how to meet this challenge on the Software Evolution and Maintenance course. I promise you will not regret it. First of all, it is a very interesting course. After the first lecture you will become as deliriously enthusiasic as the course leader is. Second of all, it is one of the unique courses in the world. It is even internationally listed among the very few courses on the subject in the world (see http://catamaran.labs.cs.uu.nl/twiki/pt/bin/view/Transform/TeachingSoftwareEvolution).

General Description of Software Evolution and Maintenance

Software evolution and maintenance has become one of the most important, costly and complex activities within software engineering. Its cost reaches almost 90% of the total life-cycle cost. Evolution and maintenance encompasses enhancement of extant software systems with new functionality, attendance to software defects, adaptation to new environment, and prevention of future problems.

Despite the fact that evolution and maintenance has become the dominating software engineering activity, most of the academic courses today are only dedicated to software development, the phase before the system is delivered to the customer. On this course, you will learn how to effectively evolve and maintain the software systems after the systems is delivered to the customer.

Goal

The primary goal of the course is to provide students with basic knowledge about the domain of evolution and maintenance, its process models, and increase their awareness of the problems encountered both within the academia and industry.

Innehåll

Contents

- History of Evolution and Maintenance
- Definition of Evolution and Maintenance

- Laws of Evolution
- Maintenance Categories
- Organisational infrastructures
- Maintenance team structure
- Modification Requests
- Scheduled maintenance
- System Release Planning
- Impact Analysis
- Process models
- Enhancive maintenance
- Corrective maintenance
- Preventive maintenance
- Support
- Predelivery/prerelease maintenance
- Transition phase
- Industrial processes
- Maintenance testing
- Daily build process
- Education and training of maintenance engineers
- Documentation
- Product ageing and maintainability
The history and future of the course
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1999/2000:

The course was conducted for the first time in 1999. Please observe that at this time, there was hardly any course material. We used one book dealing with the subject on a very general level. For this reason, the course leader got support from industry. Three industrial organisations were involved in teaching on the course. They were ABB Robotics, ABB Corporate Research and Neotech. The course mainly dealt with definition of the domain, maintenance categories, industrial processes in general, maturity model and predelivery and transition phases.
- Examination 1999/2000: The written examination was based on Pigoskis book - Practical Software Maintenance. This year, we hardly had any material to examine our students on.
- Research task 1999/2000: The students evaluated the CMM from the perspective of software evolution and maintenance.
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2000/2001:

The course was further extended with preventive maintenance, problem management and introduction to documentation process.
- Examination 2000/2001: The theoretical part was based on Pigoskis book - Practical Software Maintenance.
- Research task 2000/2001: The lecturer has defined a model encompassing a number of basic requirements for

a documentation process. The students would first study the model and its requirements and then investigate how these requirements were implemented within the industry. This course task has resulted in an international publication presented at IEEE International Conference on Software Maintenance 2001 in Florens in Italy. All the students involved on the course became co-authors of this international publication.

The exact reference to this article is: Mira Kajko-Mattsson and the students of the course on Software Maintenance (Lola Andersson, Andreas Eriksson, Fredrik Börjesson, Nina Grundemark, Sandra Giarimi, Rasmus Gunnar, Karl Heling, Mia Kokko, Magnus Pettersson, Maria Pettersson, Åsa Maria Pettersson, Jolanta Plisko, Maria Luisa Quiroga de Arreyes, Fabian Rivière, Helena Sjöberg, Fredrik Schmidt, Urban Örthberg, Leila Vanhala-Packendorff, Tove Wättestam), Proceedings, International Conference on Software Maintenance, IEEE Computer Society Press: Los Alamitos, CA, 2001.

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2001/2002

The course was further extended with the documentation process, education and training and introduction to support processes.

- Examination 2001/2002: The theoretical part was based on Pigoskis book -Practical Software Maintenance and some of the lecturers own international publications. This year the students were examined against a set of predefined questions, listed in a Question Bank.

- Research task 2001/2002: The lecturer defined a maturity model for a front-end support process. The students studied the model and then investigated how it was implemented within the Swedish industry. It was really fun to see how the process was performed within the industry.

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2002/2003

The course material was extended with a testing process. All the couse material was written by the course leader, and it was delivered to students in form of a compendium.

- Examination 2002/2003: The theoretical part was based on a compendium, written by the course leader, and exclusively tailored for this course. Questions taken from the Question Bank were used in the written examination. .

- Course task 2002/2003: The lecturer defined a set of basic requirements for either a testing process or a maintainability model of requirement specifications. The students investigated how these requirements are implemented within the Swedish industry.

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2003/2004

The course was extended with enhancive maintenance process, maintainability and evolution and maintenance testing. The course was run in co-operation with Scandinavian Airline Systems (SAS).

- Examination 2003/2004: The theoretical part was based on the compendium and the question bank.

- Course task 2003/2004: Students conducted two types of tasks. Some groups conducted literature studies in various domains within evolution and maintenance. Three groups (4 members per group) conducted the course task at Scandinavian Airline Systems (SAS). They studied the evolution and maintenance of web services.

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2005/2006

The course compendium has been substantially improved.

- Examination 2005/2006: The theoretical part is based on the compendium and the Question Bank.

- Course task 2005/2006: Students will conduct two types of tasks. They will be free to choose whether they would like to make an industrial or literature study. The literature study will deal with reengineering and refactoring this year.

Genomförande

Realisation

This course consists of the following:

- 7 lectures

- 2 seminars

Litteratur
Kompendier

Kajko-Mattsson: Software Evolution and Maintenance, *32 Compendium.

The compendium will be available at DSV department.

Examination

Examination

- Written exam, 2 credits (100% of the questions come from the Question Bank)

- Research task, 2 credits.

The research task deals with either:

- Investigation of the state of practice of industrial maintenance software processes. Different tasks are designed each year. See the history of the course above.

- Literature study of some specific domain within evolution and maintenance. See again the plans for the task of this year.

Medverkande
Momentansvarig
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