Planning rapport for master thesis at IDA

Niclas Olofsson
<nicol271@student.liu.se>

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1 Author

Niclas Olofsson, Civilingenjörsutbildning i Datateknik

2 Working title

Automated testing in a web application for staff manning

3 Problem formulation

In large organizations, there is often a need for efficient administration of staff. Resource planning is often used to determine the required production capacity in order to reach a specific goal. One example could be the required number of examinations that is needed to be done at a hospital in order to keep the waiting times within specific bounds. The results of the resource planning poses as the base for allocating staff. GOLI is a startup company developing a web application for production planning, currently focused on following up plans and goals. Due to requirements from customers, the code base will be extended to include new features.

During code refactoring or implementation of new features in software, errors often occur in existing parts. Automatic testing is often used to verify the functionality of software, in order to detect bugs and errors before they end up in a production environment. The goal of this master's thesis is to analyze how this can be introduced in a good way, and if lower-level tests can be derived from existing high-level tests automatically.

3.1 Formulation of question

- How can a combination of low-level and high-level testing be used in order to achieve good test coverage?
- Is it possible to automate the process of breaking down high-level behavioral into lower-level unit tests?

4 Initial approach

[Ska ge en preliminär beskrivning av hur problemet ska angripas. Ska [även beskriva planerat sätt att visa att problemet lösts på ett [tillfredsställande sätt.]

5 Literature basis

The literature basis will be focused on how automated testing can be used in a web application in order to achieve good test coverage, make tests easy to write and run them sufficiently fast.

Garousi et al. [2013] presents the results of a classification and analysis of 79 articles about web application testing. This will be a good way to get and overview of the area, and to find other relevant articles on the subject.

6 Time schedule

6.1 Week planning[1]

6.1.1 Week 5

This week is focused on getting to know the company and the existing web application, to understand the basics of project planning and which role staff manning has in this context. The project planning report should be started, a draft of the problem problem formulation should be done. Meeting with customers in order to understand what the product designed during the case study should look like.

6.1.2 Week 6

The last parts of planning takes place and the planning report is completed. The literature study begins. Focus on getting a good basic knowledge of what testing is and how it can be performed in Rails. Getting better knowledge of the involved frameworks.

6.1.3 Week 7-14

Literature study combined with test implementations, trying to determine quality factors of testing and ways to automate parts of the test suite based on other parts. Write drafts of relevant parts for the final report. Planning design of new module to be used in evaluation study.

6.1.4 Half-time supervision

A suggested preliminary date for the half-time supervision is 2014-04-03.

The following goals should be completed at this supervision:

- Something

6.1.5 Week 15-22

Study how the practices results could be applied to existing code and how it could be used when extending the code with a new module. Writing report, hand in drafts to supervisor, correct reports (iterate as needed).

6.1.6 Week 22-23

Opposition of other thesis. Preparations for presentation.

6.1.7 Week 23-24

Final thesis presentation. Feedback corrections on report from opponent. Post-study and evaluation report.

References

Vahid Garousi, Ali Mesbah, Aysu Betin-Can, and Shabnam Mirshokraie. A systematic mapping study of web application testing. *Information & Software Technology*, 55(8):1374–1396, 2013.

[1] Week numbers refers to the ISO 8601 week number of year