

REVIEW

About PhD defense procedure in the Faculty of Mathematics and Informatics at Sofia University “St. Kliment Ohridski”

By assoc. prof. Aleksandar Dimov,
Faculty of Mathematics and Informatics at Sofia University “St. Kliment Ohridski”

PhD candidate: Tihomir Dimitrov Tenev

Thesis title: Development of Hierarchical Taxonomy that Incorporates Patterns for Improving Security in Information Systems Based on Microservice Architecture

1. General characteristic of the PhD thesis

Main text of the thesis has a volume of 122 pages, which includes an Introduction, 8 chapters, conclusion and bibliography with 111 literature sources with 3 auto-citations. There also exist an appendix with a volume of 28 pages.

The aim of the dissertation is to develop a hierarchical taxonomy of models for improving security in information systems.

Ensuring the security of modern software is one of the topical problems currently. In addition, the PhD student focused on one of the most widely used architectural models in software systems today – microservice systems. Thus, the relevance of the issues addressed in the dissertation is out of doubt.

The text of the dissertation consecutively studies various characteristics of the concept of security and classifies currently known policies, models and architectural solutions that focus on these characteristics. On this basis, a taxonomy is created of security models for microservice software systems.

2. Assessment of the scientific contributions

Main contribution of the thesis is the creation of a taxonomy of models for security of microservice based software systems. This will enable

professionals involved in the development and design of software systems to make sound decisions in meeting specific security requirements.

In addition to this, the doctoral student claims five more contributions, and I am inclined to admit three of them without comments. More specifically:

- Description of the second contribution is not complete.
- I believe that contribution №5 represents a "graphical model" and not a "graphical interface"

3. Assessment of the thesis publications

The doctoral student has presented 5 publications on the dissertation, all in English. These publications cover the topic and the developments in the dissertation. None of the publications is indexed in the international databases SCOPUS and / or Web of Science.

4. Assessment of the thesis synopsis

The thesis synopsis is presented in both English and Bulgarian languages and has sufficient volume and fully summarizes the text of the dissertation..

5. Personal impressions

I do not know the doctoral student before the defense and I have no personal impressions of him.

6. Critical remarks and questions

There exist places in the thesis text where the choice of a certain approach or technology is not justified, which leaves the impression of a lack of scientific approach, for example:

- Page 20, second paragraph - it is good to describe the "in-depth studies" that the doctoral student has done so that the reader can assess whether the proposed methodology could be universally applied
- Section 1.6 - why is it proposed to use exactly these technologies? How can we be sure that there are no better ones in this case?
- How can we be sure that the set of security features on which the taxonomy is based is comprehensive?
- The application (Kong) selected for validation purposes in Chapter 8 is not clearly explained. Much of the text in this chapter assumes knowledge of certain details of the implementation and architecture of the application.

- Description of the contributions is incomplete (specifically contribution №2)

It is inappropriate to use foreign words for terms that have well established equivalents in Bulgarian, such as: "service", "user interface", etc.

7. Conclusion

I consider the thesis to fulfil the requirements for PhD degree of the Bulgarian law and corresponding state and university regulations. Thus, I recommend that Tihomir Tenev should be given a PhD degree in field of 4.6. Informatics and Computer Science.

Sofia

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Signed: