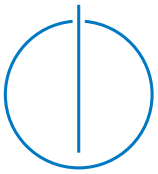
FAKULTÄT FÜR INFORMATIK

TECHNISCHE UNIVERSITÄT MÜNCHEN

Master Thesis in Informatics

Improving the Software Architecture Documentation Process for Mediawiki Software

Ankitaa Bhowmick



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Improving the Software Architecture Documentation Process for Mediawiki Software

Author:	Ankitaa Bhowmick
Supervisor:	Matthes, Florian; Prof. Dr. rer. nat.
Advisor:	Klym Shumaiev
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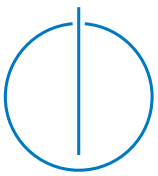

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Munich, 15th August, 2015 Ankitaa Bhowmick

Acknowledgments

Abstract

The thesis involves the initial research on the available state-of-the-art Software Architecture documentation processes, tools, etc. that help in maintaining a software architecture documentation that is consistent with the evolving architecture.

Understanding the current software architecture documentation process at Wikimedia, keeping the evaluation goals in mind, is an essential part of this thesis. It also focuses on critical evaluation of the documentation process to derive requirements for its improvement.

Based on analysis, an improved Software Architecture documentation process will be proposed and evaluated.

Contents

Part I.

Introduction

1. Introduction

1.1. Motivation

A good software architecture is the focal point of an evolving software. To make this software maintainable, extendable and sustainable, a robust software architecture and a defined documentation process for this architecture are required.

Documentation is a factor that determines the quality of a software. A good software architecture documentation helps to understand, evaluate and communicate the various architectural decisions from different stakeholder viewpoints. Also, as the software evolves and its complexity and dependencies increase, the corresponding architecture documentation needs to updated as well.

Standardized software processes provide structural support a software development project's life-cycle. The quality of a software process directly affects the quality of the software.

Summing up, a standard process for documentation improves the quality of the documents and ultimately, the quality of the software itself.

1.2. About the Topic

Open source softwares have distinguished themselves as the trend of the trade in this era and have advantages which are beyond comparison. But there are a few downsides to this approach of software development. In the pretext of software process, open source softwares can be categorized as loosely co-ordinated and less process-oriented. They believe in "Do-ocracy" where there is more focus of doing (building) the software from small to big, rather than following a process-oriented strict software life-cycle management process. This leads to the basic scope of this thesis : Improving the process in an open source environment

In the recent past, Mediawiki software (WMF Foundation) has grown to become one of the largest open source communities in the world. This prompted the choice for the candidate software for the thesis: Improving the process for Mediawiki software

As discussed above, software architecture documentation is as important in the software project as the software architecture itself. With some background study, it was

found that lack of documentation is one of the major downsides of open source development model. Hence this thesis topic aims to find a proof of concept and a theoretical reasoning that may prove helpful for Open Source community in general and in particular : Improving the software architecture documentation process of Mediawiki software.

1.3. Research scope

The scope of the thesis has been reduced to maintenance of mid-level software architecture documentation of Mediawiki that is available as a part of the source code on mediawiki.org.

Moreover, a process has been defined and demonstrated that can be used as a basis for a process that can aide in maintenance of documents over a period of time. Coupling the existing review process and task management system, this documentation process is well-bound to the practices in the Mediawiki community and aims to win greater acceptance of the defined process.

1.4. Reader's guide

The next chapter (chapter 2) will enumerate the questions to which this thesis aims to provide an answer. This will help us understand our initial assumptions, the existing problems and the expected solution.

The following chapter will present literature analysis giving theoretical proofs to explain the important concepts for this research and the reasoning to support the thesis work (chapter 3).

Then, chapter 4 will show the approach followed to find a proper solution by conducting discussions and meetings with the stakeholders. The system design is also covered in this chapter.

The consecutive chapter will present a detailed description of the system implementation, defining all of its features (chapter 5).

With regards to chapter 6, the thesis focuses on evaluating the proposed solution by comparing it with the standard processes in the industry and also by evaluating stakeholder satisfaction

Lastly, **??** will conclude the concepts of this work, its future scope and the answers to the initially proposed research questions.

2. Research Questions

2.1. Section

Citation test [**latex**].

2.1.1. Subsection

See Figure 7.1.

Figure 2.1.: An example for a figure.

2.2. Section

See Table 7.1, Figure 7.2, Figure 7.3, Figure 7.4.

Table 2.1.: An example for a simple table.

A	B	C	D
1	2	1	2
2	3	2	3

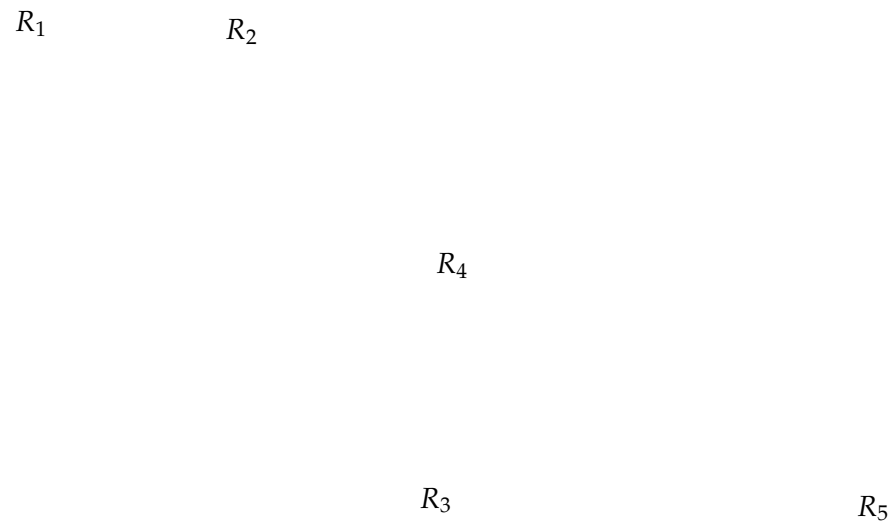

Figure 2.2.: An exam

3. Literature Survey

3.1. Section

Citation test [**latex**].

3.1.1. Subsection

See Figure 7.1.

Figure 3.1.: An example for a figure.

3.2. Section

See Table 7.1, Figure 7.2, Figure 7.3, Figure 7.4.

Table 3.1.: An example for a simple table.

A	B	C	D
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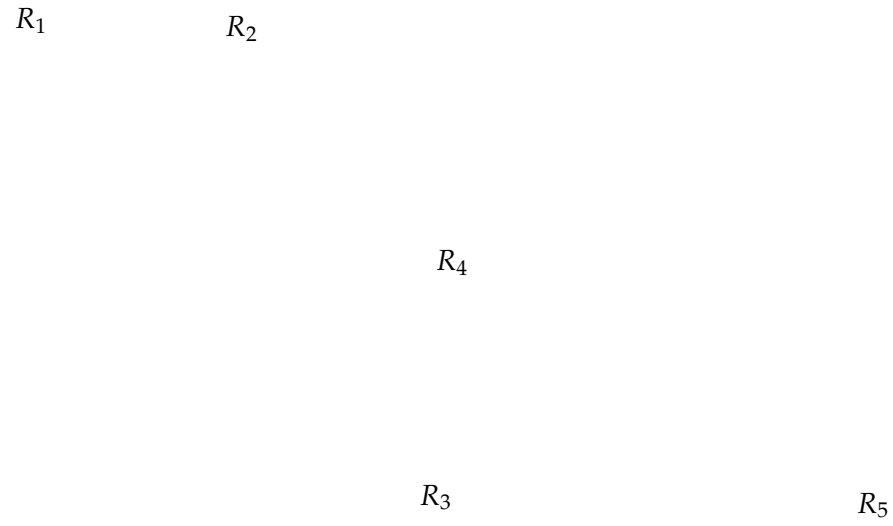

Figure 3.2.: An exam

Part II.

Thesis Contribution

4. Conceptualization

4.1. Section

Citation test [**latex**].

4.1.1. Subsection

See Figure 7.1.

Figure 4.1.: An example for a figure.

4.2. Section

See Table 7.1, Figure 7.2, Figure 7.3, Figure 7.4.

Table 4.1.: An example for a simple table.

A	B	C	D
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2	3	2	3

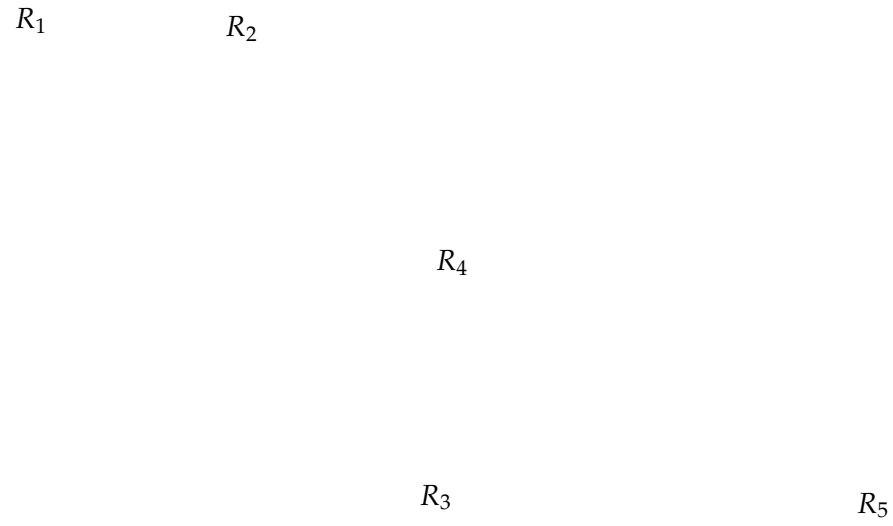

Figure 4.2.: An exam

5. Implementation

5.1. Section

Citation test [**latex**].

5.1.1. Subsection

See Figure 7.1.

Figure 5.1.: An example for a figure.

5.2. Section

See Table 7.1, Figure 7.2, Figure 7.3, Figure 7.4.

Table 5.1.: An example for a simple table.

A	B	C	D
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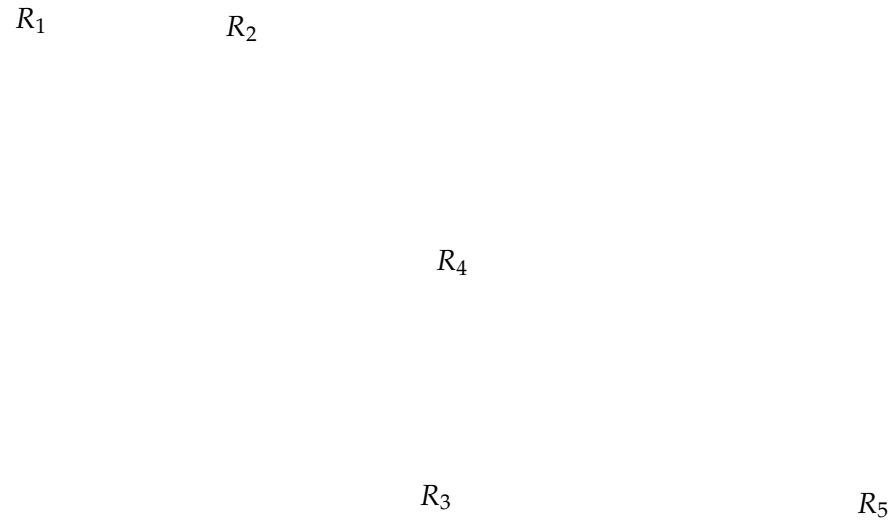

Figure 5.2.: An exam

Part III.

Evaluation and Conclusion

6. Evaluation

6.1. Section

Citation test [**latex**].

6.1.1. Subsection

See Figure 7.1.

Figure 6.1.: An example for a figure.

6.2. Section

See Table 7.1, Figure 7.2, Figure 7.3, Figure 7.4.

Table 6.1.: An example for a simple table.

A	B	C	D
1	2	1	2
2	3	2	3

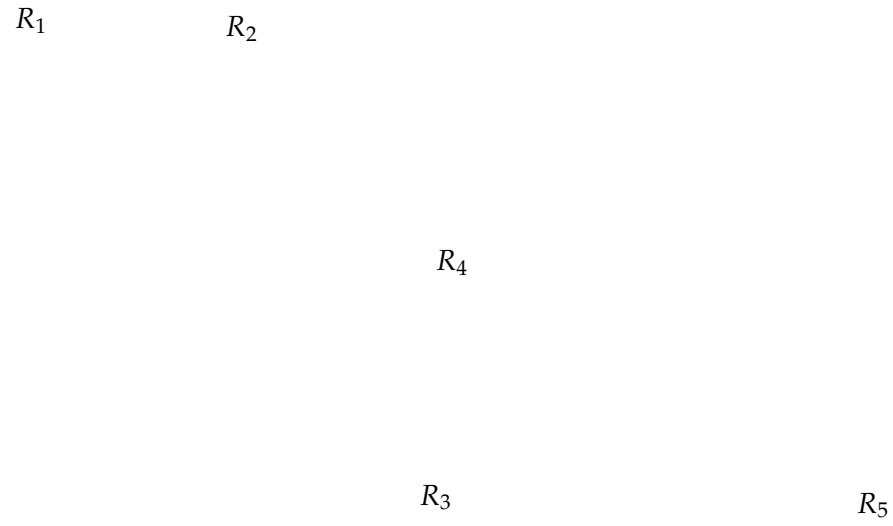

Figure 6.2.: An exam

7. Conclusion

7.1. Section

Citation test [**latex**].

7.1.1. Subsection

See Figure 7.1.

Figure 7.1.: An example for a figure.

7.2. Section

See Table 7.1, Figure 7.2, Figure 7.3, Figure 7.4.

Table 7.1.: An example for a simple table.

A	B	C	D
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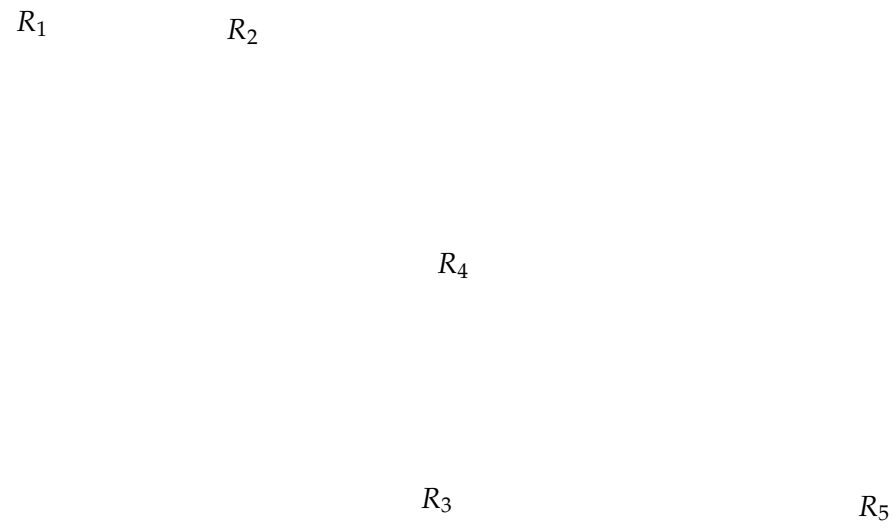

Figure 7.2.: An exam

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