Automatic Generation of Release Notes

Artifact Packages

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ABSTRACT

In the paper *Automatic Generation of Release Notes*, we introduced ARENA, an approach for automatically generating release notes by extracting changes from the source code, summarizing them, and integrating them with information from versioning systems and issue trackers. ARENA was designed based on the manual analysis of 1,000 existing release notes and evaluated with three empirical studies. This document presents a simple package consisting of the artifacts for replicating these studies and their results.

Categories and Subject Descriptors

D.2.7 [**Software Engineering**]: Distribution, Maintenance, and Enhancement—*Documentation, Enhancement, Restructuring, Reverse Engineering, and Reengineering*

General Terms

Documentation

Keywords

Artifacts, Release notes, Software documentation, Software evolution

1. INTRODUCTION

In the paper *Automatic Generation of Release Notes* [1], we presented ARENA, a novel approach for the automatic generation of release notes. The design of our approach is based on the manual analysis of 1,000 of existing release notes from 58 software projects. In a nutshell, ARENA builds a release note by (i) capturing and describing fine-grained changes performed between two software releases, (ii) mining information from the issue tracker and linking it to such changes, and (iii) aggregating all the extracted information into an HTML file. We evaluated ARENA through three empirical studies assessing different aspects of our approach. In the current document, we present the set of artifacts that were generated thorough the design, implementation and evaluation of ARENA. Such artifacts serve to completeness and replication purposes.

2. OBTAINING THE ARTIFACTS

The artifact packages generated for the paper *Automatic Generation of Release Notes* [1] are available online at

`http://www.cs.wayne.edu/~severe/fse2014/`

The website is organized by the subjects developed in the paper. For each subject, a brief description is provided together with the list of artifacts linked to the subject.

Each artifact can be separately downloaded by clicking the icon next to its description. A package containing all the artifacts can be downloaded from the section *Full Package* in the same website.

3. GETTING STARTED

The website consists of five sections corresponding to the next subjects:

1. Exploratory Study on Existing Release Notes
2. ARENA's Design
3. Empirical Study I: On the Completeness of ARENA Release Notes
4. Empirical Study II: On the Importance of ARENA Release Notes
5. Empirical Study III: "In-field" Evaluation

Most of the artifacts provided for these subjects are files of common types such as spreadsheets, text documents, PDF files, comma-separated files, or HTML files, which can be opened using any Office suite or browser. In the case of Zip files, uncompress the files as usual. These files group files of common types.

For the Empirical Study II, we provide an R script for generating the plots that appear in the paper based on the collected responses. The next section describes the requirements and usage of this script.

As mentioned before, the purpose of the provided artifacts vary. For example, the artifacts corresponding to the Exploratory Study and ARENA's design are provided for the sake of completeness, as they contain the full data summarized in the paper. The artifacts related to the design

of the empirical studies are provided with the purpose of replication of such studies. Finally, the responses obtained in such studies and the plot-generation script are provided with the purpose of replication of our results.

4. USING THE ARTIFACTS

In order to generate the plots of the Empirical Study II using the provided R script, it is required the R environment. Two options are available for executing the script: local execution and online execution.

4.1 Local Execution

For running the script in a local machine, it is necessary to have installed the R environment. For this, follow the instructions in `http://tinyurl.com/installing-r`.

Once R is installed and ready to be used, follow the next steps:

1. Download the R script file for plot generation (i.e., `study-ii_script.R`) and the study responses file (i.e., `study-ii_responses.csv`) of the Empirical Study II from the Artifacts website.
2. Place the downloaded files under the working directory of R.
3. Invoke R from the command line and run the script file by using the command:

```
source('study-ii_script.R')
```

A set of PDF files with the plots based on the responses of the participants (which appear in the paper) will be created in the same folder.

4.2 Online Execution

For executing the provided R script online:

1. Access to the online compiler at `http://tinyurl.com/execute-r-online`.
2. Copy and paste the content of the study script (i.e., `study-ii_script.R`[1]) in the tab `main.r` of this website and the content of the study responses file (i.e., `study-ii_responses.csv`[2]) in the tab `input.txt`.
3. Run the script by clicking the *Execute Script* button.

The generated files can be obtained by clicking the button *Download Files*.

5. REFERENCES

[1] L. Moreno, G. Bavota, M. Di Penta, R. Oliveto, A. Marcus, and G. Canfora, "Automatic generation of release notes," in *Proceedings of the 22nd ACM SIGSOFT International Symposium on Foundations of Software Engineering (FSE'14)*. ACM, 2014, p. to appear.

[1] `http://tinyurl.com/study-ii-script-R`
[2] `http://tinyurl.com/study-ii-responses-csv`