Analyzing OSS Developers’ Working Time Using Mailing Lists Archives

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Categories and Subject Descriptors

General Terms: Management

Keywords
Overtime work, workload

1. INTRODUCTION
We chose PostgreSQL, a relational database system for the MSR mining challenge.

Our research question is in the following mining area:
- Process analysis

Our mining question is “when OSS developers work?” OSS developers’ working time may be a good indicator to understand the development style of a project. (For example, if many developers work in office hour, these might be daily works in a company.)

2. INPUT DATA
We used mailing lists (MLs) archives of PostgreSQL, downloaded from http://www.postgresql.org/community/lists/. The MLs mainly consist of user lists and developer lists. We used developer lists archive since we needed developers’ working time. Table 1 explains details of each ML. Figure 1 shows amounts of messages of each ML in the developer lists. Amounts of messages were increasing year by year. The ML of hackers had many more messages than other MLs. We extracted MLs archives till December 2005. Note that most of committers’ messages were automatically generated when source code was checked into software configuration management repository.

![Figure 1. Amount of Messages in Each Year](image)

We picked up “mail sent time” to identify developers’ working time. Getting mail sent time from the MLs archives consists of the following two steps: First, we downloaded the MLs archives with

Table 1. Description of Each ML

<table>
<thead>
<tr>
<th>List</th>
<th>Description</th>
<th>Archived from</th>
</tr>
</thead>
<tbody>
<tr>
<td>committers</td>
<td>Notification of CVS commits are sent to this list.</td>
<td>April 2000</td>
</tr>
<tr>
<td>hackers</td>
<td>Discussion of current development issues, problems and bugs, and proposed new features.</td>
<td>January 1997</td>
</tr>
<tr>
<td>patches</td>
<td>Patches for new features and bug fixes should be sent to this list.</td>
<td>June 2000</td>
</tr>
<tr>
<td>www</td>
<td>Discussion of development and coordination of the PostgreSQL websites.</td>
<td>August 2003</td>
</tr>
</tbody>
</table>

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MSR’06, May 22–23, 2006, Shanghai, China.
ACM 1-59593-085-X/06/0005.
Irvine\(^1\), a web download tool. Then, we extracted mail sent time from the downloaded archives with a Perl script.

In our analysis, we mainly focused on the following aspects:

- Mail sent hour
- Days of a week of mail sent date
- Difference in hours and date among ML groups
- Time trend

To see developer workload, we defined the overtime period. Overtime period includes before 9a.m. and after 5p.m. on weekday, and all day of weekend. Because each ML has different amount of messages, we used ratio of messages, defined as amount of messages divided by total amount, of each ML group.

3. RESULTS AND INTERPRETATIONS

The ratio of messages in each hour is shown in Figure 2. The ML of hackers was active in the morning. On the contrary, ratio of committers’ messages in the evening is comparatively higher than other ML groups. The ratio of messages in each day of a week is shown in Figure 3. Most developers work on weekday. The ratio of committers’ messages on weekend is slightly higher than other ML groups.

4. CONCLUSIONS

We analyzed mailing lists archives of PostgreSQL. We focused on mail sent hour, days of a week of mail sent date, difference in hours and date among ML groups, and time trend. Our finding is that the ratio of committers’ messages sent at overtime period was increasing year by year.

5. ACKNOWLEDGMENTS

This work is supported by the EASE (Empirical Approach to Software Engineering) project of the Comprehensive Development of e-Society Foundation Software program of the Ministry of Education, Culture, Sports, Science and Technology of Japan.

\(^1\) http://hp.vector.co.jp/authors/VA024591/ (in Japanese)