PROJECT: BOGOR – JAVA ENVIRONMENT FOR ECLIPSE

DELIVERABLE: PROJECT EVALUATION

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1. Introduction

This document is a summary of my experiences during the life cycle of this project.

2. Problems Encountered

2.1. Comprehending Project Requirements

At the beginning of this project, it took a lot of efforts to understand the vision of this product and the requirements of this project. After several meetings with Dr. Robby, the vision and requirement of project became clear. It was not easy to create system requirement for GUI layout at the early phase of this project. However, it became clear when the project moved to the second phase because the prototype built in the first phase helped me to fully understand this product.

2.2. Understanding Eclipse Frameworks

This project is to create several Eclipse plug-ins. Building Eclipse plug-ins requires developer to fully understand Java development tooling and plug-in development environment. There is a very steep learning curve for developer with little Eclipse plug-in developing experience. JFace and SWT are the APIs to build GUI for this project. The development documents on these two are not adequate. The only resource I could use is the Eclipse help. I had to read the Eclipse source code to understand how these API works.

2.3. Creating formal specification

Using FSM to create formal specification was a challenged task. At the beginning of building FSM, I could not model all system states and actions.
After several iterations and conversations with Dr. Robby, I found all system states and actions by using the prototype and system requirements.

3. Source Line of Code

I did not estimate SLOC for this project in the first phase because I was not familiar with JFACE and SWT APIs at the beginning of this project. During the first phase, I studied these APIs, understood more on requirement, and created the first prototype. By accumulating experience and knowledge on APIs and requirement, my estimation of the SLOC for this project in second phase was 6000 SLOC. In the third phase, the actual SLOC was reduced to 4741 by tuning the code.

The actual SLOC implemented for each plug-in is as follows.

Incremental compilation = 556

BogorVM view = 2556

Launcher = 1429

Error trace in Java = 200

Total = 4741

4. Project duration

<table>
<thead>
<tr>
<th>Phase</th>
<th>Expected finish time</th>
<th>Actual finish time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>August 7, 2005</td>
<td>August 7, 2005</td>
</tr>
<tr>
<td>Phase II</td>
<td>October 18, 2005</td>
<td>November 11, 2005</td>
</tr>
<tr>
<td>Phase III</td>
<td>December 12, 2005</td>
<td>December 12, 2005</td>
</tr>
</tbody>
</table>

Both Phase I and Phase III were on schedule. Phase II was delayed due to longer than expected time on creating formal specification.
The initial estimation was 6 months for this project. Although phase II spent more time than the time was planned, the project was still well managed and finished on time.

The following is a summary of time spent on each phase.

- Phase I: 100 hours
- Phase II: 86 hours
- Phase III: 56 hours
- Total = 242 hours

The following graphs present the time allocation for the project and for each phase.

**Project Breakdown by Phase**

![Pie chart showing time allocation]

- Phase I: 43%
- Phase II: 36%
- Phase III: 21%
Phase I

- Study PDE&JDT: 34%
- Design & Document: 49%
- Build Prototype: 17%

Phase II

- Design & Document: 44%
- Coding: 56%

Phase III

- Design: 7%
- Coding: 29%
- Document: 43%
- Testing: 21%
5. Lessons learned

By working on this project, I leaned the essential part of delivering a product on time is to create consistent documents, design the core functions at early phase, and build the prototype for these critical functions at early phase. Building the prototype helped me to understand the requirement. The consistence and accuracy of the documents are critical to this project. These documents helped to smooth the process of this project. I also leaned the advantage of using iterative process over waterfall process. By addressing the critical requirements during the first phase and second phase reduced the risk of project delay. For my personal technical skills, I learned Eclipse PDE, JDT, JFACE and SWT from this project.

6. Future work

There are some functions that can be implemented into the Bogor-Java Environment for Eclipse to make this tool user friendlier and more useful.

- Adding break-point function into the Debug Perspective when tracing errors
- Changing error trace from BIR/Bytecode level to Java level
- Improving configuration tab in launch pad
- Adding BogorVM view highlighting function