Project Evaluation
Airline Reservation System

Submitted in partial fulfillment of the requirements of the degree of Master of Software Engineering

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1. INTRODUCTION
This document mainly focuses on presenting the summary of experiences gained by me as an MSE student during the entire life cycle of the MSE project.

2. PROBLEMS ENCOUNTERED
This section of the project evaluation document describes all the difficulties that I have encountered during my MSE project.

2.1 SOLUTION DOMAIN RESEARCH AND LEARNING
Identifying a technology to work on for my MSE project was one of the basic difficulties that I have faced. But, to be honest, with my growing interest for C#.NET, I decided that it would be the best fit for my MSE project. Since my MSE project “The Airline Reservation System” is a web application project C# was chosen for the project. The different advantages offered by C#.NET technology and my craving for the technologies made me choose C#.NET.

2.2 LEARNING ASP.NET AND C# LANGUAGE
Learning and experimenting with new technologies and languages is of great interest to me. I wanted to take up the challenge of learning a new technology and then implementing it. Learning this new technology has taken quite some time for me. I have had a few difficulties finding a good resource for learning .NET. I have learnt .NET through many tutorials available online and also the complete reference book for .NET has helped me a lot. Since all the examples available online were very simple, I had to work hard to implement some of the features in the project.

2.3 SECURITY ISSUES
Installing the software necessary for project took some time for me. I couldn’t find the Visual Studio .NET 2003 CD and the Windows XP professional CD for a reasonable price online. I finally found the software that I needed from the CIS department. I also had some problems configuring the IIS server. A lot of research and hard work has helped me figure out the problem.
2.4 JMETER
JMeter installation and set-up was one of the problems I faced during the testing phase of the project. Initially I was able to set-up JMeter, but it kept crashing each and every time I put a heavy load on the server. So, I had to re-install it and then start the testing all over again.

3. SOURCE LINES OF CODE
The source line of code is a very important measure of the software project being developed. For my Airline Reservation System project, I have used a tool called the SLOC Metrics which counts the number of lines of code, based on the directory that we provide for search to the tool. We also need to indicate the types of files that the tool has to scan. So, based on the information provided by me to the tool, the following data was produced by the tool:
The numbers of lines of code in files with extension .cs are: 2310
The numbers of lines of code in the files with extension .aspx, which is the ASP.NET server page are: 1262
The numbers of lines of code in the files with extension .resx are: 962
Thus combining all these, the total lines of code would be: 4534
Thus nearly more than 50% of the coding consisted of C# coding. Most of the time spent for coding was for C#, since they are the files which have the actual logic to be implemented into the system. Nearly 28% of the coding was covered by the .aspx files, which are the ASP.NET server pages.

4. PROJECT DURATION
Initially I had planned to complete my MSE project by the end of the July 2008. But due to my health problems and also the availability of the committee members the project would be completed by the end of summer semester.
Initially I had estimated the effort required for the project as 4.56 staff months. In the project plan initially I had put in a total of 22 days for the Phase II of the project, but later on I had some coding problems and I had to extend the deadline for the Phase II of the project by 15 more days.
The following table would best depict the break down and the duration for each phase of the project:

Table: Project breakdown and duration

<table>
<thead>
<tr>
<th>Phase</th>
<th>START TIME</th>
<th>FINISH TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>May 1st, 2008</td>
<td>June 11th, 2008</td>
</tr>
<tr>
<td>Phase II</td>
<td>June 12th, 2008</td>
<td>July 21st, 2008</td>
</tr>
</tbody>
</table>

The breakdown of activities in each phase would also be presented in a table as follows:

Table: Activities and allotted time for all the Phases of MSE project

<table>
<thead>
<tr>
<th>Activity</th>
<th>Phase I hours</th>
<th>Phase II hours</th>
<th>Phase III hours</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>25 hours</td>
<td>20 hours</td>
<td>40 hours</td>
<td>85 hours</td>
</tr>
<tr>
<td>Design</td>
<td>16 hours</td>
<td>22 hours</td>
<td>20 hours</td>
<td>58 hours</td>
</tr>
<tr>
<td>Coding</td>
<td>0 hours</td>
<td>80 hours</td>
<td>110 hours</td>
<td>190 hours</td>
</tr>
<tr>
<td>Testing</td>
<td>0 hours</td>
<td>0 hours</td>
<td>25 hours</td>
<td>25 hours</td>
</tr>
<tr>
<td>Documentation</td>
<td>20 hours</td>
<td>30 hours</td>
<td>30 hours</td>
<td>80 hours</td>
</tr>
<tr>
<td>Total Hours</td>
<td>61 hours</td>
<td>152 hours</td>
<td>225 hours</td>
<td>438 hours</td>
</tr>
</tbody>
</table>

The pie chart diagram showing the breakdown of each phase of the project would be as follows:

Fig: Pie chart showing the phase breakdown for the MSE project
5. LESSONS LEARNT

My MSE project has been one of the rewarding experiences I have had. I have learnt a lot of things in the entire course of my Project. My desire to learn one of the fast evolving technologies like C# and .NET has been satisfied. I have learnt the various coding techniques in C# and .NET. In all the projects I have done till now, I have either taken up the front end or the back end responsibility. But, this is the first project where I have taken up both the front end and back end responsibility. I have experienced a situation similar to the real-time work environment, where programmers and developers work under pressure and a specified deadline. Being new to the technology I had some difficulties with the coding part initially. Going through the entire life-cycle of the software development has given me a lot of knowledge and experience which will be useful for my future. I have also improved my coding skills through this project.

The MSE project has also helped me realize that documentation for a project is as equally important as the coding of the project.

Testing the Airline Reservation System project has helped me gain a lot of knowledge about the stress and load testing of the web applications. Even though I had a lot of problems initially getting JMeter to respond to a request, I was able to figure out the
procedure with some research online. On the whole, I would like to thank my committee members for guiding me through the project.