Faculty of Science, Engineering and Technology

Enterprise Development

Portfolio Proposal(s) for High Distinction (HD)

Prepared by: Nguyen Tran Nguyen - 6586880

Submission for Approval: now - 6 May 2015 (End of Week 9)

Instructions - This document is for students aiming to achieve High Distinction (HD).

For **HD**, a student needs to complete the software for D grade as well as a research report. The student needs to propose a "research topic" related to technologies used in **Enterprise Applications.** Note: Database Technology research topic like "comparing ORM mechanisms in Java and .NET" will not be approved. Although this subject has database discussions (e.g. ODBC / JDBC and ORM), we are just using it to develop enterprise application. We are more interesting onto the enterprise application technology such as WCF and RMI-IIOP, stateless vs stateful Web Services). Possible options are

R1 Implement the same functionality of the software for D grade using two different technologies of the same language (e.g comparing JSF with PrimeFaces) and compare the two in terms of some criteria nominated by the student (e.g. performance or ease of development).

R2 Implement the same functionality twice (one using Java EE technologies and the other using .NET technologies), and compare the two in terms of some criteria nominated by the student (e.g. performance or ease of development)

The work in this option involves integrating Java EE applications with .NET technologies or vice versa.

R3 Other please specify (to be detailed in the research proposal)

In the research report, the student must (1) collect useful and relevant data, (2) perform their own analysis and (3) draw conclusion based on their comparison.

Intended Learning Outcomes (extracted from Unit Outline)

ILO1. Use a range of APIs and technologies to build enterprise applications and explain why the APIs and technologies were selected to develop the applications

ILO2. Perform independently research into a range of APIs and technologies so as to select appropriate technologies (with justification) to build enterprise applications; during the research process you should be able to present your findings and reasoning why such decisions are made

ILO3. Design (with justifications) and describe an enterprise architecture for a software solution to a given business scenario. The justification should ideally include at least the following topics:
- a. the choice of any APIs and technologies
- b. the selection of architectural patterns and the use of any best practices
- c. any security issues and concerns and how to mitigate the potential threats

ILO4. Develop end-to-end features of enterprise applications to given business scenarios. Ideally, you should demonstrate your understanding of at least the following topics
- a. The choice of any APIs and technologies
- b. The selection of architectural patterns and the use of any best practices
- c. The choice of enterprise technologies to mitigate any potential threat raised by security issues and concerns

RESEARCH PROPOSAL for HD

Some Background Information on your D software

Software Title: SAllocate+

Introduction

Staff work load and staff scheduling are essential parts of internal processes in service industry such as Taxi service, Trader service like plumbing, asbestos removal, electrical installations, stocktaking. Ranging from large enterprise to medium and small businesses, well prepared staff management and scheduling process is important to improve services quality & customer satisfaction. The SAllocate+ is a software system that provides a hassle-free and automation process of job staff allocation and staff management. This system is built specifically to support staff allocation on stocktaking service.

Research Report: The effect of architecture design pattern approach on system maintainability regarding requirement change.

Research Topic: Compare the system quality in term of changeability and testability when designing Business Logic Layer with Domain Model (Fowler 2002, p. 116) design versus Transaction Script (Fowler 2002, p. 110) design and the effect of those design when requirement is changed.

Research Option:

1. Using Domain Model design pattern to implement Business Logic Server
2. Using Transaction Script design pattern to implement Business Logic Server

Comparison Criteria:

1. Software maintainability comparison using LOC measurement & Cyclomatic complexity measurement to see which design has better maintainability.
2. Software testability comparison using automated test script technique to see which design can be tested and how easy it is to setup an automated testing environment.

Research Plan:

In order to carry out this research, 2 implementations of the Business Logic Server will be developed: One with Domain Model design and one with Transaction Script design.

Then the LOC and Cyclomatic measurements will be collected after the implementation is complete for each design.

Writing an automated testing for each of the design and analyse the complexity on setting up the testing environment on each implementation.

Then implement a change on one of the requirement on both implementations.

After that, another measurements of LOC and Cyclomatic will be taken to compare with each other and compare to the previous figure.

References:

Fowler, M 2002, Patterns of Enterprise Application Architecture, Addison-Wesley Professional