Chapter 6

CONCLUSION

6.1 Introduction

From the testing done in Chapter 5, this dissertation has fulfilled the project goal to develop a mobile agent system which transfers files to destination machines. This chapter concludes this dissertation discussing the knowledge learnt during this dissertation process, achievements, limitations of the system and future enhancement.

6.2 Knowledge Learnt

Invaluable knowledge has been gained throughout this dissertation process, discussed in the following subsections.

6.2.1 Theoretical Knowledge

Theoretical knowledge was obtained during this dissertation especially on distributed computing and network environment. Several paradigms and the implementations have been studied for instance the client-server, remote evaluation, code-on-demand and mobile agent paradigms. Based on this study, mobile agent paradigm had been chosen to be implemented in this system. Furthermore, mobile agent paradigm is an emerging technology compared to a more matured paradigm such as the client-server systems. Therefore there is the need to more researches on this paradigm.

We also learnt about request-reply models and their use in network environment. Knowledge gathered about the distributed computing and these request-reply models had been used in this mobile agent system development.

6.2.2 Practical Knowledge

Practical knowledge was gained during the development of this mobile agent system. The mobile agent system was developed to implement the research algorithms discovered during this dissertation. Two types of agents were developed, the Master Agent and the Slave Agent which interacts to transfer files intended on destination machines. Both agents' classes are installed on the server machine.

A lot also has been learned about Aglets ASDK and Java as well. This includes the security policy imposed by Java, as some modifications needed to be done on Java policy files and Aglets policy file to enable the Slave Agent to perform its task at destination machines.

6.3 Dissertation Achievements

Several achievements had been gained from this dissertation, as listed below:

a. We have created the Slave Agent with the smallest possible size we think it should be capable to perform its task.

b. The system is easy to use and only one person, situated at the server, can handle any file transfer needed for destination machines.

c. The file transfer process executes transparently at the destination site, therefore does not cause any disturbance to client machines' users.

6.4 Dissertation Constraints

Several constraints have been encountered during this dissertation, such as lack of sufficient documentation on Aglets SDK available. Aglets SDK is an open-source project, hence not much have been written about it. There is also parts of the SDK which contains bugs, therefore we have to avoid using these modules.

6.5 Future Enhancement

To make this system more useful, there are a few suggestions for future enhancement, as listed below:

a. Compression - inclusion of mostly used compression algorithm may be possible to reduce the size of files hence reducing the duration of file transfer.

b. Encryption - a private key encryption algorithm can be added to ensure that the files transferred are not modified or being eavesdropped. This is especially important for files containing private and critical data.

c. Incorporation of this mobile agent system into network management tools especially for configuration management purposes.

To implement the above suggestions, a thorough design is needed to ensure that the agent size is small. This is to ensure the smallest possible size of object which needs to migrate from servers to client machines.

6.6 Conclusion

This agent system was developed to provide an easy way to transfer files over the network. It enables any files update to be done and administered only from server site hence making the job of a network administrator easier.

Invaluable knowledge has been gained throughout this dissertation especially during literature review, analysis, design and implementation of the mobile agent system. Besides that, testing had proved to be the most useful in providing future insights for future enhancement of this system.