On-line Student Record System

By



Alyia Amir
M.Sc. Computer Science

THESIS

Submitted in partial fulfillment of the requirements for the Degree of Master of Science in Computer in the Department of Computer Science

Bahria Institute of Management and Computer Science
Islamabad (Pakistan)
April, 2000

Certificate

This is to certify that we approve this thesis submitted by Alyia Amir for the partial Fulfillment of

the M.Sc. Degree in Computer Science.

Mr Fazal Wahab		 ,	 	
(Supervisor)				
External Examiner		 	 	
	*- **			

Department of Computer Science

Bahria Institute of Management and Computer Science

Islamabad

April, 2000

IN THE NAME OF "ALLAH"

THE MOST BENEFICIENT AND MERCIFUL

Table of Contents

Acknowledgement 7

Chapter 1.	. Introduction	n
------------	----------------	---

1.1. Scope of the System	10
1.2. Objectives of the system	10
1.3. System Architecture	11
1.4. Constraints	13
1.5. Similar projects	13
Chapter 2. Technology	
2.1. Development Environment	15
2.2. Introduction to Servlets	18
2.2.1. When to use a servlet	18
2.2.2. What are the benefits of using a servlet	19
2.2.3. The Java Servlet API	21
Chapter 3. System Analysis and Design	
3.1 Project Planning and Management	26
3.1.1. The Spiral Model	26
3.1.2. The Management Spectrum	2.7
3.1.3 Risk Management	20

3.2 Requirement Analysisis	
3.2.1. The system	32
3.2.2. Information Description	32
3.3 System Analysis	
3.3.1 Process Model	
3.3.1.1 The Context Diagam	33
3.3.1.2 Level 1 Diagram	34
3.3.1.2 Admissions Diagram	35
3.3.1.3 Accounts Diagram	38
3.3.1.4 Registration Diagram	39
3.3.1.5 Faculty Diagram	41
3.3.2 Control Flow diagrams	42
3.3.3 Data Model	44
.4 System Design	
3.4.1 Site Map	45
3.4.1.1 Admissions Forms	45
3.4.1.2. Accounts Forms	48
3.4.1.3. Registration Forms	50
3.4.1.4. Faculty Forms	51
3.4.1.5. Admin Tools	53

3.4.2 Report Design	
3.4.2.1 Admissions Reports	55
3.4.2.2. Accounts Reports	57
3.4.2.3. Faculty Reports	57
3.4.3 Data Dictionary	57
3.5 Software Testing	
3.5.1. Types of errors	60
3.5.2.Database Schema Testing	60
3.5.3. Program testing	61
3.6 Conclusion	
3.6.1 Disadvantages of writing servlets by embedding HTML, JavaScript and	62
SQL statements	
3.6.2 Other Servlet design options	62
Chapter 4. Future Development	
4.1 Cookies	73
4.2 NetObjects Fusion	73
4.3 Security	73
4.4 JSP and JavaBeans	73
	73
References	76
Appendix – A	70
Snap Shot of product	77
Shap shot of product	77

Acknowledgement

First of all, I would like to thank Almighty Allah for His blessings that enabled me to successfully complete my degree.

I am grateful to my parents for their encouragement and motivation throughout the project. They have always been there for me and I owe them everything.

I also would like to thank my project supervisor Mr. Fazal-e-Wahab who has been a source of inspiration for me. His advice and experience has steered me in the right direction for completing the project.

I am also grateful to Mr Jawad, System Analyst, Comsats, for his guidance throughout this project.

His command over Java servlets and project management skills have greatly helped me.

I am also grateful to Kashif, Programmer, Comsats, for his help over Javascript and HTML.

I am also grateful to my class fellow Ashar Naseer. His vast knowledge of technology has helped me through-out the project.

Finally, I would like to thank everyone whose names have not been mentioned here but have helped me in one way or the other for the completion of this project.

Alyia Amir BIMCS, Islamabad April, 2000

Abstract

The purpose of this thesis is to describe the design and implementation of a student record system for Comsats Institute of Technology. CIT wishes to make its information freely accessible on the Internet. Initially, existing student on-line systems are analyzed. A study of Internet programming techniques is presented and analyzed, identifying advantages of Java servlets over other Internet programming languages. Then the requirements of the CIT Information system are studied. Based on the requirements and analysis the most suitable design is presented. Problems with the design method of servlets used is discussed and concludes the thesis.