Auto Search System

Of
Transport Routes, Library Books, Laboratory Equipment Records
Of
Quaid-e-Azam University Islamabad

Developed By:
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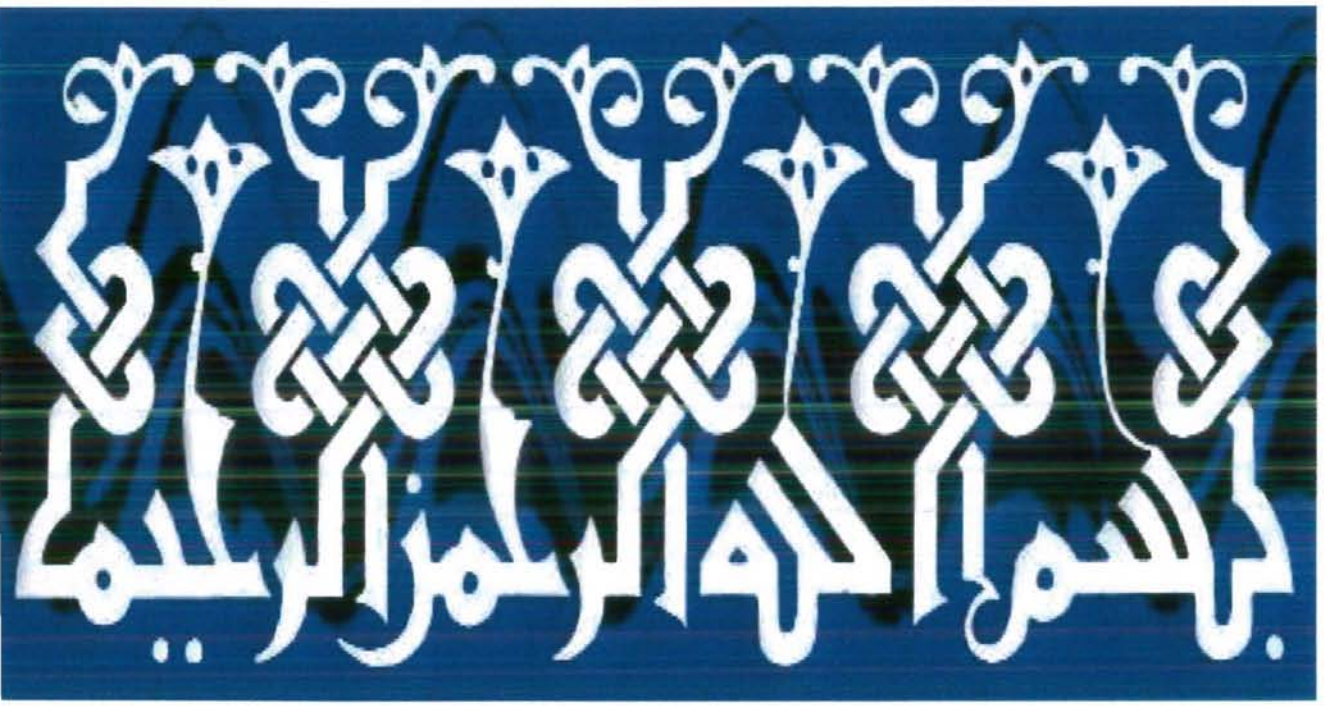
بسم الله الرحمن الرحيم

CERTIFICATE

Project Report Title: ***Auto Search System***

This dissertation Sairah Batool is accepted in its present form by the Department of Computer Center, as fulfilling the requirement for the Post Graduate Diploma in Information Technology by the Quaid-e-Azam University after approved by Sir Javed Hussain (project supervisor).

Supervised by:

Mr. Javed Hussain

Computer Center
Quaid-e-Azam University Islamabad

Prepared by:

Sairah Batool

Internal Supervisor Signature:

_____

External Supervisor Signature:

_____

Submitted On: _____

DEDICATION

I dedicate my humble project to my beloved master the **Holy Prophet Hadhrat Muhammad (peace and blessing of Allah be upon him)** Who granted me social freedom and same human rights as men have and guided me through His Sunnah and Sayings. That is why I am now enjoying the fruits of His blessings related to women/girls' rights and enabled me to continue my studies and complete my project successfully.

PROJECT BRIEF

PROJECT TITLE:	Auto Search System of Library-books, University-Students, Laboratory-Equipment, Transport-Routes Of Quaid-e-Azam University Islamabad
ORGANIZATION:	Quaid-e-Azam University
UNDERTAKEN BY:	Sairah Batool
SUPERVISED BY:	Mr. Javed Hussain
SESSION:	2005 -2006
SOFTWARE TOOLS & Technologies:	HTML, DHTML ASP, VB SCRIPT, JAVA SCRIPT Internet Information Services (IIS 5.0) Macromedia Dreamweaver MX Microsoft Office Access 2003 Macromedia Fireworks MX
OPERATING SYSTEM	WINDOWS XP

ACKNOWLEDGMENT

Praise to Almighty Allah, Lord of the heavens and the earth, the most Gracious, the most Merciful who enabled me to complete this project and fulfill the required functionalities. I am thankful to my teachers Mr. Javed Hussain, Mr. Anees-ur-Rehman, and Mr. Abdus Subhan of Computer Center for providing me necessary and adequate support and facilities in connection to this project and to meet its hardware and software needs. I am also thankful to the Head of Department for providing us the practical knowledge of developing this software. He provided us every opportunity to work in a healthy environment. This was of course not possible without the guidance and moral support of my teachers because they were always there whenever I needed their help and ideas. I am really thankful to them all. In the end I would also like to thank the laboratory staff for being cooperative throughout the year.

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AUTOSEARCH.ORG

OBJECTIVE OF THE SYSTEM

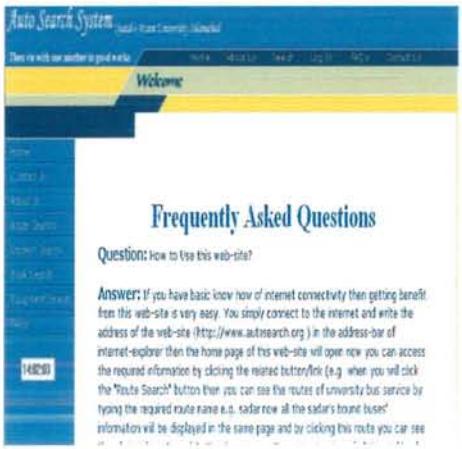
This chapter sums up the introduction,

Purpose of the system along with the

Descriptive features of my web site.

This chapter includes:

- **Executive Summary**
- **Detailed Requirement Analysis**
- **Project Structure of AutoSearch.org**
- **Features of AutoSearch.org**



INTRODUCTION TO AUTOSEARCH SYSTEM

CHAPTER # 1

Version 1.0

By: ***Sairah Batool***

Executive Summary

Auto Search is online information and data entry system developed especially for the students, their parents, teachers, and the staff of Quaid-e-Azam University. This system covers the search facility for transport unit, library books, student data, & equipment in various departments. This is an era of internet and all and sundry have access to internet. Internet connectivity is available in all departments, most of the offices, and a dedicated net café is functional in the library. Most of the students, teachers, and staff also enjoy this facility at their homes.

Transport department/unit of this university is very important section as 95% students, teachers, and staff members use university buses so they are very much concerned with the time-tables and bus-numbers of the vehicles going to and coming from their homes. This need is met manually by posting these time-tables on the black boards of this section. People who are desirous of knowing the time-table have to go to these boards to watch the specified route details. So this would provide a very useful and convenient mode to know the desired route by simply logging in our website and giving the name of route or some words of it as well as the whole time-table of each service name i.e. Islamabad Service or Rawalpindi Service.

Similarly teachers, students, and staff need various books and that is why they have to frequently visit the library of the university. In this auto search system we are also providing the means to search the desired book(s) without physically going to the library. In Simple Search you can search on book's title or author's name, you can just write few letters/words in this search text field and press Enter key to see the results. In Advance Search you have to click the advance search link then it gives you a comprehensive search to find out your required book. You can use this search in many ways e.g. subject/Area, Title, Author, and Year wise search. In year search, you can search books by giving exact publication year, before any given year, and after any given year. Similarly other convenient modes of searches are also available which are covered in detail in the relevant sections.

The transport and library book search is maintained by the administrator but is for use of students and teachers or any one who wants to search. Contrary to this student record search and laboratory equipment search facility is meant only for administrator, it means it is not open for search by any user. This data on student and laboratory is only for record keeping for university.

In student data record, administrator can delete, modify, or add any data and he can search any data by giving any two of student name, department name, roll /registration number.

This is basically automation of manual records of university administration section.
Similarly in laboratory equipment record, administrator can delete, modify, or add any data and he can search any data by giving any of equipment ID, equipment name, etc. This is basically automation of manual records of laboratory equipment of Computer Centre.

The system is developed to provide convenience to the prospect users who do not have much and convenient Information gathered altogether online (because no such online application i.e. related to Routes, Books, Students, Laboratory Equipments search, data entry, updating and modification, is available). So keeping in view the problems of all these people we are going to develop a site, which can be used by students, teachers, staff, and IT Personals hired for automation of university's different departments and sections.

The Users need not to be registered for viewing bus-routes information but no right to access to the administration-pages to change/modify/add/delete any information/data.

The Administrator(s) will be registered first, then he/they will be authorized to have access to the different features of the site e.g. update/add/delete the record for library, administration section, transport section, laboratory equipment section.

All these modifications/additions/deletion will be done at any time (i.e. Monthly, Weekly, and occasionally basis or need basis) by the Administrator after a secure login. Then the information can be displayed to the Users of the system. User of the site can send their feed back via email by clicking the link of email address of the site developer(s).As far as Administrative tasks are concerned these are:

- ✓ Weekly/Monthly Transport Route Administration
- ✓ Weekly/Monthly Library Books Administration
- ✓ Weekly/Monthly Student Section Administration

✓ Weekly/Monthly Laboratory Section Administration

Detailed Requirement Analysis

Auto Search is an online search system that will be accessible through Internet with a user-friendly interface. This auto search site is going to be developed specially to fulfill the requirements of the students/their parents and staff of different sections of the Quaid-e-Azam University at single platform.

The Purpose of this project is to create a User friendly and Informative site, by which students/their parents and related university staff would have an easy access to information of the university services that is why I term the project as "Auto Search System". In the new millennium because the need of the time I am going to launch this unique project to facilitate our students/their parents and our staff member to meet their desires. It is the 1st ever Search Engine of this kind for the Quaid-e-Azam University and obviously it will be the first ever Website helping the concerned people.

I have combined various search facilities in my single system to cover all the information about Routes, Library books, Students, Laboratory Equipments. This provides an easy access to the route information and any library book information to users at their homes/their work places and the data can only be changed (i.e. add/modify/delete) by the administrator(s) of the system after logging in by giving administrator name and password.

Software Project Structure

The General Project Structure is divided into three tasks or project phases: **Online Transport Route Search, Online Library Books Search, Interactive Online Administrator Services** (Such as: Online Record/Data Entry, Record/Data Updation, Record/Data Deletion, Record/Data Modification for Transport Section, Library's Books Section, Administration/Student Section, Laboratory Equipment Section.) are done only by administrator of the Auto Search System.

After the General Proposal Overview (Phase I through IV) is the actual Project Timeline and summary that the Budgetary Estimate we have arrived at is based upon.

All the tasks, which will be addressed by the Web Site, are briefly described as below.

1- Transport Route Search Services

The Service provides the facility for the users i.e. students, staff members, teachers etc of the Quaid-e-Azam University to view the following:

- **Route Search By Service Name:**

All Routes Time Table of both services (i.e. Islamabad and Rawalpindi Services) with thorough route description. If you want to search a specific route but you have not known the name of your destination place but only know the service name then you can click the name of you transport route service e.g. click on "*Islamabad Service*" link to see all the routes of Islamabad Service with detailed information.

- **Route Search By Route Name:**

i) If you want to search a route by Route's Name, then write the name in this text box.

ii) Click on the "Search Transport Routes" button
iii) You will get the Advance Search results
iv) If you do not know the full name of the route, you can type a part of the route's name, e.g. sad for Sadar. The computer will show the results containing the few letters.

2- Library Book Search Service

The Library Book Search Service provides the facility for the users i.e. students, staff members, teachers etc of the quaid-e-azam university. The prominent features of this search service are as follows:

❖ **Advance Search:**

When you click on the **Advance Search** link from the top menu bar a screen will appear. It gives you a comprehensive search to find out your required book. You can use this search in many ways detailed below:

❖ **Subject/Area:**

i) If you want to search a book by a particular Subject/Area, and then select that subject/area from the dropdown list e.g. Generalities.
ii) Click on the *Search* button
iii) You will get the Advance Search results

❖ **Author:**

i) If you want to search a book by Author's Name, then write the name in this text box.
ii) Click on the Search button
iii) You will get the Advance Search results
iv) If you do not know the full name of the author, you can type a part of the author's name, e.g. Bro for Brown. The computer will show the results containing the few letters.

❖ **Title:**

i) If you want to search a book by book's title, then write the title of the book in this text box.
ii) Click on the *Search* button
iii) You will get the Advance Search results
iv) If you do not know the full title of the book, you can type one word from the title, e.g. "Education" for "Education in Pakistan". The computer will show the results containing your typed word(s). You can also type more than one word in the search box.

❖ **Year:**

You can search books by the year of publication in different ways as follows:

✓ **From/To:**

If you want to search the books which were published in a specific period then select *From/To* from dropdown list and write starting and ending years. E.g. 1980 and 1990

✓ **Exact year:**

If you want to search the books which were published in a particular year, then select *Exact Year* from dropdown list and write year in the next field. E.g. 1995 and

✓ **After:**

If you want to search the books which was published after a particular year, then select *After* from the dropdown list and write the starting year in the next field. E.g. 1990 and

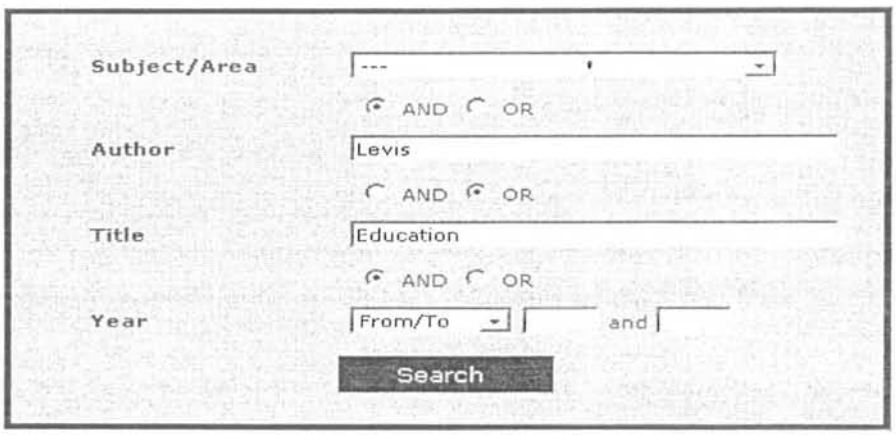
✓ **Before:**

If you want to search the books which was published before a particular year, then select *Before* from the dropdown list and write the ending year in the next field. E.g. 2000 and

❖ **AND/OR Option:**

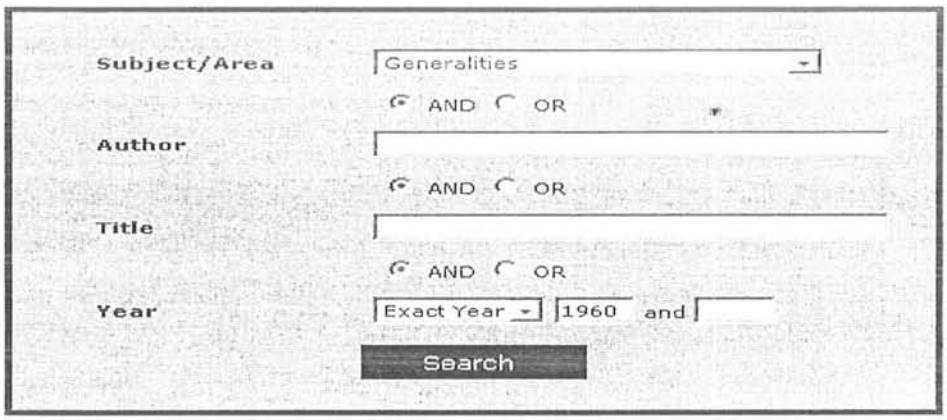
You can also search books by combining the above mentioned options using AND/OR radio buttons.

Example 1: If you want to search a book by author's name "Levis" and title "Education".

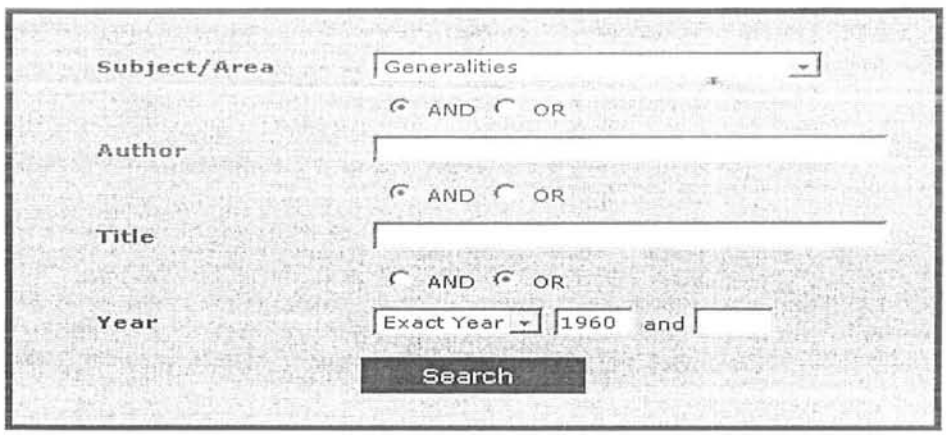


You can use it when you are not sure about the author's name or the book title. You get results of all books whose author is Levis OR whose title contains the word of Education.

Example 2: If you want to search a book whose Subject/Area is "Generalities" and published in 1960, you write:



You will get results of all books which belong to Subject/Area "Generalities" AND were published in 1960.Now if you want to search a book whose Subject/Area is "Generalities" OR published in 1960, you write:



You will get results of all books which belong to Subject/Area "Generalities" OR were published in 1960.

❖ Simple Search:

It provides a basic search facility. If you want to search on book's title or author's name, you can just write few letters/words in this search text field and press Enter key to see the results. For a comprehensive search, use the Advance Search.

❖ Categories:

When you click on one of the categories, you can see sub-category page.

✓ **Sub-Category Page:**

When you click on any category, this page will appear. If you click one of these sub-categories, you can see Book Page.

❖ **Books Page:**

When you click on the name of any sub-category the following screen will appear. It will list all the available books of that particular sub-category. When you click one of the books in the list of available books, you can see the book's details.

❖ **Book's Details Page:**

When you click on the name of any book from the list of available books as shown in previous page, a screen will appear that displays the book's record in detail.

3- Administrative Tasks

The Website will be Component based System and each component will be Effectively Customizable by the administrative options that are mentioned in the administrative menu for each component. Each and every component will be a separate Entity but the administrative options will be used to merge these entities into a single system. The administrators on the web will be needed to update/modify/add/delete the route, books, student, and laboratory equipment records when needed. The Database and site maintenance will be done by administration.

4- Database

The data about Bus Routes, Library Books, Student Records, Laboratory Equipment Records, and Administrator will be stored in the database for persistence.

5- Interface

Interface is related to user's interaction with the application, which we are going to develop now. These are the main interfaces with which the user can interact when he/she is visiting our site. The **Main page** will give brief introduction of the site and can have links to related features. Any User can access the features defined only for route and book search. The user can avail the services after logging on this website without any log in

user-name or pass word. If he/she is an administrator, he can manage/maintain or update all the Administrative tasks related to the features provided by the site. User services buttons/links are available for selecting/availing the service. From this page the user selects the service e.g. Route Search, Library Book Search. Routes Search Page will be displayed for any user-no prior registration required. **Route Search page** will contain route search links. This page will also be displaying the link to full detailed time-table of university buses service-wise i.e. Islamabad-Service and Rawalpindi-Service. The user can search a specified route by giving route name string or some words of route name string and after words he/she can also view the details of this specified route by clicking that displayed route will be displayed for any user. **Books Search Page** will contain book search buttons/links. This page will also be displaying the links to all categories and sub-categories of books. A user can search a specified book by giving book name string or some words of book name string and after words he/she can also view the details of this specified book by clicking that displayed book. Other pages have been discussed already.

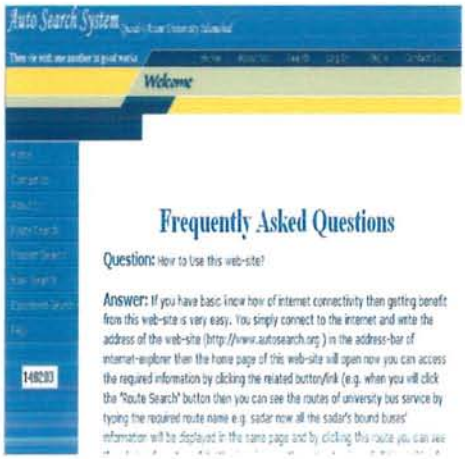
AUTOSEARCH.ORG

OBJECTIVE OF S.W. MANAGEMENT PLAN

This chapter sums up the activities of the project management plan of the autosearch.org,

This chapter includes:

- **Version Statistics**
- **Introduction of SMP autosearch.org**
- **Project Organization of autosearch.org**
- **Gantt Chart of autosearch.org**
- **Work Products of autosearch.org**
- **Project Responsibilities**



SOFTWARE PROJECT MANAGEMENT PLAN

CHAPTER # 2

Version 1.0

Version	Primary Author(s)	Description of Version	Date Completed
Draft	Sairah Batool	Initial Draft was created for distribution and review comments.	18-03-2006
Preliminary	Same as above	Second draft incorporating initial review comments, distributed for final review.	25-03-2006
Final	Same as above	First complete draft, which is placed under change control.	30-03-2006
Revision 1	Same as above	Revised draft, according to the change control process and maintained under change control.	08-05-2006
Revision 2	Same as above	Revised draft, according to the change control process and maintained under change control.	15-05-2006

Introduction

Software Project Overview

There are many sites, which provide limited features. The basic purpose of developing this Web Site is to provide customized and updated Information to the users. As today life is very busy and no one has time to go for getting information which one needs that is why internet plays an important role to get information at ones door steps. Up to date information plays an important role for any Professional, Student, User or Computer Users. Some users i.e. teachers or students are very conscious about the new arrivals in library and want to study the related books. Transport route details are also changed after some time that is why it is necessary to get up to date information of it to avail this facility. For those reasons users can switch to Internet in order to gain some information, but there is no information in the main site of Quaid-e-Azam University. So for these users, teachers, students, and university staff members, we are going to develop Web Site that will provide these feature they require in a single Web Site.

The application will perform following functionalities.

- ✓ Library Book Search
- ✓ Transport Route Search
- ✓ Administrative Tasks
- ✓ Student Record Search
- ✓ Laboratory Equipment Record Search
- ✓ Form validation
- ✓ Database validation

Software Project Deliverables

Project deliverables are:

Deliverables	Delivery Location	Delivery Method	Quantity	Expected Date
AutoSearch	Computer Center Quaid-e-Azam University Islamabad	Installing Disk	1	June, 02, 2006
User Manual	Computer Center Quaid-e-Azam University Islamabad	Book let	1	June 02, 2006

Evaluation of Software project Management Plan

Version	Primary Author(s)	Description of Version	Date Completed
Draft	Sairah Batool	Initial Draft created for distribution and review documents	18-04-2006
Preliminary	Same as above	Second draft incorporating initial review comments, distributed for final review.	25-04-2006
Final	Same as above	First complete draft, which is placed under change control	30-04-2006

Revision 1	Same as above	Revised draft, according to the change control process and maintained under change control	08-05-2006
Revision 2	Same as above	Revised draft, according to the change control process and maintained under change control	15-05-2006

Reference Materials

1. IEEE Standard 1058.1-1987 for Software Management Plans.
2. Software Engineering by Roger.S.PressMan (5th Edition).
3. HTML The Complete Reference by Thomas A .Powell (3rd Edition).
4. Beginner Java Script (Wrox).
5. Dreamweaver Fireworks Studio, A Beginner's Guide by Kim Cavanaugh.
6. Different Informative web sites

Definition, Acronyms, or abbreviations

SDK	Software Development Kit
SRS	System Requirement Specification
RSD	Requirement Specification Document
I/O	Input Output
SDS	Software Design Specification

Software Project Organization

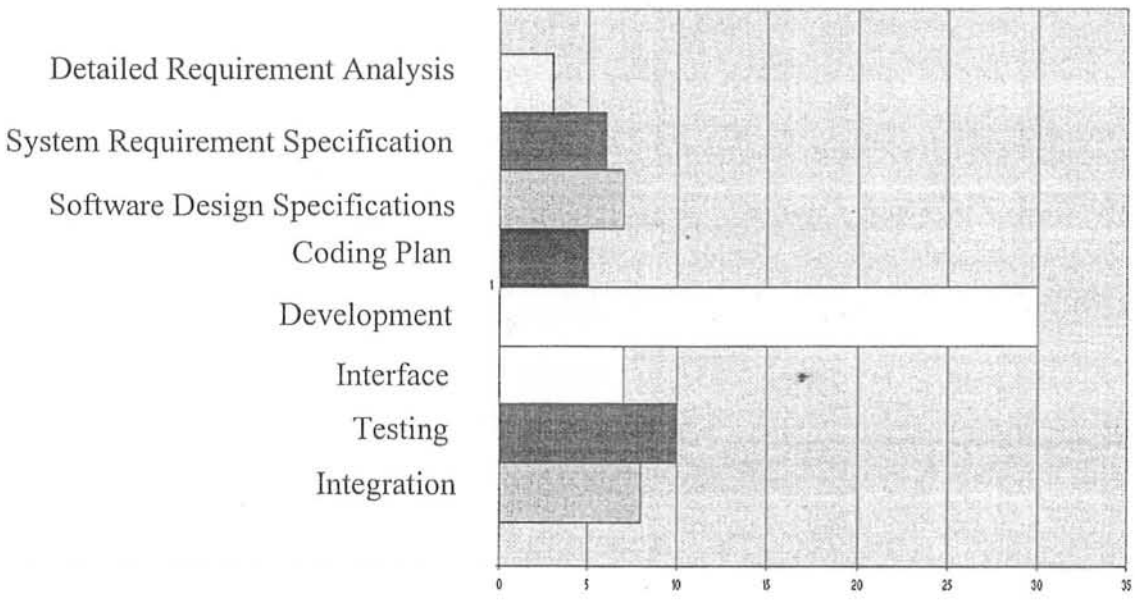
Process Model:

Milestones	Description	Content	Expected Date
Problem Analysis	The problems described by the user for software.	Scope Product Perspective Product functions Constraints Assumptions and Dependencies External Interface Requirements Design constraints Functional	**April 15, 2006**
Detailed Requirement Analysis	Getting Requirements from the customer in detail		**April 18, 2006**
Software Requirement Specification	This document will contain the basic requirements of the customer in detail for providing basis for the software development.	Scope Product Perspective Product functions Constraints Assumptions and Dependencies External Interface Requirements Design constraints Functional	**April 23, 2006**

		Requirements Logical Database Requirements	
Software Design Specification	This document contains the design suitable for development.	Actors Use cases Main Components Functionality of each component Component interaction Component Interaction Model	May 01, 2006
Coding Plan	Tool selection for development of modules		**May 06, 2006**
Development	Implementation of the design	Different Modules	**May 22, 2006**
Integration	Integration of different components.	Software components	May 25, 2006
Interface	Development of user interfaces	Interface components	May 30, 2006
Testing	Black box testing Focuses on the functional requirements of the software. Is a test case design method that uses the control structure of the procedural design to derive test cases?	White Box testing Back Box Testing	**June 02, 2006**
Final Presentation	Final presentation of the software	Software Document	**June 05, 2006**

Gantt chart:

Activity	Description	Duration	Dependencies
A1	Problem Analysis	3 days	None
A2	Detailed Requirement Analysis	5 days	No of requirements
A3	System Requirement Specification	5 days	Same as above
A4	Software Design Specifications	8 days	No. Of modules
A5	Coding Plan	5 days	Modules interactivity with each other
A6	Development	15 days	
A7	Interface	5 days	
A8	Testing	3 days	No. of users
A9	Integration	3 days	
A10	Final Presentation	3 days	Type of technology



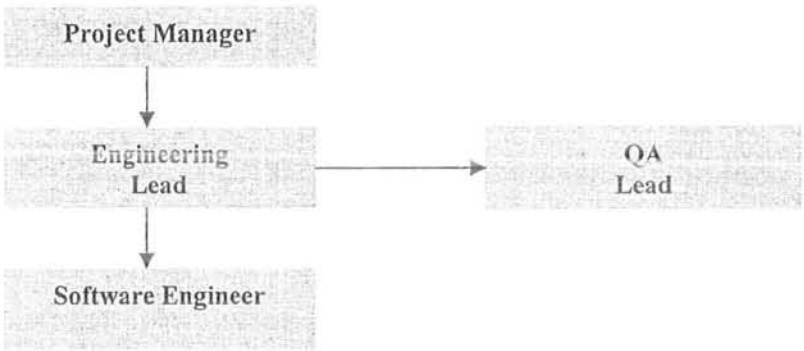
Work Products

Work Product Name	Planned Completion Date	Placed under change control?	Deliverable to customer?	People who must sign off on the Work Product
Software Project Management Plan	18-04-2006	YES	NO	Project Manager, Engineering Lead, QA Lead, Documentation Lead
Change control Plan	27-04-2006	YES	YES	Project Manager, Engineering Lead, QA Lead, Documentation Lead
Top 10 Risk List	26-04-2006	YES	NO	Same as above
Change Proposals	29-04-2006	YES	YES	Same as above
Vision Statement	29-04-2006	YES	NO	Same as above
Software Development Plan, including project cost and schedule estimates	02-05-2006	YES	YES	Same as above

User Interface Style Guide	30-05-2006	YES	YES	Same as above
User Manual / requirements specification	05-06-2006	YES	YES	Same as above
Quality Assurance Plan	21-04-2006	YES	NO	Same as above
	23-04-2006	YES	NO	Same as above
Software Architecture	24-04-2006	YES	NO	Same as above
Software Integration Procedure	24-04-2006	YES	YES	Same as above
Staged Delivery Plan	25-04-2006	YES	YES	Same as above
Individual stage plans, including miniature milestone schedules	25-04-2006	YES	YES	Same as above
	01-05-2006	YES	YES	Same as above
Coding Standard	06-05-2006	YES	YES	Same as above
Detailed design documents	25-05-2006	YES	NO	Same as previous
Software				

construction plans	30-05-2006	YES	NO	
Deployment document	01-06-2006			Same as previous
	02-06-2006	YES	NO	Same as previous
Release Checklist				Same as previous
Release Sign-off Form Document				

Organizational Structure



Organizational Boundaries and Interfaces

- Parent Organization: Quaid-e-Azam University Islamabad (Computer Center)
- Customer Organization: Computer Center, Quaid-e-Azam University Islamabad
- Subcontracting Organization(s): Not Specified (Any Interested customer)
- QA Organization: Quality Control Department of Organization.
- Documentation Organization: Quaid-e-Azam University Islamabad (Computer Center)
- End User Support Organization: Computer Center (Quaid-e-Azam University Islamabad)

Project Responsibilities

Responsibility	Persons Responsible
Overall Project Manager	Mr. Anees-ur-Rehman
Engineering Manager	Sairah Batool
Quality Assurance	Mr. Anees-ur-Rehman
End-user Documentation	Sairah Batool
Requirements Development	Sairah Batool
Software Architecture	Sairah Batool
Technical Self-Reviews	Sairah Batool

Managerial Process

❖ Management Objectives and Priorities

- ✓ Risk Management procedure used is proactive risk strategy.
- ✓ Relative priorities are functionality, schedule and resources (budget, time, and technical people).
- ✓ MS Project will be used for management purposes.

Assumption, Dependencies and Constrains

❖ Assumptions

This product will be used only by this organization.

❖ Dependencies

- ✓ The database depends upon MS-Access, with maximum size (10 MB approx)
- ✓ The number of concurrent users can be limited by MS-Access.

❖ **Hardware Constraints**

- ✓ Monitors: 800*600 minimum resolutions at 256 colors minimum.
- ✓ Memory: Approximately 64 megabytes.
- ✓ I/O: One or two button mouse and standard 101-key keyboard.
- ✓ CPU: At least 600 MHz should be on the computer.

Risk Management

- ✓ Technology being used is new to transport section of the organization.
- ✓ Specialized user interface is required for the project.

Monitoring and Controlling Mechanics

- ✓ Must work on network because it is a web base application.
- ✓ Must be Browser independent
- ✓ Must have clear help/error messages.
- ✓ Minimum Text should be kept to facilitate the user.
- ✓ Color choices should be appropriate to accommodate users of all kinds.

Staff Plan

Staffing Factor	Required
Number of Personnel	2
Software Engineer	1 full time
Senior Software Engineer	1
Engineering Lead	1
Quality Assurance Lead	1
Duration of the Project	60 days for the first release
Training Days	1 week

Technical process

Methods, Tool and Techniques

- **Hardware Environment**
  - ✓ Monitors: 800x600 minimum resolutions at 256 colors minimum.
  - ✓ Memory: Approximately 64 mega bytes.
  - ✓ I/O: One or two button mouse standard 101-key keyboard.
- **Operating System**

Microsoft Windows (95, 98, 2000, XP, NT Workstation, NT Server) platform preferred.

- **Software Tools Methods and Techniques**
  - ✓ Microsoft Office Word 2003
  - ✓ Microsoft Office Access 2003
  - ✓ Paint
  - ✓ Macromedia Dreamweaver MX
  - ✓ Macromedia Fireworks MX
  - ✓ ASP
  - ✓ Java Script
  - ✓ HTML
  - ✓ DHTML
  - ✓ Unit Testing
  - ✓ Integration testing

- **Software Development**

Software Development plans, including project cost and schedule estimates.

- **Project Support Functions**
  - ✓ System Requirement Specification
  - ✓ Software Design Document

Work Packages, Schedule and Budget

Work Packages

Work Products:

Work Package Identification	Work Packages
W1	Software Project Plan
W2	Change Control Pan
W3	Change Proposals
W4	Vision Statement
W5	Top 10 Risks List
W6	Software Development Plan, including project cost and schedule estimates
W7	User Interface Style Guide
W8	User Manual / Requirement Specification
W9	Quality Assurance Plan
W10	Software Architecture
W11	Software Integration Procedure
W13	Individual stage plans, including milestones.
W14	Coding Standard
W15	Detailed design documents
W16	Software construction plans
W17	Deployment Document
W18	Release Checklist
W19	Release Sign-off log
W20	Software Project Log
W21	Software Project History Document

Resource Requirements

Resources Required	Duration
Software Engineer	28 Weeks
Quality Assurance Lead	4 Weeks
Training Leader	1 Week
Computers	2
Software used	8
Budget Required	Rs. 100,000

Budget and Resource Allocation

Project Functions	Budget Allocation
Engineering	Rs. 30000
Quality Assurance	Rs. 20000
Documentation	Rs. 15000
Management	Rs. 35000

Schedule

Already described in Gantt chart

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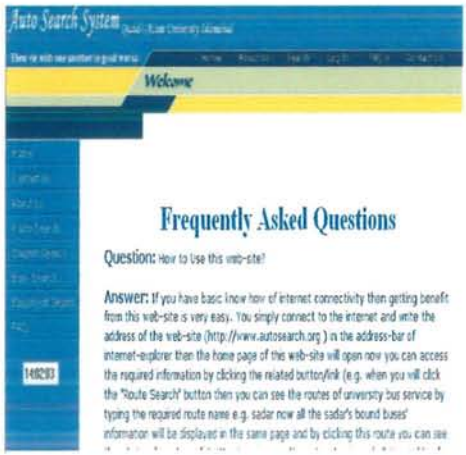
OBJECTIVES RISK MANAGEMENT PLAN

This chapter sums up the activities of the Risk Management plan, Roles and Responsibilities, Tools, and Risk Budget.

This chapter includes:

- **Introduction (Risk Management System)**
- **Purpose of Risk Management System.**
- **Roles and Responsibilities**
- **Risk Documentation Activities**
- **Risk Management Budget**
- **Risk Management Tools**
- **Features of AutoSearch.org**



PROJECT RISK MANAGEMENT PLAN

CHAPTER # 3

Version 1.0
By: *Sairah Batool*

1. Introduction (Risk Management System)

Despite much research and progress in the area of **Software Project Management**, software development projects still are not achieving the target of delivering desired systems on time, within the available financial resources and desired quality. Much of the failure in achieving those targets could be avoided by managers proactive planning for dealing with risk factors rather than waiting for problems to occur and then trying to react on the time of occurrence. Usually this reaction is too little and too late, because by the time the problem is fully recognized, the schedule has already been disturbed, a considerable amount of resources has been utilized, and the product quality has suffered due to introduction of errors. Risk management has been proposed as a solution to for overcoming errors appeared insight into potential problem areas and to identify these problems, address and eliminate them before they can create any problems in the project.

In order to implement a successful risk management program, project managers need tools to help them reduce risks. Risk Management helps project managers in identifying risks in earlier phases of the project cycle, defining risks in earlier phases of the project cycle and defining risk containment actions. The system should support Risk Assessment during the initial phase of the development as well as during project delivery phase.

A good measurement program helps managers:

Communicate unambiguously throughout the organization.

Identify and correct technical and management problems by focusing on early discovery of errors.

Make key tradeoffs by assessing the impact of decision.

Defend and justify decisions by providing data to explain how issues are prioritized and managed.

Using these as the evaluation criteria a detailed search and evaluation of the Risk Management System available in the industry was made.

2. Purpose

The purpose of this document is to describe how we can perform the job of managing risks for online testing. It identifies risks which may occur in the project, defines roles and responsibilities for participants in the risk management process, the risk management activities that will be carried out, the schedule and budget for risk management activities and tools and techniques that will be used during this process.

3. Roles and Responsibilities

❖ **Project manager**

The project manager will assign a Risk Officer to the project, and identify this individual on the project's organization chart. The Project Manager and other members of the Project Management team will meet every week to review the status of all risk resolving efforts, review the exposure assessments for any new risk items, and redefine the project's Top Ten Risk List.

❖ **Software Quality Assurance involvement**

The Project Manager and other members of the project will check about the quality of the project and will assign role for each member of the team for making quality assured software

❖ **Risk Officer**

The Risk officer has the following responsibilities and authorities:
Coordinating between risk identification and analysis activities
Maintaining the project's risk list
Notifying project management of the new risk items discovered
Reporting risk resolution status to management
The Risk Officer should normally not be the project Manager.

❖ **Project Member Assigned a Risk**

The Risk Officer will assign each newly identified risk to any member of the project, who will assess the exposure and probability for the risk factor and report the results of that analysis back to the Risk Officer. Project members who have assigned the responsibilities for performing the steps of the mitigation will report progress about the risk mitigation to the Risk Officer biweekly.

4. Risk Documentation

❖ **Risk List**

The risk factors identified and managed for this project will be accumulated in a risk list. The Risk list contains the following items:

- ✓ Incomplete Requirements
- ✓ Lack of User involvement.
- ✓ Lack of Resources.
- ✓ Unrealistic Expectations.
- ✓ Lack of executive support.
- ✓ Changing requirements and specifications.
- ✓ Lack of planning.
- ✓ Elimination of need for the project.
- ✓ Lack of IT management.

The ten risk items that currently have the highest estimated risk exposure are referred to as the project's Top Ten Risk List.

❖ **Risk Data Items**

The following information will be stored for each project risk:

- ✓ Risk ID
- ✓ Classification
- ✓ Description
- ✓ Probability
- ✓ Impact

- ✓ Risk Exposure
- ✓ First Indicator
- ✓ That risk is becoming a problem
- ✓ Mitigation approaches
- ✓ Owner
- ✓ Date due
- ✓ Contingency plan
- ✓ Contingency plan trigger

❖ **Closing Risk**

A risk item can be considered closed when it meets the following criteria:

The planned lessening actions have been completed and the estimated risk exposure of probability time's impact is less than 2.

5. Activities

	Task	Participants
Risk Identification	State the techniques that will be used to identify risk factors at the beginning of the project and on an on-going basis. This may involve a formal risk assessment workshop, a brainstorming session, and interviews at the beginning of each life cycle phase. Describe any consolidated lists of risk items that will be used to identify candidate risks for this project.	**Risk Officer**

	The Risk **Officer** will assign each risk factor to an individual project member, who will estimate the probability the risk could become a problem and the impact this risk on either scale of units of dollars or schedule days, as indicated by the Risk Officer)	**Assigned Project Member**
	The individual analyzed risk factors are **collected, reviewed,** and **adjusted** if necessary. The list of risk Factors is sorted by descending risk exposure.	**Risk Officer**
	The top ten risks, or those risk factors having an estimated exposure greater than *<state exposure. Threshold>* are assigned to individual project members for development and execution of a risk mitigation plan.	**Risk Officer**
	For each assigned risk factor, recommend actions that will reduce either the probability of the risk materializing into a problem, or the severity of the exposure if it does. Return the mitigation plan to the Risk Officer.	**Project Members**
	The mitigation plans for assigned risk items are collected into a single list. The completed **Top Ten Risk List** is created and made available for the management.	**Risk Officer**
	Each individual who is responsible for executing a risk mitigation plan carries out the mitigation activities	**Assigned Individual**

	Constructive Cost Model (COCOMO)	**Risk Officer**
	The status and effectiveness of each mitigation action is reported to the Risk Officer every two weeks.	**Assigned Individual**
	The probability and impact for each risk item is reevaluated and modified if appropriate for risk management.	**Risk Officer**
	If any new risk items have been identified, they are analyzed as were the items on the original risk list and added to the risk list.	**Risk Officer**
	The Top Ten Risk List is regenerated based on the updated probability and impact for each remaining risk.	**Risk Officer**
	Any risk factors for which mitigation actions are not being effectively carried out, or whose risk exposure is rising, may be escalated to an appropriate level of management for visibility and action.	**Risk Officer**
	If the project will be storing lessons learned about mitigation of specific risks in a database, describe that database and process here and indicate the timing of entering risk-related lessons into the database.	**Risk Officer**

❖ **Schedules for Risk Management Activities**

Risk Identification	A risk workshop will be held on approximately 05 June 2006.
Risk List	The prioritized risk list will be completed and made available to **the project team** by approximately 05 June 2006.
Risk Management Plan	The risk management plan, with mitigation, avoidance, or prevention strategies for the top ten risk items, will be completed by Approximately 20 June 2006.
Risk Review	The Risk Management Plan and initial Top Ten Risk List will be reviewed and approved by the Project Manager on approximately 22 June 2006.
Risk Tracking	The status of risk management activities and mitigation success will be revisited as part of the gate exit criteria for each life cycle phase. The risk management plan will be updated at that time

6. Risk Management Budget

Rs. 60,000

7. Risk Management Tools

RiskTrack Version 5.0

❖ **Introduction**

Risk Track is a Risk management tool from Risk Services and Technology. It allows the identification of different kinds of risks that may occur during the different phases of software project development. It also allows the specification of the probability of these

risks. The interface is more attractive and easy to use. It does not use the rather outdated spreadsheet like interface which the other risk management and management software use. To start a new project, first it provides a screen for project definition where we can specify the project title, creation date, project description, project manager, project leader, risk, mitigation parent and mitigation. Project ID is generated automatically.

We can also add, modify and delete all possible users, phases, risk class, risk cause, attributes, objectives, risk status, and risk types that can occur during the development of the project. After specifying all these, we can add a new risk through the **Add Risk function**.

In the add new risk screen you can give the Risk name, risk ID, and select the risk status, class, cause, type and phase. You can also provide a risk statement and its consequences, the risk probability, At Risk Cost, Risk exposure, mitigation exposure, mitigation exposure, cost allocation, assigned to, date assigned on, assigned by, and action date. You can also add a mitigation using the add mitigation title screen. Here you can give the mitigation title, the effectiveness, risk exposure, cost of mitigation, mitigated exposure, cost allocation, assignee, assigned by and action date while the mitigation ID, creation date, created by, modification date and date assigned on are automatically generated. There is also a mitigation screen where we can see the cost, slip and effect on performance.

1. Usability

RiskTrack is very easy to use software. It does not use the spreadsheet like interface rather it uses a simple interface where you provide input through input boxes and dropdown lists. It generates easily comprehendible reports, which are also a plus point of the software.

2. Strength

Its strength lies in its ease of use and straight forwardness. It also covers all the phases of Risk Management Process.

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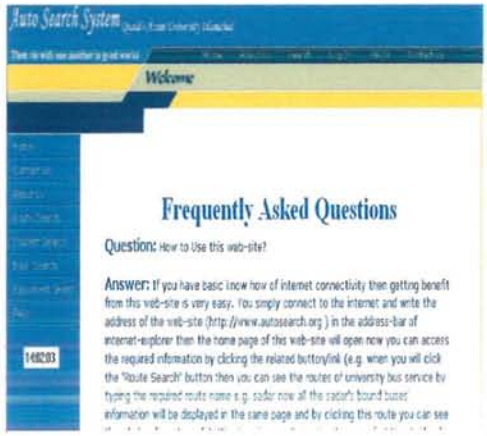
OBJECTIVE OF S.W. REQUIREMENT SPECIFICATION

This chapter sum up the activities of the Software Requirement Specification of the autosearch.org

This chapter includes:

- **Introduction**
- **General Description**
- **Specification Requirements**
- **Maintenance Plan**
- **Deliverables**



SOFTWARE PROJECT REQUIRMENT SPECIFICATION

CHAPTER # 4

Version 1.0

By: Sairah Batool

1. Introduction

❖ **Purpose**

The purpose of this document is to describe the functionality of an Informative Web Site naming AutoSearch. This document will serve as a baseline on which the proposed system will be developed and implemented. This document will also describe the scope and boundaries of the system. All the requirements of the user will be documented here and the proposed system will meet all the requirements which are being described in this document.

❖ **Scope**

This document will encompass all the functional and non-functional requirements of the user. The users define hardware and software constraints and interfaces will be the part of this document. The performance issues and limitations of the software will be established.

❖ **Overview**

This application provides functionality to a person that avails different services without any membership registration. A user can navigate through some features of the site i.e. search all the Routes and Books. Administrator section is totally different that contains different administrative tasks related to the all features of the System/Web Site.

2. General Description

❖ **Product Perspective**

This application is a three-tier application, means that it runs from a server. The product should be able to run from a remote server with an Internet connection or from the local machine without an Internet connection. The current hardware that is running the software is a Pentium IV, running Windows XP.

❖ **Product Functions**

- ✓ The application will perform following functionalities.
- ✓ Library Book Search
- ✓ Transport Route Search
- ✓ Administrative Tasks
- ✓ Student Record Search
- ✓ Laboratory Equipment Record Search
- ✓ Form validation
- ✓ Database validation

User Characteristics

The user should have internet connectivity to view information.

Administrator

- ✓ Overall control of the application
- ✓ Database administration
- ✓ All the related administrative tasks such as Add, Edit, and Delete in all the components.

3. General Constraints

The Product

- ✓ Must Browser independent
- ✓ Windows based application
- ✓ Must have clear help/error messages

Hardware Constraints

- ✓ Monitors: 800*600 minimum resolutions at 256 colors minimum.
- ✓ Memory: Approximately 64 megabytes.
- ✓ I/O: One or two button mouse and standard 101-key keyboard.
- ✓ CPU: At least 600 MHz should be on the computer.

Guidelines

- ✓ Text should be kept to a minimum to increase readability.
- ✓ Color choice should be appropriate to accommodate users with color-blindness.

4. Specification Requirements

There are two types of specification requirements:

1. Functional Requirements
2. External Interface Requirements

Functional Requirements

We divide our functional requirements into two categories:

1. Functional Requirements of Administrator
2. Functional Requirements of Users

This section describes the basic functional requirements of the system with respect to different users.

Functional Requirements of Administrator

Administrator Login

Introduction

This function is used to login the Administrator. This function changes information records/data of the system by the administrator then gives access to the resources to users who can search and view information.

Inputs

a) Administrator ID

b) Administrator Password

Processing

This function will be used for validating the Administrator for login and granting him privileges for their registered resources.

Output

The output of the function is based upon the user given information. If the user gives incorrect information for login, he will be requested to try again; else he/she will be logged in.

Administration of Transport Route Module

Introduction

This function will provide the opportunity to the Administrator to add new Routes, Amend or Delete Existing Routes.

Input

Route Record Selection to Edit or Delete

Processing

This function will provide the opportunity to the Administrator to view, Add new Routes, & Amend or Delete Existing Routes and Configure Route Application. In the Amend or Delete Transport Route section Administrator simply selects the Route and Delete it. Administrator can delete more than one Route in the mean time.

Output

Form to Enter new Route along with its service choices (as entered by administrator up to 2)
Check boxes are used to select appropriate Route to delete or Edit it.
Form to Configure Transport Route Application.

Administration of Book Search Module

Introduction

This function will provide the opportunity to the Administrator to add Books. It also consists of Amend or Delete Books details from the web site, Configure Books Record List.

Input

Book Record Selection to Edit or Delete

Processing

This function will provide the opportunity to the Administrator to add new arrivals/Books. This section includes a form to add a Book consist of Book-Title, Author, Publisher, Date-of-Publishing, Place-of-Publishing, etc. Before adding Books to the Database Administrator can preview those Books. Amend or Delete Books from the record.

Outputs

Form to add Books

Form to Edit/Delete Books

Form to Configure Books Application

Administration of Student Search Module

Introduction

This function will provide the opportunity to the Administrator to add students. It also consists of Amend or Delete student records/details from the database record, and also to Configure Students Record List.

Input

Student Record Selection to Edit or Delete

Processing

This function will provide the opportunity to the Administrator to add new Student. This section includes a form to add a Student credentials and it consists of Registration-No, Name, Father Name, Tele No, Email Address, Postal Address, Department Name, and Semester etc. Before adding Students to the Database Administrator can preview that Students Record. Amend or Delete Students from the system.

Outputs

Form to add Students

Form to Edit/Delete Students

Form to Configure Students Application

Administration of Equipment Search Module

Introduction

This function will provide the opportunity to the Administrator to add Equipments. It also consists of Amend or Delete Equipments details from the system, and configures Equipments Record List.

Input

Equipments Record Selection to Edit or Delete

Processing

This function will provide the opportunity to the Administrator to add new Equipments. This section includes a form to add Equipments consist of Equipment Id, Name, Type, Description, Location, Laboratory Name, etc. Before adding Equipments to the Database Administrator can preview those Equipments then can Amend or Delete Equipments from the system

Outputs

Form to add Equipments

Form to Edit/Delete Equipments

Form to Configure Equipments Application

■ Functional Requirements of Users

User validation

Introduction

This function will not check validity for authenticating the users of the system other than the administrators.

Inputs

Internet connection

Web site address

Clicks on required link(s).

Processing

This function is used for viewing the information from our web site. The links clicked by the user are activated and information can be viewed.

■ External Interface Requirements

Administrator Interface

The user interaction with the system has to be through forms designed for each module.

Hardware Interfaces

Hardware interface will be provided through the network connectivity between server and Client

Communications

All system processes are explained in detail in functional requirements and that will be the base of actual system. After approval of requirements document no additional requirements will be added.

A beta version of the system will be submitted for testing and to remove the bugs.

Design Constraints

❖ **Standard Compliance**

1- The system is browser independent and can be run on Browser.

2- The system is Windows Based System.

❖ **Hardware Limitations**

For server: RAM required (recommended) = 128 MB

Hard disk = at least 20 GB

Processor = Pentium III-minimum requirement

For client: There is no limitation of hardware for the client machine.

❖ **Others**

I/O Rate

Input/output of the system will be lesser, if the user of the system enters the information in time.

Defaults

The system will provide appropriate defaults where possible.

Attributes

❖ **Security**

Role base security will be implemented. Access to some features will be restricted by passwords and user name.

❖ **Maintainability**

The system will be Browser independent and can be run properly up to three months in Windows Based Environment. During this time the developer will be responsible for the maintenance.

Error and Error messages

Descriptive error message will be provided.

The system will have context sensitive help.

Business Process

The system will be based on the functional requirements, which are according to the business process and will be approved by the user.

Audit Trails

Audit trail will be provided. Only the audits of the action will be provided i.e. which action is performed by whom and when.

Trace ability

All the requirements are traceable to business processes.

Consistency

The system will show uniform behavior on all the screens that are concerned to the users. There will be no variations from section to section for the users.

Error Tolerance

All errors will be trapped and conveyed to the user through proper messages.

Simplicity

Forms will be designed according to the workflow of the actual process and thus will be easy for the administrative user to use.

Documentation

Technical and user documentation will be provided with the system.

Coding Standards

Hungarian notation will be used for coding.

Test with code review

Internal code reviews will be conducted to test the coding standard.

Other Requirements

❖ **Data Base**

✓ **Location of Data**

Data will be stored on **remote server** and client will be attached to the server for data access via Internet.

✓ **Database Size**

Total number of records could go up to any number depending upon storage capacity.

Training

❖ **Level of Training**

There is only one level of user.

Administrator

❖ **Time Frame**

To use the system properly an administrator-user will require approximately one hour.

On Line Help

On line help will be provided with the system. In addition a user guide will also be provided.

Deliverables

❖ **Requirements Specification Document (RSD)**

Initially an RSD will be delivered to the client and the client will be responsible to sign it off. After the acceptance of the RSD, the actual software development will be started.

❖ **Installation Software**

The software that will be designed and implemented according to the requirement specification document will be delivered to install. Beta version will also be delivered in the mean time for testing.

✓ **User Training**

Three hours workshop will be held to train the users.

✓ **User Guide**

A user guide will be provided with the software so that the user can easily understand the system and learn how to use its different options in a quick and proper manner.

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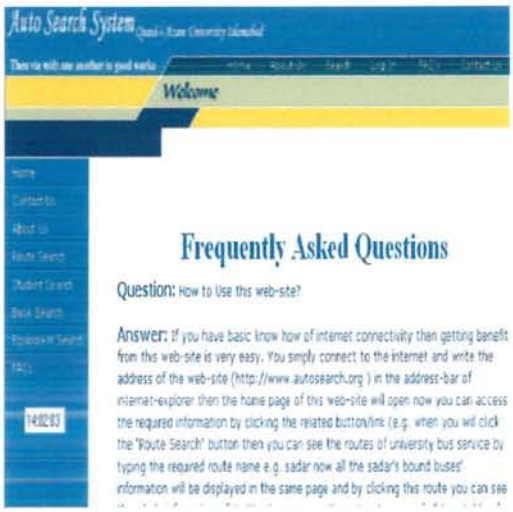
OBJECTIVES OF DATABASE

This chapter sums up the description of the database, its tables along with its Data fields and description.

This chapter includes:

- **Database Description**
- **Platform (OS)**
- **Database Connectivity Type**
- **Short Description of Tables**
- **Data Dictionary**



DATABASE DESCRIPTION

CHAPTER # 5

Version 1.0

By: Sairah Batool

Development Environment	
Programming Language	**ASP, HTML, JAVA SCRIPT**
Development Operating System	**Windows XP**
Target Operating System	**Windows 9x, 2000, XP**
User Interface Development Tool	**NOTEPAD, Dreamveawer MX, Fireworks MX**
Database Connectivity	**Access, Connection String (ADODB)**

Data Base		
Name	Ssearch_engine	
Introduction	It contains all the information regarding AutoSearch. It maintains the records of Administrator, Library Books, Transport Routes, Students, and Laboratory Equipment.	
Platform	Windows XP	
Connectivity	OLEDB	
References		
No	**Table Name**	**Description**
1.	users	This table stores the information of Administrator i.e. Administrator Id and Pass Word.
2.	books	This table is used to store all the information related to the Books of the Library of the university.
3.	cat	This table is used to store all the Categories of the Library Books Subject/Category Wise.
4.	subcat	This table is used to store all the Sub-Categories of the Library Books Sub-Category Wise.
5.	publisher	This table is used to store all the information of the Publishers of the Books
6.	tblRoutes	This table is used to store all the information related to the university transport routes.
7.	tblStudent	This table is used to store all the information related to Students of the university.
8.	tblDepartment	This table is used to store all the names of Departments of the university.
9.	tblEquipment	This table is used to store all the information related to the Laboratory Equipments of computer center.
10.	equipType	This table is used to store all the names of eqipment's type.

Data Dictionary

Users			
FIELD NAME	**DATA TYPE**	**SIZE**	**DESCRIPTION**
uid	Text	20	Id of the Administrator
pwd	Text	20	Password of the Administrator

Books			
FIELD NAME	**DATA TYPE**	**SIZE**	**DESCRIPTION**
bid	AutoNumber	Long Integer	Id of the Book
dates	Date/Time	Current	Book Purchased Date
accno	Number	Long Integer	
author	Text	200	Book's Author name
title	Text	255	Title of the Book
callno	Number	Long Integer	Book Code Number for library use
callnoinitials	Text	3	Book Code-Number's Initials for library use
publisher	Text	255	Book's Publisher Name
place	Text	100	Place of Publishing
pyear	Number	Long Integer	Year of Publishing
pages	Number	Long Integer	Total Number of Pages of the Book
isoff	Yes/No	T/F	Hide Book Informatin from user
volume	Number	Long Integer	Volume-Number of the Book
pic	Text	50	Picture of Title of the Book

cat			
FIELD NAME	**DATA TYPE**	**SIZE**	**DESCRIPTION**
catid	AutoNumber	Long Integer	Books Category-Id
catcode	Number	Long Integer	Books Category-Code Number
catname	Text	255	Category Name
catdes	Text	255	Category Description/Details
isoff	Yes/No	T/F	Hide Book's Category Informatin from user
image	Text	50	Picture Related to the Category

subcat			
FIELD NAME	**DATA TYPE**	**SIZE**	**DESCRIPTION**
subcatid	AutoNumber	Long Integer	Books Sub-Category Id
catid	Number	Long Integer	Books Category Id
scatcode	Number	Long Integer	Books Sub-Category Code Number
scatname	Text	255	Books Sub-Category Name
scatdes	Text	255	Books Sub-Category Details/Description
isoff	Yes/No	T/F	Hide Book's Sub-Category Informatin from user
image	Text	50	Picture Related to the Sub-Category

publisher			
FIELD NAME	**DATA TYPE**	**SIZE**	**DESCRIPTION**
publisherid	AutoNumber	Long Integer	Publisher Id
pname	Text	100	Publisher Name
paddress	Text	100	Publisher Address
pcountry	Text	50	Publisher Country where book is published
ptel	Text	20	Publisher Tele Phone Number
pemail	Text	30	Publisher Email Address
isoff	Yes/No	T/F	Hide Publisher's Informatin from user

tblRoutes

FIELD NAME	DATA TYPE	SIZE	DESCRIPTION
Id	AutoNumber	Long Integer	Route's Record Id Number
RootIDNo	Number	Integer	Route Id
Routes	Text	Memo	Route's Details/Description
Service	Text	20	Route Service Name
Departure_Time	Text	Date/Time	Departure Time From Campus
Start_Time	Number	Date/Time	Starting Time from Destination Place
Arrival_Time	Text	Date/Time	Arrival Time at Campus
Bus_No	Text	20	Bus Number
Isoff	Yes/No	T/F	Hide Route's Informatin from user

tblStudent

FIELD NAME	DATA TYPE	SIZE	DESCRIPTION
id	AutoNumber	Long Integer	Student Record Id Number
regNo	Number	Long Integer	Student Registration Number
Nam	Text	50	Name of the Student
fName	Text	50	Father Name of the Student
phNo	Text	50	Phone Number of the Student
Email	Text	50	Email of the Student
address	Text	50	Address of the Student
deptId	Text	50	Department Id of the Student
semester	Number	Integer	Semester of the Student
sPic	Text	50	Photo of the Student
isoff	Yes/No	T/F	Hide Student's Informatin from user

tblDepartment

FIELD NAME	DATA TYPE	SIZE	DESCRIPTION
deptId	Number	Integer	Id of the university Departments
deptName	Text	100	Name of the university Departments

tblEquipment			
FIELD NAME	**DATA TYPE**	**SIZE**	**DESCRIPTION**
equipId	Auto Number	Long Integer	Id of the laboratory Equipments
Name	Text	225	Name of the laboratory Equipments
typeId	Number	Long Integer	Id of the laboratory Equipment-Types
Description	Text	Memo	Details of the laboratory Equipments
location	Text	225	Location details where the laboratory Equipment is placed

equipType			
FIELD NAME	**DATA TYPE**	**SIZE**	**DESCRIPTION**
typeId	Auto Number	Long Integer	Id of the Type of the laboratory Equipment
eqTypeName	Text	225	Name of the Type of the laboratory Equipment

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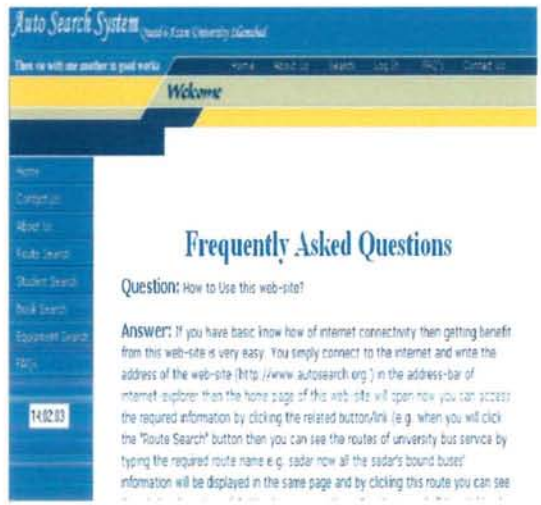
OBJECTIVES TEST MANAGEMENT PLAN

This chapter sums up the activities of the testing, plan of the Web Site (AutoSearch)

This chapter includes:

- **Testing Plan**
- **Team for Testing**
- **Decomposition of Modules**
- **Level of Testing**
- **Desc.of Plan**
- **Test Cases**



CHAPTER # 6

TEST MANAGEMENT PLAN

Version 1.0

By: ***Sairah Batool***

Software Test Plan

Product Visualization

AutoSearch is an online information system developed especially for the students, teachers, and staff of the university who do not have much and convenient Information gathered altogether online (because there is no feature related to auto search in the university's own website. These features related to Job, Admissions in University etc are available already.). So keeping in view the problems of these people we are going to develop a site, which can be used by them.

The Purpose of this project is to create an Informative site, by which people would have an easy access to information. We term the project as "**AutoSearch**". In the new millennium we are going to launch exclusive informative and unique website to facilitate our users with the need of the hour.

Time Limit

We have a time of eight days, so we will take Six days for testing, as we don't require an exhaustive testing.

Team for Testing

Our testing team is composed of one member including

Name	Tasks
Sairah Batool	♦ Book Search ♦ Route Search

	♦ Related Administrative Tasks ♦ Student Search ♦ Equipment Search

Decomposition of Modules

We have divided project into different modules for the testing purposes after considering our manpower, resources and expertise. The modules for AutoSearch are:

Book Search

Route Search

Related Administrative Tasks

Level of Testing

We require a medium level of testing for AutoSearch, so we will perform our testing on this level and try to make it a quality product. We will also try to find as many bugs as we can and try to achieve the goal.

Description of Plan

As far as the overall description of our testing plan is concerned we have planned it by considering different factors including

Nature of product

Tools used for development

Platform of the product deployment

Development and design constraints

User consideration

Architecture of software

Resources constraints

TESTING

Introduction

Product Name	Version
AutoSearch	1.0

Test Cases Developed by	
Name	Tasks
Sairah Batool	Testing of Related Administrative Tasks

Document Generated by	Signature
Sairah Batool	

Date		
Thursday, 01	June	2006
Day	Month	Year

Test Report Reference No
786/AutoSearch/06/01

2.1 Test Case	
Test Case No	1
SRS Functionality Code	001
Functionality	Book Search
Description	This module is related to search of books available in university library. By using this module user can search any book placed in the library of university by giving title, author, or year of publishing, etc. In advance search, search can be made by giving title, author, year of publishing to or from, etc. Search can be made topic or category wise, or sub topic, or sub category wise.

Test Results				
No	Input	Expected Output	Observed Output	Discrepancy
1.	Title of the	Book Record	Desired book details	Nil

	book.	displayed	displayed upon clicking that result in search result	
2.	Part of the title of the book	Book Record displayed	Desired book details displayed upon clicking that result in search result	Nil
3.	Author of the book	Book Record displayed	Desired book details displayed upon clicking that result in search result	Nil
4.	Part of the author of the book	Book Record displayed	Desired book details displayed upon clicking that result in search result	Nil
	Sub category wise search	Record displayed of that sub category	Desired details shown	Nil
5.	Click on Specified book from the search list	Desired book details displayed	Desired details shown	Nil
6.	Click on advance search link	Advance search page will be displayed	All details given upon giving desired options	Nil

(a) General Observations

- Being a database project, storage of correct book info was very critical and significant.
- It is of critical importance that we can provide friendly user interface and correct output.
- The administrator will initially be checked, is he/she is valid or not. If valid then allow the user to login and use his/her account.
- No user registration required.

Tested By

Name	Sairah Batool
Designation	Software engineer
Date	31/5/2006
Signature	

2.2 Test Case	
Test Case No	2
SRS Functionality Code	002
Functionality	Transport Route Search
Description	This module is related to search of bus routes of the buses of university. By using this module user can search any route of university buses and its description by giving service name or route name or some part of route name etc.

Test Results

No	Input	Expected Output	Observed Output	Discrepancy
1.	Route Name.	Rout Record displayed	Desired route details displayed upon clicking that result in search result	Nil
2.	Part of the Route Name	Route Record displayed	Desired route details displayed upon clicking that result in search result	Nil
3.	Link of the Bus Service	Service Related Route Time-Table displayed	Route Time-Table displayed	Nil

(b) General Observations

- Being a database project, storage of correct route info was very critical and significant.
- It is of critical importance that we can provide friendly user interface and correct output.
- The administrator will initially be checked, is he/she is valid or not. If valid then allow the user to login and use his/her account.
- No user registration required.

Tested By	
Name	Sairah Batool
Designation	Software engineer
Date	31/5/2006
Signature	

2.3 Test Case	
Test Case No	3
SRS Functionality Code	003
Functionality	Related Administrative Tasks
Description	This module is related to the maintenance and modification of different records related to Books, Routes, Students and Equipments records. By using this module Administrator can add new records and can delete and modify the existing records of all the Modules infect configuration of all the Modules.

Test Results

No	Input	Expected Output	Observed Output	Discrepancy
1.	Configure Books	Configured	Database will be updated	Nil
2.	Add New Books	Added	New Book Added	Nil
3.	Delete Existing Books	Deleted	Book Deleted	Nil
4.	Edit Existing Books	Edited	Book Edited	Nil
5.	Configure Student Record	Configured	Database will be updated	Nil
6.	Add New Student Record	Added	New Student Record Added	Nil
7.	Delete Existing Student Record	Deleted	Student Record Deleted	Nil
8.	Edit Existing Student Record	Edited	Student Record Edited	Nil
9.	Configure Route	Configured	Database will be updated	Nil
10	Add New Route	Added	New Route Record Added	Nil
11	Delete	Deleted	Route Record	Nil

	Existing Route		Deleted	
12	Edit Existing Route	Edited	Route Record Edited	Nil
13	Configure Equipment		Database will be updated	Nil
14	Add New Equipment Record	Added	New Equipment Record Added	Nil
14	Delete Existing Equipment Record	Deleted	Equipment Record Deleted	Nil
`6	Edit Existing Equipment Record	Edited	Equipment Record Edited	Nil

(c) General Observations

In this module the Administrator must have to login in order to Maintain and modify all the Modules with the control of its entire functionality. This module is related to the maintenance and modification of different records related to Books, Route, Student, Equipment. By using this module Administrator can add new records and can delete and modify the existing records of all the Modules infect configuration of all the Modules

Tested By	
Name	Sairah Batool
Designation	Software engineer
Date	31/5/2006
Signature	

AUTOSEARCH.ORG

OBJECTIVES OF S.W. TOOLS AND TECHNOLOGY

This chapter sums up the information of the tools and technologies used to develop this Informative Web Site (AutoSearch)

This chapter includes:

- **Dynamic Web Pages**
- **Dynamic VS Static Web Pages**
- **Active Server Pages (ASP)**
- **Server Side Scripting**
- **Client Side Scripting**
- **ASP Object Model**
- **ADO's**

Software Tools & Technology

CHAPTER # 7

Version 1.0
By: Sairah Batool

❖ What Is A Dynamic Webpage?

If you surf around the Internet today, you will see that there are a lot of static web pages out there. A static web page is essentially a page whose content consist of some HTML pages that was typed directly into a text editor and saved as an HTM or HTML file. Thus the author of the page has already completely determined the exact content of the page.

Static web pages are quite easy to spot, some time you can pick them out by just looking at the content of the page. The contents (e.g. text, images hyperlink etc) and appearance of the static web page is always the same regardless of who visit the page, or when they visit, or how they arrive at the page, or any other factors.

❖ Static Pages Vs Dynamic Pages

Lets think for a moment how a static, pure HTML page finds its way into a client Browser. A web author writer pages composed of pure HTML, and save it within an HTML file.Some time later a user type a page request into a Browser, and the request is passed from the Browser in to the web server.

- ✓ The web server locates the .html page.
- ✓ The web server sends the HTML stream back across the network to the Browser.
- ✓ The Browser processes the HTML and displays the page.

❖ The Limitations Of Static Web Pages

If we want to enhance our page so that it displays the current time or a special message that is personalize for each user. It will not be possible using HTML alone.

❖ Active Server Pages (ASP)

So far we have analyzed the difference between static and dynamic web pages, but we have barely mentioned the active server pages (ASP), here is a simple definition of ASP.

Active Server Pages is a technology that allows for the programmatic construction of HTML pages just before they are delivered to the Browser.

In other words ASP we can write a set of instructions that can be used to generate HTML, just after the web page has been requested by a client, and just before it delivered .It is a perfect tool

for any HYML write to add to the toolkit, because it gives us the power and flexibility to generate fresher HTML and ultimately to reduce more spectacular, interactive, personalized, up-to-date web pages.

How can we describe ASP? It is not a language like other high level languages like (Pascal & C++) although it does make use of existing scripting languages such as VB Script and Java script, more ever it is not really an application like Front page and MS Word, Instead we describe ASP using rather a more ambiguous term technology.

❖ ASP Code Is Browser Independent

ASP code is always executed on the web server, and generates pure HTML. The client machine does not need to provide any kind of ASP support at all. Infect the web Browser handles .html pages an ASP page in exactly the same way because from the Browser point of view, the process involves the sending the page request to a web server and receiving a stream of pure HTML.

The Browser is blissfully ignorant of any ASP processing that might be happening on the server, it only ever get to see pure HTML, so dynamic ASP pages are just view able in internet explorer, Netscape Navigator and other Browsers as their static .html counter parts.

❖ Advantages Of Using A Server Side Technology

We have stressed that ASP is processed on the web server to generate HTML. While HTML is processed solely on the Browser, so see what is the main advantages of performing actions on the web server first? Here are some main advantages of that:

Allow you to run programs in programming language that are not supported by your Browser.

Enable you to program dynamic web applications Browser independently, without recourse to client side programming features such as Java applet, Dynamic HTML, Active X control, all of which are Browser specific.

Can provide the client (Browser) with data that does not reside at the client.

Often makes for quicker loading time than with client side dynamic web technologies such as Java applet or Active X controls, because at the en you are actually downloading a page of HTML.

Provides improper security measures, since you can write code, which can never be viewed, from the Browser.

That is not to say that the ASP pages are perfect e.g. they increase the workload on the server so if your web site becomes popular you may need to invest more hardware, but this is true, server-side functionality outweigh any disadvantages.

❖ **Virtual Directories**

How does this relationship works? In fact it can work by creating a second directory structure on the web server machine, which reflects of our web site.

The first directory structure is what we see when we open windows explorer on the web server these are known as physical directories (e .g c:\My document)

The second directory structure is the one that reflects the structure of the web site. This consists of hierarchy of virtual directories. We use the web server to create virtual directories, and to set the relationship between the virtual directories and the real directories.

Virtual directory is in fact a nickname or alias for a physical directory that exist on the web server machine. The idea is that when the user Browser to the web page that is contained in the physical directory on the server. They don't use the name of the physical directory to get there instead; they use the physical directory nickname.

To see how this might be useful, consider a web site that publishes news about many sporting events. In order to organize this web site carefully the web master has to build a physical directory structure on the hard disk, which looks like this.

Now to visit this web site in order to get the latest news on the javelin event in the Olympics: If the URL of this web site were based on the physical directory structure, then it would be something like this:

http://www.oursportsite.com/sportsnews/atletics/field/javelin/default.asp

It's the webmaster who can understand this directory structure, but its fairly unmemorable web address! So to make it easier for the user, they web master can assign a virtual directory name or alias to this directory its act just like a nick name of this directory

Let's assign the virtual name javelin news to the c:\inetpub\...\javelin\directory. Then the URL of the latest javelin news would be as:

http://www.oursportsite.com/javelinnews/default.asp

Not only thus this saves the user from long and wide URLs but it also serves as a good security measures, because it hides the physical directory structures from all the web site visitors.

- **Microsoft FrontPage**

It comes as a part of MS office 2000 suite. It is one of the tools for creating and designing web pages but it does not offer all functionality of visual Interdev. It is ultimately a weaker but easier application to use.

It offers three views of the web page. The normal vie gives a WYS? WYG page creation view, which allows you to write pages without having to code to HTML explicitly. The HTML view allows you to write your code explicitly and the preview tabs gives a quick view of what a page should look like in a Browser.

Again a normal and a preview tabs are unable to process any ASP. In order to view the results of ASP script in Front page select file view in the Browser to see what your processed Asp will look like.

- **Notepad**

Certainly helps in sustaining its popularity it does not highlight the ASP in any way and also it doesn't generate any extra code even having less additional functionality. It is still very popular in use due to its simplicity and less complexity in Windows 2000. Notepad offers a "Goto" feature, which helps in quickly moving around the document using the line number.

It does not really matter which editor is to be used. We will avoid any attempt to provide a tutorial on additional tools at its beyond the scope of this book.

- **Identifying a Script**

How do we identify the script when it is embedded in a small or large amount of pure HTML? Because the ASP which will be enclosed in a special tag < %.....%> e.g. if we want to print a time on a web page we will use the following piece of code:

The current time is <%=time %>

Every thing within<% and %> this tag is assumed to be the ASP and a sent to the ASP script host for processing.

But there are other kinds of scripts , what are not ASP code , but which still need to o be distinguish from the HTML and the text in which they are embedded . For this reason HTML provides a special tag called <script> tag e.g.

<SCR IPT LANGUAGE =VB SCRIPT RUNAT=SERVER>

Response.Write time

</ SCRIPT>

Any thing that lies between the opening and the closing tags <SCRIPT> and closing tag </SCRIPT>is dispatched for processing to the appropriate script engine, according to the instructions given by the SCRIPT tags attributes.

❖ **Server-Side Scripting**

A script that is interpreted by the web server is called a server side script . A server side script is an instruction set that is processed by the server and which generates the HTML is sent as a part of the HTTP response to the browser.

As we have gathered by now ASP is server side scripting, however it is not true to say that all server side scripting as not ASP as we will elaborate in the following section.

If we are going to place any kind of server side script so that the server can identify them as a server side scripts and hence arrange for them to be interpreted correctly. There are two ways to label server side scripts

Use the < %...%> server script delimiters, which donate ASP code.

Use the HTML< script> tag specifying the RUNAT= SERVER attribute within the tag. If a tag look this is found within an ASP file, then it is treated as an ASP. If such a tag is found within an .html file, then it is treated as a non-Asp client side script.

We must highlight an important difference here namely that the choice of HTML or ASP for the suffix of the web page file is not trivial. It really does have a bearing on how your code is

processed. If you have any ASP at all, you can label it, using either of the techniques used above. How ever in order to ensure that it is processed as an ASP then it must be included as a part of the ASP file.Within an HTML file, it is only possible to use the <SCRIPT>...</ SCRIPT> tags. Script contained within these tags will be interpreted as non-ASP script. If you try to include any ASP script within these tags or if you write <%...%>into an HTML file, then the script will not be executed and your web page would not look the way you intended .

❖ Client-Side Scripting

The script that is interpreted by the browser is called a client side script. A client side script is also an instruction set but is not processed by the web server. Instead it is sent to the Browser (as part of the HTTP response) and is processed by the Browser, the Browser on the monitor then displays the result.

Client side scripting is not directly related to ASP at all, it involves scripting that will be processed by the Browser. When a web page source contains a client side script, it does not attempt to process the script; instead, it simply downloads the script to the Browser as part of the HTTP response, and assumes that the Browser will know how to deal with it.

When the Browser receives the HTTP response, it needs to process the HTML contained within, which describe how it is to display the page. The Browser must also take care of the client side script that when downloaded as part of the page.

❖ Advantages of Client-Side Scripting

The main advantage of client-side scripting over pure HTML is that it allows the developer to create the more functional, interactive web pages.

Response time is often quicker because the script is interpreted on the Browser machine, there is no network involves and there is no round – trip to ask the server to calculate things.

Executing script on the Browser reduces the web server's workload as less script will be executed on the server, and it can be more advantageous when lots of people use web site.

❖ Disadvantages of Client-Side Scripting

The main disadvantage of client side scripting is teat we can't depend on the functionality of the Browser to support the script we write. If you have two different client machines hosting two

different Browsers, and you view a page containing client side scripting on each independently then you can reasonably expect the results to be quite different. This means that the client side scripting is Browser specific because some browser does not support certain scripting language e.g.

Recent version of Internet explorer comes with script engines for both VBScript and Jscript, where as the older version of the Browser by default come with the older version of the scripting engines.

Netscape navigator comes with Java script engine only so there is no support for VBScript.

Another potential disadvantage of client-side scripting is that the code in your client-side scripts is completely visible to the user. By selecting view source option in the Internet explorer will show how the HTML source code plus client – side scripting used in that page. If you want to keep your client – side script to be hidden then you will have to use complex encryption techniques.

❖ Alternatives to ASP

What other technologies could do the same job as ASP? Or if Microsoft provides ASP then what are the non-Microsoft alternatives?

ASP is only one of several technologies that can be used to create more dynamic and interactive web pages. Microsoft is not the only organization pulling in the direction of interactive web sites many of its competitors are also chipping away at the boundaries of interactive web capability.

Interactive web sites can be build with a combination of languages and technologies you can use any one of these alone, or any number of them together and they are all independent (in the sense that you do not have to learn one technology before you can learn another). Some exist on the client side while other on server side.

❖ What Is Active Server Pages Object Model?

In the Active Server Pages programming model, there is a wide range of functionality that is access able to the programmer. ASP helps us to track the site of a user dynamic generate HTML output and take data from forms to be inserted into a data base. All of the functionality makes ASP a rather complex beast. Microsoft was task with finding the best compromise between

offering a simple programming model and providing access to all of the power that ASP provides. These objects were then related together into what is known as an object model. An object model is a representation of a set of objects and there relationships to one another. These relationships can take to form of containment, where one object is embedded inside of another or they can take the form of a parent child relationship, where one object has a set of child objects associated with it.

❖ **Object Model Structure**

Seven objects make up the core of Active Server Pages. These are known as the built-in objects. These objects are:

i) Server Object
ii) Application Object
iii) Session Object
iv) Request Object
v) Response Object
vi) Object Context Object
vii) ASP Error Object

Each of these objects interacts with the different parts of the ASP system. This chart shows how they are related to each of them, and how they are related to the client and the server.

✓ **The Server Object**

The server object is an object that provides a home to a miscellaneous ragbag of properties and methods that can be send in almost every Active Server Page. While seemingly unrelated, these methods and properties are in fact abstractions of the properties and methods provided by the web server itself. This object will allow you to do things such as:
Set the amount of time a script can run before an error occurs.
Take a user supplied string and encode it into an HTML format.
Convert a Virtual path to a physical path on the server.
Take a user supplied string and encode it into the proper format for a Uniform Resource Locator (URL) string.
Create an instance of an Active X component. Change the course of execution by jumping to another page using the transfer and execute properties.

These method and properties are provided as utility functions for you to use in your pages. They are not directly used to affect the display of the page, but they still provide value able support in creating Active Server Pages

✓ **Application Object**

As the web is moving from just serving up pages to providing access to dynamic information from a wide range of systems, the site that a user must access are beginning to look more like a traditional desktop application.

Since these pages are functioning together as an application, naturally the developer would want some control over the application as a whole; this is the responsibility of an application object. Let's just introduce the few things that it does. With this object one can:

Be notified when an application is first started, so that you can perform some startup processing.

Be notified when an application is ending, so that you have an opportunity to perform functions to enable the application to close down clearly.

Store information that can be accessed by all clients accessing the application.

There is the one instance of an application object for each web application running on the web server. There may be many clients accessing the same application. They each can get a reference to the same application object. Next we will look at an object that is unique to each client of an application.

✓ **Session object**

There is one application object for each application on the web server. Every client accessing that application can get a reference to it. Each of these clients opens a session therefore each of them has a reference to a unique session object. The session on object will allow you to:

Be notified when a user session begins, so that you can take an appropriate action for a new client.

Be notified when a client has ended their session, this can either be caused by a time out or an explicit method called Abandon.

Store information that can only be accessed by the particular client through out the session.

The session object is the most powerful object for continuity when using an application in Active Server Pages. One of the problem s that has existed in creating web-based applications is

that the connection between the client and the server is stateless. The web server itself has no mechanism for tying a request for a page by a client back to a previous request of the page by the same client. This means that each request that one-client makes of a web server is treated independently from the rest. While this allows for a very efficient and fast web server, it makes writing application nearly impossible.

Think of it this way if you are writing an application using a standard web server, then every request to the server must carry along with it every thing that you have done related to the application up to this point. Since the web server has no way of sending and retrieving that information, it is up to you provide it every time you make a request to the server. Sounds pretty cumbersome? Well with the session object Active Server pages allow you to store and retrieve information about the client accessing your application.

✓ Request Object

When a web Browser or other client application asks for a page from a web server, this is called making a request. Along with the actual page the client wants, it can send a great deal of information to the server as well. The request object is responsible for packaging up that information to make it easily accessible to the ASP application.

The client asks the server to create an HTML page by requesting an ASP script. When the server sees this request, it interprets this type of page as an active Server page. All of the information that the client is sending along with the request is then packaged into the request object. This information is then accessible to the actual ASP script that is used to construct the page.

The information is cauterized into five sets of information. Since each set of information can include multiple individual pieces of information, each set is stored as a collection. In a collection each piece of information is sent as a name-value pair.

The collection holds information about:

The values that are provided in the URL that are send by the client. In the URL the client can include name value pairs of information after the file name. This information is stored in the collection called query string.

If the client is sending request, then the values of the form elements are stored in anothe4 collection the form collection.

If the web server itself has a greater deal of information about the request, response and the general information about the server itself. These are called the HTTP server variables. This information is made available as a collection as well.

If the client is sending any cookies along with the request, these are included in their own collection.

In addition, if the client is sending any security certificates to the server, then these are included in there own collection.

By using the information that is included with the request, along with the script code in the active server pages script file, the server can dynamically generate a page for the client to display. In order for the client to display the information, the server needs a mechanism to replay the data back to the client. This is the job of the response object.

✓ Response Object

The primary features of the Active Server Pages are the ability to dynamically create web pages. The basic task needed to execute this feature is the ability to tell the client what information to displays. There are a number of different ways to shape what the client will display. The response object exists to provide an efficient interface to control the output to the client.

The response object provides the ASP script with a set of interface that allows the script to control what information is being sent back to the client. For now we will just touch the some of the functions that the response object provides.

With the response object the ASP script can:

Insert information into the page being sent back to the client.

Select instruction to the Browser to create cookies on the client.

Send the client to another page via a redirection.

Control whether the page is sent as it is created, or it is completely build and then sent at one time.

Control the various properties of the page such as the HTML header or the type of content.

These interfaces give the designer of the script the ultimately flexibility to decode how the information is presented back to the client.

✓ Object Context Object

The object context object helps you to develop application out of components. It does this by allowing you to handles transaction from within an ASP page. A transaction is a single unit of work that must either succeed in its entirely or if its fail, must be undone completely – returning the system to the state it was before the transaction was started.

When using applications made of out of components, its common to use transitions. If for example an action handled by a particular component fails then you'd want details of the failure and be able to take an alternative course of action. If he user tried to change the details of their bank accounts and then bombed out mid – track it would be logical to want track back to what the bank to what the bank account details were previously, before trying to change the details again or continuing on alternative course.

The second type of application that uses transactions would be one that features data processing. If some one makes an other alternative to a data base via a web page and somebody else make another alternative at the same time, you need to be able to accept one alternation, while canceling or postponing, the other. The management of these types of transactions was handled in HS 4.0 and PWS 4.0 by a piece of software known as Microsoft Transaction Server (MTS). How ever with HSS and Windows 2000, the functionality of MTS is now integrated directly into part of the windows 2000 operating system known as COM+.

The object context object allows access to MTS in order to start or terminate a transaction. We don't want to go into how it does now, this hope fully gives you an over view of this useful object.

✓ ASP Error Object

The ASP Error object contains the detail of any error generated by an ASP script or by an ASP-DLL itself. Previously there was no facility in ASP for storing details of errors that occurred. ASP Error object with help from the server. Get last error method; allow more complex customized handling of error messages. It directs the user to a standard error page or to user created page depending on the option selected in MMC.

❖ Active Server Components

Active Server components are components or DLL that come freely with ASP (as opposed to components that are wended by third parties). There are ten common components provided by Microsoft with IIS 5.0 90 (although different versions of the installation can add or remove components), and many more are available from third parties. Here is a brief summary of the components and what they do:

The AD rotator component do exactly what you might expect, it is a rotator for the Ad's that appear on your page. More specifically we use this component by supplying with a list of images, it will arrange for one of the image to be displayed on the page each time the age is requested.

The Browser capability components references a file called browscap.ini which details the every version of every Microsoft and Netscape Browser every created it uses this information to determine whether or not the browser currently used supported frame, tables and so.

The content linking component uses a text file to manage (and provide) links for a sequential set of web pages. It allows the administrator to provide extra information about each page in the sequence, and keeps the link in an orderly list so that they can be easily mentioned. For example, it can be predetermined order used to guide a visitor through a sequence of pages in a The Content Rotator component is a slimmed –down version of the Ad rotator component, which just displays text.

The content component creates an object that persists for the lifetime of n application and can be used to store, increment or retrieve a value. Counters are manually set, unlike page counter e.g. which are set automatically, and persist until deleted.

The logging utility component allow your application to be able to read from your LLS log file which monitor who has been connecting to your site

The My info component is used to store personal information about the server administration.

The page counter components provide a page counter, which increments by one each time a page is accessed. This is an automatic process, rather than a user defined one.

The permission checker component can be used to monitor whether a certain user has been given permission to read or execute a file.

The tools component provides a set of properties that are loosely grouped under the catchall heading of miscellaneous utilities, include checks to see if a certain file exist exists or if a certain user is the owner of the site.

❖ Universal Data Access

Any persisted collection of information is a data store. We might want to access the data contained within and use it in our web pages and other applications we are particularly interested in how we can access data stores from our ASP pages, and use there data to influence the appearance and content of our dynamic web pages.

So the question is one of how to access the data contained within these data stores. There is a problem with using ODBC here generally, the information contained within each of the other media does not fit neatly into a data base type format and more often than not, ODBC can't help us to get at that kind of data.

In other words the notation of database access is not enough to fill the dreams of universal data access; we need a way of getting at the other forms of the data too, so how can we get at the contents of your data stores quickly and easily?

Microsoft UDA strategy has yielded a technology that has the potential to access the data contained in any kind of data stores. This technology is known as OLEE-DB

❖ What is ADO's?

You might like to think of the Active X Data Objects (ADO) as being the interface of OLE-DB. ADO is a set of objects that allow programmers to program their data access login from languages and scripting languages. ADO is a high level model than OLE-DB, which means that it simplifies some of the complexities of programming which OLE-DB thus, ADO is much easier to use than OLE-DB.

How thus ADO fit into over all structure? The ADO layer sits neatly between the application itself and the OLE-DB layer.

In this sense we can think of ADO as being as application-programming interface. ADO is a superset of DAO and ADO is much easier to understand.

❖ ADO Features

Access to all type of data. Various data sources including Email, text files ISAM/VSAM databases and all ODBC data sources.

Support Free threading-ADO supports multiple client connections through multiple threads in such away that these threads don't interfere with each other.

Support asynchronous queries. This basically means that after an SQL query is submitted to the data base server, the control then immediately returns to the calling application, allowing the user to complete the query, the results are then sent to the client.

Support client side and server side cursors –Cursor is a mechanism that allows access a navigation of the data in a record set. They are implemented as a client side or a server side. Traditionally, frequently updated record set is implemented as a server side while read only record set is implemented as a client side.

Support disconnected record set – After a record set is returned on a execution of a query, it is stored as a client side cursor and the active connection is closed. After changes have been committed to the record set the connection is re established and all up dates arte sent in a batch to the data store. . This helps in reducing network traffic in a great extent.

Support commands as a common method – The unique feature of ADO is that when a command is executed, a connection is first established internally before that commands get submitted for execution. Compare this to a traditional object model like DAO/RAO where a connection has to establish explicitly before a command can be submitted.

❖ ADO Architecture

In the ADO model there are five objects

i) Connection
ii) Command
iii) Record set
iv) Record
v) Stream

The connection object sets up the connection to the data source. First the data source name, its location, user id, password is stored in a connection string object, which is passed to the connection object to establish z connection to the data source.

The command button is used to execute the SQL commands, queries and stored procedures.

When a query is executed it returns results that are stored in the Record set object. Data in a record set is manipulated and then updated to the database.

Records allow you to handle data kept in semi structured storage (such as files in a directory structure) as through they were record in a database.
The stream object is used to access the contents of the node, such as an Email message, or a web page.

❖ **ADO and ASP Are Different Technologies**

Don't fall into the trap of assuming that ADO is a par5 of ASP or that it is designed specifically for use with ASP. It is true to say that ADO is the ideal tool to use for achieving data access from ASP pages and that Ado is shipped as part of the HS 5.0/ASP 3.0 package. But ADO is more generic than that .If you are planning to write other data – dependent applications such as Visual Basic, Java, VC++, there is nothing to stop you from using ADO is those application too. Infact you can use ADO with any COM complaint programming language, so where does ADO come from? Infact ADO is one of a suite of components, which are known collectively as the Microsoft Data Access Components (MDAC). This sort of components has enjoyed a release schedule that a separate to that of HS/ASP.

Reference Materials

1. IEEE Standard 1058.1-1987 for Software Management Plans.
2. Software Engineering by Roger.S.PressMan (5^{th} Edition).
3. HTML The Complete Reference by Thomas A .Powell (3^{rd} Edition).
4. Beginner Java Script (Wrox).
5. Dreamweaver Fireworks Studio, A Beginner's Guide by Kim Cavanaugh.
6. Different Informative web sites