 INTRODUCTION TO PROJECT

This project is aimed at developing an online search Portal for the Placement Dept. of the college. The system is an online application that can be accessed throughout the organization and outside as well with proper login provided. This system can be used as an Online Job Portal for the Placement Dept of the college to manage the student information with regards to placement. Students logging should be able to upload their information in the form of a CV. Visitors/Company representatives logging in may also access/search any information put up by Students.

The project has been planned to be having the view of distributed architecture, with centralized storage of the database. The application for the storage of the data has been planned. Using the constructs of MS-SQL Server and all the user interfaces have been designed using the ASP.Net technologies. The database connectivity is planned using the “SQL Connection” methodology. The standards of security and data protective mechanism have been given a big choice for proper usage. The application takes care of different modules and their associated reports, which are produced as per the applicable strategies and standards that are put forwarded by the administrative staff.

The entire project has been developed keeping in view of the distributed client server computing technology, in mind. The specification has been normalized up to 3NF to eliminate all the anomalies that may arise due to the database transaction that are executed by the general users and the organizational administration. The user interfaces are browser specific to give distributed accessibility for the overall system. The internal database has been selected as MS-SQL server 200.The basic constructs of table spaces, clusters and indexes have been exploited to provide higher consistency and reliability for the data storage. The MS-SQL server 200 was a choice as it provides the constructs of high-level reliability and security. The total front end was dominated using the ASP.Net technologies. At all proper levels high care was taken to check that the system manages the data consistency with proper business rules or validations. The database connectivity was planned using the latest “SQL Connection” technology provided by Microsoft Corporation. The authentication and authorization was crosschecked at all the relevant stages. The user level accessibility has been restricted into two zones namely.

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**Chapter 1 - INTRODUCTION**

**1.1. INTRODUCTION TO PROJECT - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

This project is aimed at developing an online search Portal for the Placement Details for job seekers. The system is an online application that can be accessed throughout the organization and outside as well with proper login provided. This system can be used as an Online Job Portal for job seekers. Job Seekers logging should be able to upload their information in the form of a CV. Visitors/Company representatives logging in may also access/search any information put up by Job aspirants.

**1.3.** **PURPOSE OF THE PROJECT**

This system can be used as an Online Job Portal for the Placements providing to the un employees who are seeking for a job placement. Job Seeker logging into the system and he can should be able to upload their information in the form of a CV. Visitors/Company representatives logging in may also access/search any information put up by Job Seeker.

**1.4.** **PROBLEM IN EXISTING SYSTEM**

         Cannot Upload and Download the latest updates.

         No use of Web Services and Remoting.

         Risk of mismanagement and of data when the project is under development.

         Less Security.

         No proper coordination between different Applications and Users.

         Fewer Users - Friendly.

**1.5.** **SOLUTION OF THESE PROBLEMS**

The development of the new system contains the following activities, which try to automate the entire process keeping in view of the database integration approach.

1.   User friendliness is provided in the application with various controls.

2.   The system makes the overall project management much easier and flexible.

3.   Readily upload the latest updates, allows user to download the alerts by clicking the URL.

4.   There is no risk of data mismanagement at any level while the project development is under process.

5.   It provides high level of security with different level of authentication.

**Chapter 2**

**SYSTEM ANALYSIS - JOB PORTAL SYSTEM**

**2.1. INTRODUCTION**

After analyzing the requirements of the task to be performed, the next step is to analyze the problem and understand its context. The first activity in the phase is studying the existing system and other is to understand the requirements and domain of the new system. Both the activities are equally important, but the first activity serves as a basis of giving the functional specifications and then successful design of the proposed system. Understanding the properties and requirements of a new system is more difficult and requires creative thinking and understanding of existing running system is also difficult, improper understanding of present system can lead diversion from solution.

**2.2. ANALYSIS MODEL**

The model that is basically being followed is the WATER FALL MODEL, which states that the phases are organized in a linear order. First of all the feasibility study is done. Once that part is over the requirement analysis and project planning begins. If system exists one and modification and addition of new module is needed, analysis of present system can be used as basic model.

The design starts after the requirement analysis is complete and the coding begins after the design is complete. Once the programming is completed, the testing is done. In this model the sequence of activities performed in a software development project are: -

Requirement Analysis

Project Planning

System design

Detail design

Coding

Unit testing

System integration & testing

Here the linear ordering of these activities is critical. End of the phase and the output of one phase is the input of other phase. The output of each phase is to be consistent with the overall requirement of the system. Some of the qualities of spiral model are also incorporated like after the people concerned with the project review completion of each of the phase the work done.

WATER FALL MODEL was being chosen because all requirements were known beforehand and the objective of our software development is the computerization/automation of an already existing manual working system.

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| --- |
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**2.3. STUDY OF THE SYSTEM - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

**GUI’S**

In the flexibility of the uses the interface has been developed a graphics concept in mind, associated through a browses interface. The GUI’S at the top level have been categorized as

Administrative user interface

The operational or generic user interface

The administrative user interface concentrates on the consistent information that is practically, part of the organizational activities and which needs proper authentication for the data collection. The interfaces help the administrations with all the transactional states like Data insertion, Data deletion and Date updation along with the extensive data search capabilities.

The operational or generic user interface helps the users upon the system in transactions through the existing data and required services. The operational user interface also helps the ordinary users in managing their own information helps the ordinary users in managing their own information in a customized manner as per the assisted flexibilities.

**NUMBER OF MODULES**

The system after careful analysis has been identified to be presented with the following modules:

**The modules involved are:**

Admin

Job Seeker

Job Provider

Notification

Search

Report

Authentication

Admin

In this module Admin will add all the qualifications, skill, experience, city, state, country and update and delete information about the job provider or job seeker he can also search for the job seeker and he can send mail to offer the job to job seeker and he can also see the jobs add by the job provider.

Job Seeker

In this module Job Seeker register him self and upload his resume and fill the profile give by admin and after login he will search for the job on various conditions and he can change his profiles and resume and he can apply for the jobs based on various conditions. He can see the response of the company and he can call the company person for the interview.

Job provider

In this module Job Provider register him self and his company and after login he will add new job and he can search for the job seekers on various condition and he can offer the job to job seeker according to the job profile and he can also see the response from the job seekers and send the mail.

Notification

In this module admin and job provider send the notification to the job seeker in the form of email.

Reports:-

This module contains all the information about the reports generated by the admin based on the particular job seeker, particular job provider, all job seeker and job provider, all jobs generated by the job providers.

Authentication:-

This module contains all the information about the authenticated user. User without his username and password can’t enter into the login if he is only the authenticated user then he can enter to his login.

**PROJECT INSTRUCTIONS:**

         Based on the given requirements, conceptualize the Solution Architecture. Choose the domain of your interest otherwise develop the application for ultimatedotnet.com. Depict the various architectural components, show interactions and connectedness and show internal and external elements. Design the web services, web methods and database infrastructure needed both and client and server.

         Provide an environment for upgradation of application for newer versions that are available in the same domain as web service target.

**2.4. HARDWARE SPEDIFICATIONS**

**HARDWARE REQUIREMENTS:**

PIV 2.8 GHz Processor and Above

RAM 512MB and Above

HDD 20 GB Hard Disk Space and Above

**SOFTWARE REQUIREMENTS:**

WINDOWS OS (XP / 2000 / 200 Server / 2003 Server)

Visual Studio .Net 2005 Enterprise Edition

Internet Information Server 5.0 (IIS)

Visual Studio .Net Framework (Minimal for Deployment)

SQL Server 2000 Enterprise Edition

**2.5. PROPOSED SYSTEM - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

To debug the existing system, remove procedures those cause data redundancy, make navigational sequence proper. To provide information about audits on different level and also to reflect the current work status depending on organization/auditor or date. To build strong password mechanism.

**NEED FOR COMPUTERIZATION**

We all know the importance of computerization. The world is moving ahead at lightening speed and every one is running short of time. One always wants to get the information and perform a task he/she/they desire(s) within a short period of time and too with amount of efficiency and accuracy. The application areas for the computerization have been selected on the basis of following factors:

         Minimizing the manual records kept at different locations.

         There will be more data integrity.

         Facilitating desired information display, very quickly, by retrieving information from users.

         Facilitating various statistical information which helps in decision-making?

         To reduce manual efforts in activities that involved repetitive work.

         Updating and deletion of such a huge amount of data will become easier.

**FUNCTIONAL FEATURES OF THE MODEL**

As far as the project is developed the functionality is simple, the objective of the proposal is to strengthen the functioning of Audit Status Monitoring and make them effective and better. The entire scope has been classified into five streams knows as Coordinator Level, management Level, Auditor Level, User Level and State Web Coordinator Level. The proposed software will cover the information needs with respect to each request of the user group viz. accepting the request, providing vulnerability document report and the current status of the audit.

**WORKING OF THE SYSTEM**

The entire scope has been classified into five streams known as: -

**Coordinator Level**

(Addressing the information management needs of coordinator)

**Management Level**

(Addressing the information management needs of management)

**Auditor Level**

(Addressing the information management needs of auditors)

**User Level**

(Addressing the information management needs of the user group)

**State Web Coordinator level**

(Addressing the needs of coordinator of the state)

**2.6. INPUT AND OUTPUT**

The main inputs, outputs and major functions of the system are as follows

**INPUTS:**

         Head operator enters his or her user id and password.

         Operators enter his or her user id and password.

         Technicians enter his or her user id and password.

         Sub technicians enter his or her user id and password.

         User requests the reports.

         User requests the search.

         Head operator can edits the personal details and so on.

**OUTPUTS:**

      Head operator receives personal details.

      Operator receives the personal details.

      Technicians receive personal and technical details.

      Users receive requested reports.

      Displays search result.

**2.7. PROCESS MODELS USED WITH JUSTIFICATION**

**ACCESS CONTROL FOR DATA WHICH REQUIRE USER AUTHENTICATION**

The following commands specify access control identifiers and they are typically used to authorize and authenticate the user (command codes are shown in parentheses)

**USER NAME (USER)**

The user identification is that which is required by the server for access to its file system. This command will normally be the first command transmitted by the user after the control connections are made (some servers may require this).

**PASSWORD (PASS)**

This command must be immediately preceded by the user name command, and, for some sites, completes the user's identification for access control. Since password information is quite sensitive, it is desirable in general to "mask" it or suppress type out.

**Chapter 3**

**Feasibility Report - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

Preliminary investigation examine project feasibility, the likelihood the system will be useful to the organization. The main objective of the feasibility study is to test the Technical, Operational and Economical feasibility for adding new modules and debugging old running system. All system is feasible if they are unlimited resources and infinite time. There are aspects in the feasibility study portion of the preliminary investigation:

         Technical Feasibility

         Operation Feasibility

         Economical Feasibility

**3.1. Technical Feasibility**

The technical issue usually raised during the feasibility stage of the investigation includes the following:

         Does the necessary technology exist to do what is suggested?

         Do the proposed equipments have the technical capacity to hold the data required to use the new system?

         Will the proposed system provide adequate response to inquiries, regardless of the number or location of users?

         Can the system be upgraded if developed?

         Are there technical guarantees of accuracy, reliability, ease of access and data security?

Earlier no system existed to cater to the needs of ‘Secure Infrastructure Implementation System’. The current system developed is technically feasible. It is a web based user interface for audit workflow at NIC-CSD. Thus it provides an easy access to the users. The database’s purpose is to create, establish and maintain a workflow among various entities in order to facilitate all concerned users in their various capacities or roles. Permission to the users would be granted based on the roles specified. Therefore, it provides the technical guarantee of accuracy, reliability and security. The software and hard requirements for the development of this project are not many and are already available in-house at NIC or are available as free as open source. The work for the project is done with the current equipment and existing software technology. Necessary bandwidth exists for providing a fast feedback to the users irrespective of the number of users using the system.

**3.2. Operational Feasibility**

Proposed projects are beneficial only if they can be turned out into information system. That will meet the organization’s operating requirements. Operational feasibility aspects of the project are to be taken as an important part of the project implementation. Some of the important issues raised are to test the operational feasibility of a project includes the following: -

         Is there sufficient support for the management from the users?

         Will the system be used and work properly if it is being developed and implemented?

         Will there be any resistance from the user that will undermine the possible application benefits?

This system is targeted to be in accordance with the above-mentioned issues. Beforehand, the management issues and user requirements have been taken into consideration. So there is no question of resistance from the users that can undermine the possible application benefits.

The well-planned design would ensure the optimal utilization of the computer resources and would help in the improvement of performance status.

**3.3. Economic Feasibility**

A system can be developed technically and that will be used if installed must still be a good investment for the organization. In the economical feasibility, the development cost in creating the system is evaluated against the ultimate benefit derived from the new systems. Financial benefits must equal or exceed the costs.

The system is economically feasible. It does not require any addition hardware or software. Since the interface for this system is developed using the existing resources and technologies available at NIC, There is nominal expenditure and economical feasibility for certain.

**Chapter 4**

**SOFTWARE REQUIREMENT SPECIFICATION - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

The software, Site Explorer is designed for management of web sites from a remote location.

**INTRODUCTION**

**Purpose:** The main purpose for preparing this document is to give a general insight into the analysis and requirements of the existing system or situation and for determining the operating characteristics of the system.

**Scope:** This Document plays a vital role in the development life cycle (SDLC) and it describes the complete requirement of the system. It is meant for use by the developers and will be the basic during testing phase. Any changes made to the requirements in the future will have to go through formal change approval process.

**DEVELOPERS RESPONSIBILITIES OVERVIEW:**

The developer is responsible for:

         Developing the system, which meets the SRS and solving all the requirements of the system?

         Demonstrating the system and installing the system at client's location after the acceptance testing is successful.

         Submitting the required user manual describing the system interfaces to work on it and also the documents of the system.

         Conducting any user training that might be needed for using the system.

         Maintaining the system for a period of one year after installation.

**4.1. FUNCTIONAL REQUIREMENTS:**

**OUTPUT DESIGN**

Outputs from computer systems are required primarily to communicate the results of processing to users. They are also used to provides a permanent copy of the results for later consultation. The various types of outputs in general are:

         External Outputs, whose destination is outside the organization.

         Internal Outputs whose destination is with in organization and they are the

         User’s main interface with the computer.

         Operational outputs whose use is purely with in the computer department.

         Interface outputs, which involve the user in communicating directly with

**OUTPUT DEFINITION**

**The outputs should be defined in terms of the following points:**

  Type of the output

  Content of the output

  Format of the output

  Location of the output

  Frequency of the output

  Volume of the output

  Sequence of the output

It is not always desirable to print or display data as it is held on a computer. It should be decided as which form of the output is the most suitable.

For Example

  Will decimal points need to be inserted

  Should leading zeros be suppressed.

**Output Media:**

In the next stage it is to be decided that which medium is the most appropriate for the output. The main considerations when deciding about the output media are:

The suitability for the device to the particular application.

The need for a hard copy.

The response time required.

The location of the users

The software and hardware available.

Keeping in view the above description the project is to have outputs mainly coming under the category of internal outputs. The main outputs desired according to the requirement specification are:

The outputs were needed to be generated as a hot copy and as well as queries to be viewed on the screen.  Keeping in view these outputs, the format for the output is taken from the outputs, which are currently being obtained after manual processing.  The standard printer is to be used as output media for hard copies.

**INPUT DESIGN**

Input design is a part of overall system design.  The main objective during the input design is as given below:

         To produce a cost-effective method of input.

         To achive the highest possible level of accuracy.

         To ensure that the input is acceptable and understood by the user.

**INPUT STAGES:**

The main input stages can be listed as below:

         Data recording

         Data transcription

         Data conversion

         Data verification

         Data control

         Data transmission

         Data validation

         Data correction

**INPUT TYPES:**

It is necessary to determine the various types of inputs.  Inputs can be categorized as follows:

         External inputs, which are prime inputs for the system.

         Internal inputs, which are user communications with the system.

         Operational, which are computer department’s communications to the system?

         Interactive, which are inputs entered during a dialogue.

**INPUT MEDIA:**

At this stage choice has to be made about the input media.  To conclude about the input media consideration has to be given to;

         Type of input

         Flexibility of format

         Speed

         Accuracy

         Verification methods

         Rejection rates

         Ease of correction

         Storage and handling requirements

         Security

         Easy to use

         Portability

Keeping in view the above description of the input types and input media, it can be said that most of the inputs are of the form of internal and interactive.  As

Input data is to be the directly keyed in by the user, the keyboard can be considered to be the most suitable input device.

**ERROR AVOIDANCE**

At this stage care is to be taken to ensure that input data remains accurate form the stage at which it is recorded upto the stage in which the data is accepted by the system.  This can be achieved only by means of careful control each time the data is handled.

**ERROR DETECTION**

Even though every effort is make to avoid the occurrence of errors, still a small proportion of errors is always likely to occur, these types of errors can be discovered by using validations to check the input data.

**DATA VALIDATION**

Procedures are designed to detect errors in data at a lower level of detail.  Data validations have been included in the system in almost every area where there is a possibility for the user to commit errors.  The system will not accept invalid data.  Whenever an invalid data is keyed in, the system immediately prompts the user and the user has to again key in the data and the system will accept the data only if the data is correct.  Validations have been included where necessary.

The system is designed to be a user friendly one.  In other words the system has been designed to communicate effectively with the user.  The system has been designed with pop up menus.

**USER INTERFACE DESIGN**

It is essential to consult the system users and discuss their needs while designing the user interface:

**USER INTERFACE SYSTEMS CAN BE BROADLY CLASIFIED AS:**

1.   User initiated interface the user is in charge, controlling the progress of the user/computer dialogue.  In the computer-initiated interface, the computer selects the next stage in the interaction.

2.   Computer initiated interfaces

In the computer initiated interfaces the computer guides the progress of the user/computer dialogue.  Information is displayed and the user response of the computer takes action or displays further information.

**USER\_INITIATED INTERGFACES**

User initiated interfaces fall into tow approximate classes:

1.   Command driven interfaces: In this type of interface the user inputs commands or queries which are interpreted by the computer.

2.   Forms oriented interface: The user calls up an image of the form to his/her screen and fills in the form.  The forms oriented interface is chosen because it is the best choice.

**COMPUTER-INITIATED INTERFACES**

The following computer – initiated interfaces were used:

1.   The menu system for the user is presented with a list of alternatives and the user chooses one; of alternatives.

2.   Questions – answer type dialog system where the computer asks question and takes action based on the basis of the users reply.

Right from the start the system is going to be menu driven, the opening menu displays the available options.  Choosing one option gives another popup menu with more options.  In this way every option leads the users to data entry form where the user can key in the data.

**ERROR MESSAGE DESIGN:**

The design of error messages is an important part of the user interface design.  As user is bound to commit some errors or other while designing a system the system should be designed to be helpful by providing the user with information regarding the error he/she has committed.

This application must be able to produce output at different modules for different inputs.

**4.2. PERFORMANCE REQUIREMENTS**

 Performance is measured in terms of the output provided by the application.

Requirement specification plays an important part in the analysis of a system. Only when the requirement specifications are properly given, it is possible to design a system, which will fit into required environment.  It rests largely in the part of the users of the existing system to give the requirement specifications because they are the people who finally use the system.  This is because the requirements have to be known during the initial stages so that the system can be designed according to those requirements.  It is very difficult to change the system once it has been designed and on the other hand designing a system, which does not cater to the requirements of the user, is of no use.

The requirement specification for any system can be broadly stated as given below:

         The system should be able to interface with the existing system

         The system should be accurate

         The system should be better than the existing system

The existing system is completely dependent on the user to perform all the duties.

**SYSTEM DESIGN - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

**6.1. INTRODUCTION**

Software design sits at the technical kernel of the software engineering process and is applied regardless of the development paradigm and area of application. Design is the first step in the development phase for any engineered product or system. The designer’s goal is to produce a model or representation of an entity that will later be built. Beginning, once system requirement have been specified and analyzed, system design is the first of the three technical activities -design, code and test that is required to build and verify software.

The importance can be stated with a single word “Quality”. Design is the place where quality is fostered in software development. Design provides us with representations of software that can assess for quality. Design is the only way that we can accurately translate a customer’s view into a finished software product or system. Software design serves as a foundation for all the software engineering steps that follow. Without a strong design we risk building an unstable system – one that will be difficult to test, one whose quality cannot be assessed until the last stage.

During design, progressive refinement of data structure, program structure, and procedural details are developed reviewed and documented. System design can be viewed from either technical or project management perspective. From the technical point of view, design is comprised of four activities – architectural design, data structure design, interface design and procedural design.

**6.3. NORMALIZATION**

It is a process of converting a relation to a standard form.  The process is used to handle the problems that can arise due to data redundancy i.e. repetition of data in the database, maintain data integrity as well as handling problems that can arise due to insertion, updation, deletion anomalies.

Decomposing is the process of splitting relations into multiple relations to eliminate anomalies and maintain anomalies and maintain data integrity.  To do this we use normal forms or rules for structuring relation.

**Insertion anomaly**: Inability to add data to the database due to absence of other data.

**Deletion anomaly**: Unintended loss of data due to deletion of other data.

**Update anomaly**: Data inconsistency resulting from data redundancy and partial update

**Normal Forms**:  These are the rules for structuring relations that eliminate anomalies.

**FIRST NORMAL FORM**:

          A relation is said to be in first normal form if the values in the relation are atomic for every attribute in the relation.  By this we mean simply that no attribute value can be a set of values or, as it is sometimes expressed, a repeating group.

**SECOND NORMAL FORM**:

          A relation is said to be in second Normal form is it is in first normal form and it should satisfy any one of the following rules.

1)   Primary key is a not a composite primary key

2)   No non key attributes are present

3)   Every non key attribute is fully functionally dependent on full set of primary key.

**THIRD NORMAL FORM**:

A relation is said to be in third normal form if their exits no transitive dependencies.

**Transitive Dependency**:  If two non key attributes depend on each other as well as on the primary key then they are said to be transitively dependent.

          The above normalization principles were applied to decompose the data in multiple tables thereby making the data to be maintained in a consistent state.

**6.4. E – R DIAGRAMS**

         **The relation upon the system is structure through a conceptual ER-Diagram, which not only specifics the existential entities but also the standard relations through which the system exists and the cardinalities that are necessary for the system state to continue.**

         **The entity Relationship Diagram (ERD) depicts the relationship between the data objects. The ERD is the notation that is used to conduct the date modeling activity the attributes of each data object noted is the ERD can be described resign a data object descriptions.**

         **The set of primary components that are identified by the ERD are**

 **Data object** **Relationships**

 **Attributes** **Various types of indicators.**

**The primary purpose of the ERD is to represent data objects and their relationships.**

**6.4. DATA FLOW DIAGRAMS - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

A data flow diagram is graphical tool used to describe and analyze movement of data through a system.  These are the central tool and the basis from which the other components are developed.  The transformation of data from input to output, through processed, may be described logically and independently of physical components associated with the system.  These are known as the logical data flow diagrams.  The physical data flow diagrams show the actual implements and movement of data between people, departments and workstations.  A full description of a system actually consists of a set of data flow diagrams.  Using two familiar notations Yourdon, Gane and Sarson notation develops the data flow diagrams. Each component in a DFD is labeled with a descriptive name.  Process is further identified with a number that will be used for identification purpose.  The development of DFD’S is done in several levels.  Each process in lower level diagrams can be broken down into a more detailed DFD in the next level.  The lop-level diagram is often called context diagram. It consists a single process bit, which plays vital role in studying the current system.  The process in the context level diagram is exploded into other process at the first level DFD.

The idea behind the explosion of a process into more process is that understanding at one level of detail is exploded into greater detail at the next level.  This is done until further explosion is necessary and an adequate amount of detail is described for analyst to understand the process.

        Larry Constantine first developed the DFD as a way of expressing system requirements in a graphical from, this lead to the modular design.

        A DFD is also known as a “bubble Chart” has the purpose of clarifying system requirements and identifying major transformations that will become programs in system design.  So it is the starting point of the design to the lowest level of detail.  A DFD consists of a series of bubbles joined by data flows in the system.

**DFD SYMBOLS:**

In the DFD, there are four symbols

1.   A square defines a source(originator) or destination of system data

2.   An arrow identifies data flow.  It is the pipeline through which the information flows

3.   A circle or a bubble represents a process that transforms incoming data flow into outgoing data flows.

4.   An open rectangle is a data store, data at rest or a temporary repository of data

**CONSTRUCTING A DFD:**

Several rules of thumb are used in drawing DFD’S:

1.   Process should be named and numbered for an easy reference.  Each name should be representative of the process.

2.   The direction of flow is from top to bottom and from left to right.  Data traditionally flow from source to the destination although they may flow back to the source.  One way to indicate this is to draw long flow line back to a source.  An alternative way is to repeat the source symbol as a destination.  Since it is used more than once in the DFD it is marked with a short diagonal.

3.   When a process is exploded into lower level details, they are numbered.

4.   The names of data stores and destinations are written in capital letters. Process and dataflow names have the first letter of each work capitalized

A DFD typically shows the minimum contents of data store.  Each data store should contain all the data elements that flow in and out.

Questionnaires should contain all the data elements that flow in and out.  Missing interfaces redundancies and like is then accounted for often through interviews.

**SAILENT FEATURES OF DFD’S**

1.   The DFD shows flow of data, not of control loops and decision are controlled considerations do not appear on a DFD.

2.   The DFD does not indicate the time factor involved in any process whether the dataflow take place daily, weekly, monthly or yearly.

3.   The sequence of events is not brought out on the DFD.

**TYPES OF DATA FLOW DIAGRAMS**

1.   Current Physical

2.   Current Logical

3.   New Logical

4.   New Physical

**CURRENT PHYSICAL:**

        In Current Physical DFD proecess label include the name of people or their positions or the names of computer systems that might provide some of the overall system-processing label includes an identification of the technology used to process the data.  Similarly data flows and data stores are often labels with the names of the actual physical media on which data are stored such as file folders, computer files, business forms or computer tapes.

**CURRENT LOGICAL:**

        The physical aspects at the system are removed as mush as possible so that the current system is reduced to its essence to the data and the processors that transform them regardless of actual physical form.

**NEW LOGICAL**:

        This is exactly like a current logical model if the user were completely happy with he user were completely happy with the functionality of the current system but had problems with how it was implemented typically through the new logical model will differ from current logical model while having additional functions, absolute function removal and inefficient flows recognized.

**NEW PHYSICAL:**

The new physical represents only the physical implementation of the new system.

**RULES GOVERNING THE DFD’S**

**PROCESS**

1)   No process can have only outputs.

2)   No process can have only inputs.  If an object has only inputs than it must be a sink.

3)   A process has a verb phrase label.

**DATA STORE**

1)   Data cannot move directly from one data store to another data store, a process must move data.

2)   Data cannot move directly from an outside source to a data store, a process, which receives, must move data from the source and place the data into data store

3)   A data store has a noun phrase label.

**SOURCE OR SINK**

The origin and /or destination of data.

1)   Data cannot move direly from a source to sink it must be moved by a process

2)   A source and /or sink has a noun phrase land

**DATA FLOW**

1)   A Data Flow has only one direction of flow between symbols.  It may flow in both directions between a process and a data store to show a read before an update.  The later is usually indicated however by two separate arrows since these happen at different type.

2)   A join in DFD means that exactly the same data comes from any of two or more different processes data store or sink to a common location.

3)   A data flow cannot go directly back to the same process it leads.  There must be atleast one other process that handles the data flow produce some other data flow returns the original data into the beginning process.

4)   A Data flow to a data store means update (delete or change).

5)   A data Flow from a data store means retrieve or use.

A data flow has a noun phrase label more than one data flow noun phrase can appear on a single arrow as long as all of the flows on the same arrow move together as one package.

**SYSTEM TESTING AND IMPLEMENTATION - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

**8.1. INTRODUCTION**

Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. In fact, testing is the one step in the software engineering process that could be viewed as destructive rather than constructive.

A strategy for software testing integrates software test case design methods into a well-planned series of steps that result in the successful construction of software. Testing is the set of activities that can be planned in advance and conducted systematically. The underlying motivation of program testing is to affirm software quality with methods that can economically and effectively apply to both strategic to both large and small-scale systems.

**8.2. STRATEGIC APPROACH TO SOFTWARE TESTING**

The software engineering process can be viewed as a spiral. Initially system engineering defines the role of software and leads to software requirement analysis where the information domain, functions, behavior, performance, constraints and validation criteria for software are established. Moving inward along the spiral, we come to design and finally to coding. To develop computer software we spiral in along streamlines that decrease the level of abstraction on each turn.

A strategy for software testing may also be viewed in the context of the spiral. Unit testing begins at the vertex of the spiral and concentrates on each unit of the software as implemented in source code. Testing progress by moving outward along the spiral to integration testing, where the focus is on the design and the construction of the software architecture. Talking another turn on outward on the spiral we encounter validation testing where requirements established as part of software requirements analysis are validated against the software that has been constructed. Finally we arrive at system testing, where the software and other system elements are tested as a whole.

**8.3. Unit Testing**

Unit testing focuses verification effort on the smallest unit of software design, the module. The unit testing we have is white box oriented and some modules the steps are conducted in parallel.

**1. WHITE BOX TESTING**

This type of testing ensures that

         All independent paths have been exercised at least once

         All logical decisions have been exercised on their true and false sides

         All loops are executed at their boundaries and within their operational bounds

         All internal data structures have been exercised to assure their validity.

To follow the concept of white box testing we have tested each form .we have created independently to verify that Data flow is correct, All conditions are exercised to check their validity, All loops are executed on their boundaries.

**2. BASIC PATH TESTING**

Established technique of flow graph with Cyclomatic complexity was used to derive test cases for all the functions. The main steps in deriving test cases were:

Use the design of the code and draw correspondent flow graph.

Determine the Cyclomatic complexity of resultant flow graph, using formula:

V(G)=E-N+2 or

V(G)=P+1 or

V(G)=Number Of Regions

Where V(G) is Cyclomatic complexity,

E is the number of edges,

N is the number of flow graph nodes,

P is the number of predicate nodes.

Determine the basis of set of linearly independent paths.

**3. CONDITIONAL TESTING**

In this part of the testing each of the conditions were tested to both true and false aspects. And all the resulting paths were tested. So that each path that may be generate on particular condition is traced to uncover any possible errors.

**4. DATA FLOW TESTING**

This type of testing selects the path of the program according to the location of definition and use of variables. This kind of testing was used only when some local variable were declared. The *definition-use chain* method was used in this type of testing. These were particularly useful in nested statements.

**5. LOOP TESTING**

In this type of testing all the loops are tested to all the limits possible. The following exercise was adopted for all loops:

         All the loops were tested at their limits, just above them and just below them.

         All the loops were skipped at least once.

         For nested loops test the inner most loop first and then work outwards.

         For concatenated loops the values of dependent loops were set with the help of connected loop.

         Unstructured loops were resolved into nested loops or concatenated loops and tested as above.

Each unit has been separately tested by the development team itself and all the input have been validated.

**Chapter 9**

**System Security - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

**9.1. Introduction**

The protection of computer based resources that includes hardware, software, data, procedures and people against unauthorized use or natural

Disaster is known as System Security.

System Security can be divided into four related issues:

Security

Integrity

Privacy

Confidentiality

**SYSTEM SECURITY** refers to the technical innovations and procedures applied to the hardware and operation systems to protect against deliberate or accidental damage from a defined threat.

**DATA SECURITY** is the protection of data from loss, disclosure, modification and destruction.

**SYSTEM INTEGRITY** refers to the power functioning of hardware and programs, appropriate physical security and safety against external threats such as eavesdropping and wiretapping.

**PRIVACY** defines the rights of the user or organizations to determine what information they are willing to share with or accept from others and how the organization can be protected against unwelcome, unfair or excessive dissemination of information about it.

**CONFIDENTIALITY** is a special status given to sensitive information in a database to minimize the possible invasion of privacy. It is an attribute of information that characterizes its need for protection.

**9.2. SECURITY IN SOFTWARE**

System security refers to various validations on data in form of checks and controls to avoid the system from failing. It is always important to ensure that only valid data is entered and only valid operations are performed on the system. The system employees two types of checks and controls:

**CLIENT SIDE VALIDATION**

Various client side validations are used to ensure on the client side that only valid data is entered. Client side validation saves server time and load to handle invalid data. Some checks imposed are:

         VBScript in used to ensure those required fields are filled with suitable data only. Maximum lengths of the fields of the forms are appropriately defined.

         Forms cannot be submitted without filling up the mandatory data so that manual mistakes of submitting empty fields that are mandatory can be sorted out at the client side to save the server time and load.

         Tab-indexes are set according to the need and taking into account the ease of user while working with the system.

**SERVER SIDE VALIDATION**

Some checks cannot be applied at client side. Server side checks are necessary to save the system from failing and intimating the user that some invalid operation has been performed or the performed operation is restricted. Some of the server side checks imposed is:

         Server side constraint has been imposed to check for the validity of primary key and foreign key. A primary key value cannot be duplicated. Any attempt to duplicate the primary value results into a message intimating the user about those values through the forms using foreign key can be updated only of the existing foreign key values.

         User is intimating through appropriate messages about the successful operations or exceptions occurring at server side.

         Various Access Control Mechanisms have been built so that one user may not agitate upon another. Access permissions to various types of users are controlled according to the organizational structure. Only permitted users can log on to the system and can have access according to their category. User- name, passwords and permissions are controlled o the server side.

         Using server side validation, constraints on several restricted operations are imposed.

**Chapter 10**

**CONCLUSION - ONLINE JOB PORTAL MANAGEMENT SYSTEM**

It has been a great pleasure for me to work on this exciting and challenging project. This project proved good for me as it provided practical knowledge of not only programming in ASP.NET and VB.NET web based application and no some extent Windows Application and SQL Server, but also about all handling procedure related with **“PROJECT NAME”.**It also provides knowledge about the latest technology used in developing web enabled application and client server technology that will be great demand in future. This will provide better opportunities and guidance in future in developing projects independently.

**BENEFITS:**

The project is identified by the merits of the system offered to the user. The merits of this project are as follows: -

         It’s a web-enabled project.

         This project offers user to enter the data through simple and interactive forms. This is very helpful for the client to enter the desired information through so much simplicity.

         The user is mainly more concerned about the validity of the data, whatever he is entering. There are checks on every stages of any new creation, data entry or updation so that the user cannot enter the invalid data, which can create problems at later date.

         Sometimes the user finds in the later stages of using project that he needs to update some of the information that he entered earlier. There are options for him by which he can update the records. Moreover there is restriction for his that he cannot change the primary data field. This keeps the validity of the data to longer extent.

         User is provided the option of monitoring the records he entered earlier. He can see the desired records with the variety of options provided by him.

         From every part of the project the user is provided with the links through framing so that he can go from one option of the project to other as per the requirement. This is bound to be simple and very friendly as per the user is concerned. That is, we can sat that the project is user friendly which is one of the primary concerns of any good project.

         Data storage and retrieval will become faster and easier to maintain because data is stored in a systematic manner and in a single database.

         Decision making process would be greatly enhanced because of faster processing of information since data collection from information available on computer takes much less time then manual system.

         Allocating of sample results becomes much faster because at a time the user can see the records of last years.

         Easier and faster data transfer through latest technology associated with the computer and communication.

         Through these features it will increase the efficiency, accuracy and transparency,

**LIMITATIONS:**

         The size of the database increases day-by-day, increasing the load on the database back up and data maintenance activity.

         Training for simple computer operations is necessary for the   users working on the system.

**Chapter 11**

**FUTURE IMPROVEMENT - JOB PORTAL WEBSITE MANAGEMENT SYSTEM**

This System being web-based and an undertaking of Cyber Security Division, needs to be thoroughly tested to find out any security gaps.

A console for the data centre may be made available to allow the personnel to monitor on the sites which were cleared for hosting during a particular period.

Moreover, it is just a beginning; further the system may be utilized in various other types of auditing operation viz. Network auditing or similar process/workflow based applications...