LOGISTICS-DIRECTORY.COM

PROJECT WORK DONE AT

DIMENSIONS CYBERTECH INDIA (P) LIMITED, TRIVANDRUM

PROJECT REPORT P-1004

SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF
MASTER OF COMPUTER APPLICATIONS
OF BHARATHIAR UNIVERSITY, COIMBATORE.

SUBMITTED BY

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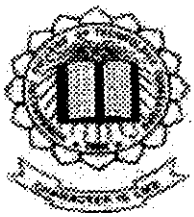
APRIL 2003

Certificates



KUMARAGURU COLLEGE OF TECHNOLOGY

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CERTIFICATE

This is to certify that the project work entitled

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Done by

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Submitted in partial fulfillment of the requirements for the award of the degree of

Master of Computer Applications

of

Bharathiar University.

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Submitted to University Examination held on 16-04-2003

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CERTIFICATE

This is to certify that **Mr Pleasant P Mampilly,** final year student of MCA from Kumaraguru College of Technology, Coimbatore, affiliated to the Bharathiar University has successfully completed a four months project titled **"logistics-directory.com"** under the guidance of the undersigned starting from December 2002 in Dimensions Cybertech (I) Pvt. Ltd., Technopark, Trivandrum.

It is also certified that this report carries a bonafide account of project work carried out under my guidance and the matter embodied in this project has not been submitted to any other University by the student for the fulfilment of the requirement of any course of study.

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Declaration

DECLARATION

I hereby declare that the project entitled ***'Logistics-directory.com'*** for Dimensions Cybertech India (P) limited, submitted to **Kumaraguru college of technology, Coimbatore** affiliated to **Bharathiar University** as the project work of **Master of Computer Applications Degree**, is a record of original work done by me under the supervision and guidance of **Mr. Premanand S.K., Project Manager (Business Applications), Dimensions Cybertech India (P) limited, Technopark,Trivandrum** and **Ms.D.Chandrakala,M.E., Senior Lecturer, Department of Computer Science and Engineering, Kumaraguru college of technology, Coimbatore** and this project work has not found the basis for the award of any Degree/Diploma/Associateship/Fellowship or similar title to any candidate of any university.

Place:Coimbatore

Signature of candidate

Date: 16-04-2003

(PLEASANT.P.MAMPILLY)

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I express my warm thanks and gratitude to my parents, friends and well wishers who have directly and indirectly contributed a lot towards this project.

PLEASANT.P.MAMPILLY

Synopsis

SYNOPSIS

Logistics can be defined as design and operation of the physical, managerial, financial and informational systems needed to allow goods to overcome time and space. It involves the integration of information, transportation, inventory, warehousing, material handling and packaging.

A Portal is best described as "something you go through to go somewhere else". Put in another way it is a network specific software that lets users - through a single web site - access a range of information, that can exist anywhere.

Our project is to develop a portal titled http://www.logistics-directory.com. As the name implies the portal is dedicated to provide information about all the aspects pertaining to the vast area of logistics. Logistics can be viewed as a logical extension of transportation and related areas to achieve efficient and effective goods distribution system and few areas of business operations involve the complexity or span the geography typical of logistics. The portal is mainly intended to provide an open, objective and comprehensive listing of all the major organizations and companies providing logistics and related services. It should also incorporate many additional features like provisions for posting news releases, maintaining discussion groups, provisions for advertisement by sending an image file, a job portal, where registered members of the portal can post vacancies and send their resumes also.

The main characteristics of the portal includes Secure access and authorized connectivity - the identity of a user is authenticated before allowing access, and each user is associated with a set of resources that can be accessed by that user. It supports abstractions that provide the ability to pull content from a variety of sources and aggregate and personalize it into an output format

Another important feature is the search engine infrastructure to enable content to be organized and accessed from the portal. It provides access to commonly needed applications for accessing services such as calendar, and file storage. The portal is having an administration interface enabling delegated and remote administration.

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Introduction

1 INTRODUCTION

1.1 OVERVIEW

In the past few years the internet has become increasingly commercialized into a worldwide information super network. It has turned into a business and marketing tool having the competitive edge in providing better customer service. The most widely used part of the internet is the world wide web (or www or w3), which is a global collection of pages and hyperlinks on the internet. Together they have created a technological revolution, which after making its tremendous impact felt in the sphere of science and technology, is swiftly permeating into our society to bring about dramatic changes in the way we live and work. In today's fast changing business environment, the effective use of information and technology behind it is critical. Information has acquired an added dimension with the status of global currency. It is the information that will keep the vitality of the economy in future. against this backdrop, was born a new concept called "portals" in the year 1998 which soon became the buzzword in the internet community.

A Portal is best described as "something you go through to go somewhere else". Put in another way it is network specific software that lets users - through a single web site - access a range of information that can exist anywhere. Portals gather a variety of useful information resources into a single, one-stop web page, helping the user to avoid being overwhelmed by "info glut" or feeling lost on the web. They can be seen as gateways to the Internet.

A Portal includes various analytical and management software such as data warehousing and document management, which allows the intelligent manipulation of information, tailored to end users needs. But since no two people have the same interests, portals allow users to customize their information sources by selecting and viewing only the information they find personally useful. Some portals also let us personalize them by including private information such as stock portfolio or checking account balance.

Thus a portal enables a joint, personalized access to data, expertise, and applications. The basic idea is to collect information from different sources and

create a single point of access to information - a library of categorized and personalized content. With the turning away from completely self-referential web pages and the promise of a single platform, which allows the integration of different data types and applications adjusted to the specific needs of each single user, the demand for portals is rapidly increasing.

Our project is to develop a portal titled http://www.logistics-directory.com/ in association with Dimensions Cybertech India (P) Ltd, a software venture located at Technopark, Trivandrum. As the name implies the portal is dedicated to provide information about all the aspects pertaining to the vast area of logistics. Logistics can be viewed as a logical extension of transportation and related areas to achieve efficient and effective goods distribution system and few areas of business operations involve the complexity or span the geography typical of logistics. This portal mainly intends to provide an open, objective and comprehensive listing of all the major organizations and companies providing logistics and related services. It also aims to provide the user with any or all information pertaining to logistics in the most rational manner.

1.1.1 The Birth Of The Portal Concept

Any technology that allows both prolific, independent creation of information and easy access to it will quickly generate inefficiencies for users trying to find information for specific needs. Mostly we require information content to be managed, coordinated, and communicated in predictable and relatively efficient ways. Certain kinds of information are required for directed activity. Information becomes old and out of date. Some information requires approvals and validation. All these led to the concept of Portals, which offers a new approach for delivering information on demand.

Initially, the term portal was used to refer to well-known Internet search and navigation sites that provided a starting point for web consumers to explore and access information on the World Wide Web. The original portals were search engines. The initial value proposition was to offer a full text index of document

content and a chance to take advantage of the hyper linking capabilities built into the web protocols.

Internet navigation sites, such as Yahoo!, Excite, Info seek, AOL, MSN, Netscape Netcenter and Lycos, represented the next phase of portal development. The term "Internet portal" (or "web portal") began to be used to describe these mega-sites because many users used them as a "starting point" for their web surfing. The term "search engine" had become inadequate to describe the breadth of the offerings, although search and navigation are still pivotal to most people's online experience. Compared to the original Internet search engines, Internet portals offer a more structured, navigable interface. Browsing an organized hierarchy of categories developed by people (rather than computers) who scoured the Internet for relevant and useful Websites is more effective than issuing a keyword search against the entire Web.

While these public Internet portals continue to flourish, the market for portal technology is increasingly focused on the better delivery of corporate information. Portal technology has significantly matured since the public search sites were first built, and has been used to build a diverse range of portal types, including specialized portals, enterprise portals, workspace portals, marketspace portals, knowledge portals etc.

Traditionally, a portal denotes a gate, a door, or entrance. In the context of the World Wide Web, it is the next logical step in the evolution to a digital culture. Web pages are not completely self-referential anymore, but allow for personalization, workflow, notification, knowledge management and groupware, infrastructure functionality, and integration of information and applications. The idea of a portal is to collect information from different sources and create a single point of access to information - a library of categorized and personalized content. It is very much the idea of a personalized filter into the web.

The key characteristic of this technology is its ability to shift control of information flow from the information creators to the information users. If the user has the ability to easily retrieve and view the information when they need it, the

information no longer needs to be sent to them just in case. Publishing can be separated from automatic distribution. As mentioned above, the Portal concept supports distributed information creation and management, so each portion can be updated as it changes. If the proper infrastructure is in place, current information content can be found and accessed when and where it is needed.

Because the concept of portals supports distributed information authoring, publishing and management, it does not require the complexity of the old centralized systems. Information is authored and managed by those who create it, without having to rely on programmers to create data entry and reporting programs. With the new browsers, a user can retrieve and view information from distributed sources and systems using a simple, uniform, interface without having to know anything about the servers they are accessing. These simple aspects of the technology will revolutionize our information infrastructures, and change our organizations

Portals also provide a powerful "search and explore capability" that will allow users to follow their interests, independently or with expert guidance, across the widest possible range of subjects. They can be considered as a standalone knowledge server that integrates the key components required for a strategic knowledge management infrastructure. They thus systematically catalog expertise and content. and personalize and organize knowledge for individuals and communities.

1.2 organization profile

Technopark, located at trivandrum, the capital city of kerala is india's first it park. Spread over 156 acres, and about 1.5 million sq. ft. of built-up space, technopark hosts over 55 it and ites companies employing over 5000 it professionals. It offers a unique confluence of advantages, not found elsewhere in comparable destinations in India - robust and failsafe physical infrastructure, power and data connectivity; highly trained technical manpower; most flexible regulatory framework; highest incentive and the best law and order environment in India.

Dimensions Cybertech India Private Limited, located at TECHNOPARK is a group company under the umbrella of the Trinity group of companies, Dubai, which is having diversified operations worldwide. The group has its presence in the Middle East, Europe, and India etc. and is into Shipping, Steel, Finance, and Construction etc. The holding company has international tie ups with firms such as ABX, the shipping subsidiary of Belgian Railways; Saima of Italy etc.

Being a growth-oriented software venture the organization lays emphasis on both scientific as well as web based business applications. The main endeavor is to empower Small to Medium Enterprises (SME) with secure, innovative IT solutions at affordable costs globally. With the internet getting better and better every day, subscription costs nose diving and approaching zero, connectivity going up, Dimensions Cybertech India Private Ltd sees the future in net based applications and solutions.

Technology development at Dimensions Cybertech India Pvt., Ltd is achieved through conceptualization, design and development of specific application frameworks. The principle behind the application framework methodology is to enable the company to provide their customers the best and effective IT solution using the appropriate technology expertise. At Dimensions quality is paramount, which is reflected in their work culture and early adoption of quality systems in the organization. ISO 9000 implementation is under way, and their commitment to quality could further be gauged from the heavy investments in CASE tools, software Configuration Management, documenting and testing tools that are implemented at their development center.

The team of professionals at Dimensions Cybertech India Pvt., Ltd., is proficient in various software platforms with over 200 man-years of IT experience. With offices in India and abroad, the total team size is around 50. Instrumentation, Academia, International Trading, Shipping and even Military. With the network of in-house expertise spread across the international borders over the Internet, their Knowledge Management (KM) is optimal and highly conducive to exceptional quality of delivery.

The team is led by Mr. Binu Jacob, an IIT Delhi technocrat, with around 10 years of experience in diverse fields such as Military, Telecom & IT Quality Assurance

The top management team includes a project manager for business applications (PM), a chief technical officer (CTO) for managing the development of scientific applications, a Quality Control Manager to head the testing and quality control team, a Deputy General Manager for business operations, a Marketing manager for leading the marketing team and a HR manager. Besides this there are separate project leaders for each project that is being undertaken, who guide the development team and report to the PM or the CTO. The development teams consist of system analysts, senior software engineers and programmers.

System Study and Analysis

2 SYSTEM STUDY AND ANALYSIS

2.1 SYSTEM STUDY

System Analysis is a process of examination of various requirements, objectives and problems that are involved in developing a system along with the identification of cost estimates, benefits and time requirements for tentative solutions. It is concerned with investigating, analyzing, designing and evaluating the proposed system. It should be ensured that the design of the system satisfies the organizational objectives, promotes integration of activities, facilitates control and has flexibility.

Our first step was to gain some domain knowledge by going through various subject related books and journals like the International Transport Journal and other logistics related magazines. We also made a thorough review of the various existing websites related to logistics. Our project manager also provided the requirements of the client to us.

2.1.1 ABOUT LOGISTICS

Logistics can be defined as design and operation of the physical, managerial, financial and informational systems needed to allow goods to overcome time and space. It involves the integration of information, transportation, inventory, warehousing, material handling and packaging. It is through the logistical process that materials flow into the vast manufacturing capacity of an industrial nation and products are distributed through marketing channels to customers. The key actors involved in ensuring an efficient and effective logistics system are shippers (users of logistics), suppliers (of logistics services) which may include carriers (rail, road, air, water, pipeline), warehouse providers, Freight forwarders and terminal operators (ports, stevedores etc) and finally the Government with all its import export regulations, Excise duties and distribution policies.

The logistic service provider organizations require the support and cooperation of many other businesses to complete their overall logistical process. Such cooperation unites the firms in terms of common goals, policies and programs. From the perspective of total supply chain, efficiency is improved by eliminating duplication and waste. However cross-organizational co-ordination requires joint planning and relationship management and a good communication system.

Like all other areas logistics and supply chain management have been influenced by developments in information technology. (IT) and systems. The two major reasons for use of information technology in this area are the spatial spread of manufacturing and service activities and the time element in planning. both of which require data intensive decision making. To make such decision making possible, there has to be efficient, reliable and timely data capture, data availability at various locations and the case with which it can be manipulated for the purpose of decision-making. Besides these, IT applications such as Transaction Processing systems (TPS), Management Information systems (MIS), Decision Support systems and ERP have large scope in this area.

Progressive logistics firms recognize that they must produce and distribute products worldwide to achieve substantial long-term success. To gain and maintain competitive superiority and achieve maximum manufacturing economies of scale, it is necessary to capitalize on the inherent advantages available from all nations within which a firm operates. Such a global perspective has created a need for development of a logic to guide worldwide logistical management. This logistical logic must be capable of controlling the complex process of asset deployment within and between large number of countries that have different laws, cultures, levels of economic development and national aspiration.

The different areas of work that come under logistics like transportation, inventory, warehousing, material handling and packaging provide a variety of stimulating jobs. These jobs combine to make overall logistics management a challenging and rewarding career. Because of the strategic importance of logistical performance, an increasing number of successful logistics executives

are being promoted to senior management and there are many educational institutions and universities offering courses related to logistics management.

2.1.2 REQUIRED FEATURES FOR A PORTAL

Portals need to offer information, applications and services in one place. They are primarily organizing tools. They collect information in one place, and provide access to information, functions and services that are relevant to one person's work or personal interests. Access may include that users enter applications, change data, and return to the portal, which now reflects the changes made. There should not only be the one-way relation of "entering" something, as the term "portal" implies. The portal should ideally also a be "state indicator" - allowing feedback into the portal as well.

The various information approaches in Web portals show that the users of Web portals vary immensely. Whereas the users of traditional software are a fairly homogenous group -- well-trained professionals, mainly completing regular tasks of some complexity for an employer -- the users of Web portals come from all walks of life, do not all have (or necessarily need) a business background, perform less frequent and more varied tasks. Another main difference is that the user of traditional application software does not usually have a say in the software he or she uses: The users of Web portals have much more flexibility. Good Web portals have a high level of personalization, so that users can choose from a range of applications and services on offer. If the user doesn't like the application, he or she simply switches to a better one. These differences indicate that each Web portal requires a separate solution depending on the target group.

One of the most important aspects of a portal is that it should provide secure access and authorized connectivity - the identity of a user should be authenticated before allowing access, and each user would be associated with a set of resources that can be accessed by that user. Since the application is to be completely Internet based, security is given utmost importance. The users will have to supply a valid User Name and Password using a Login option and access would be provided only after the system validates it with the information

stored in the database. Provisions must also be provided for a user for registration as a member of the portal.

The great benefit of a portal is its ability to bring together specialized functions and aggregated information from a number of different sources and put it all into a unified context; if it's done right, the whole becomes much more than the sum of its parts, encouraging comparison and synthesis, making appropriate tools immediately available, and intelligently connecting them all so that they function together in service of a single user goal.

When considering the organization and structure of portals, the content structures may be large, and often deeply nested (hierarchical) Content structures may form an "unbalanced" tree; that is, there may be deeply nested content areas together with rather "shallow" content areas) design. Hierarchical and network structures should be simplified or broken into pieces (that is, the tree structure is only partially revealed to the users). Hierarchical and network structures should be hidden as much as possible from the user Task needs to be integrated into the portal structures.

2.2 EXISTING SYSTEM

The existing system is the various portals available in the world. But those portals are providing only a very limited number of services. The payment for accessing services is also very high. The payment options available are not so much flexible also. The are not providing the facilities like file uploading for advertisement, Job searching facilities, Discussion forum facilities...etc. Only few are providing the facilities for the universal login for administrator to perform the effective monitoring and controlling of the portal.

2.3 FEATURES OF THE PROPOSED PORTAL

Taking into consideration all the above aspects we decided to include the following features into our portal.

It incorporates many additional features like provisions for posting news releases, maintaining discussion groups, provisions for advertising, a job portal etc. The portal among other things will have the following main characteristics:

- Secure access and authorized connectivity - the identity of a user is authenticated before allowing access, and each user is associated with a set of resources that can be accessed by that user.
- Support for abstractions that provide the ability to pull content from a variety of sources and aggregate and personalize it into an output format suitable for the user's device.
- A search engine infrastructure to enable content to be organized and accessed from the portal.
- Access to commonly needed applications for accessing services such as calendar, and file storage.
- An administration interface enabling delegated and remote administration.

2.4 REQUIREMENTS OF THE SYSTEM

The portal should provide a directory listing of all the various organizations providing the logistics related services across the world. These listings could be categorized into the following seventeen categories.

- Air/Aviation
- Sea/Maritime
- Rail
- Road/Trucking
- Warehousing
- Freight forwarding

- Distribution
- Customs Brokerage
- Supply Chain Management
- Academic institutions
- Associations
- Insurance/Finance
- Journals/Papers/Book catalogs
- Consultancy Service Providers
- Software service providers
- Integrated logistics service providers

There would be a **Listing Company** option that will enable us to make a URL submission with all the relevant details and descriptions and facilities for making online payment. An **Update Listing** option would bring into effect any modifications that have to be applied to the listed URL or the description.

Advertisements would be a major source of revenue for the portal. So there should be an **Advertising Services** option that would allow us to submit the relevant information and the banner image files and makes payment so as to avail the advertising services offered by the portal.

A **Country Profiles** feature that would include descriptions about the culture, population, geography, import-export regulations, duty structure, and list of major ports and airports in each country would have to be provided.

Typically, portals are organized as huge hierarchical structures with lots of cross-links; these allow for moves that do not follow the hierarchical paths. The static structure is complemented by a **search feature**, which leads users directly to the information or application without having to use the hierarchical navigation tools (maybe, with the intermediate step of browsing a hit list). Care has to be taken, for example, in choosing the category names and in the assignment of content to categories. The search should be easy-to-use and generally available. There should also be means for the user to organize his or her own stuff within the

A **Geosearch facility** that would help us to list all the URLs corresponding to a particular service categorized by the country to which the service provider belongs would have to be provided.

It was also decided that there should be a **Jobs database** feature that would include provisions to search for a specific job vacancy; to post both vacancy available and vacancy wanted ads and also for job seekers to post their resumes.

A portal should provide tools for supporting the communication between the various portal users and the building of online communities. It should offer a platform for information exchange and act as a very efficient communication medium for technical issues. . Examples for communication platforms are Discussion forums, and news releases. These platforms need to be moderated.

Based upon the above requirement it was decided to include a **News Release** feature. That is, Up-to-date information from diverse areas, which change daily or even faster. The news also needs to be stored for future use. There may be news archives, which can be searched, and users should also have the opportunity to save news they are interested in.

Another important aspect of portals is that it should provide means for collaboration, which means to work together with colleagues for a special purpose. People can collaborate: In parallel, for example, on a shared document or by performing one or more steps in a work flow chain. They can work alternatively on a document or process. A **Discussion Forum** is one such example of collaboration. Contributors send mails to the board and ask questions or reply to existing mails; the mails are organized in threads according to topics. Conflicts may arise, if the status of the shared documents or processes is in transparent to the participants. Users should also not interfere with or destroy other users' work. Collaborating people should be informed about the status of a document or a procedure and they should be informed about when it is their turn. Typically an editor watches the discussion board, but rarely edits or deletes

contributions. Contrary to the chat room, a discussion board is an "off-line" discussion.

An **About us** option was also decided to be provided to make the users be aware of the various services offered by the portal and other conditions and terms for membership. The user will also be able to send any suggestions or improvements to be made through E-mail to the portal administrator using the **Feedback** provision.

Thus the main features of the proposed portal are:

- Enables universal login
- Facilitates messaging and notification
- Integration to other systems (Accounting...etc)
- Security
- Access different data
- Publish Content
- Search and navigation
- Information integration (content management)
- Personalization: of data/content, of layout, navigation
- Task management and workflow: The workflow functionality allows the automation of business processes. Thus, as part of a workflow-automated business process, a portal should be able to prompt its users when they have tasks to perform.
- Collaboration and groupware: Knowledge management and groupware ensure that the required information is stored in the right place and in the right mode. By this means the right persons are brought together with the right information
- Integration of applications and business intelligence
- Infrastructure functionality: The infrastructure functionality constitutes the fundamental for the work environment -The runtime infrastructure associated with the portal will have a primary effect on manageability, scalability, security and availability.

Another important feature of a portal is that it should provide means for enabling **delegated and remote administration**. The portal administrator is responsible for defining an overall knowledge management corporate strategy. He has to create content structures based on corporate decisions most likely, he will have to work with the functional expert of an area to put together the structure and views. He has to Implement the content decisions and maintains the content timeliness and accuracy. He has to make sure that the content remains current and accessible, refine structure and content as necessary, and evaluate both direct user feedback and the information from usage statistics to make sure the portal meets the needs of various groups. He has to set up the classification functionality to automatically import content into the appropriate areas and the workflow functionality to automatically post forms-based content into defined structures. He should also have the ability to archive the Website's content.

To facilitate the portal administrator in his functions separate interfaces and mechanisms have to be developed. The most important duties of the portal administrator of the logistics portal are

- News validation and posting of the validated news
- Advertisement image validation and configuring advertising rates
- URL validation Service Rate configuration
- Jobs database management, which includes provisions for adding a new qualification, or certification program to the existing list, deletion of posted resumes and vacancy details after a specific period.
- User account management and payment details processing: Although a separate account department co-ordinates and deals with the entire payment process, the portal administrator will have to maintain the relevant details. He should have access to information such as the amount for each service a user had accessed in a session and the like.
- Deletion of posted resumes, vacancy ads, advertisement files etc after the stipulated amount of time.

For a portal to be successful from a business point of view it should fetch maximum revenue. To achieve this it was necessary to provide flexible

payment options to the users so as to entice as many users as possible. Keeping in view this point it was decided to include provisions by which a user himself could configure the amount he would like to pay for accessing a service provided by the portal. That is there would be a fixed minimum amount for accessing each service and the user could pay any amount above that and access the service as many times as could be possible with the paid amount in a stipulated period of time. Provisions must also be provided by which the administrator could allow discounts to certain users and also reconfigure the service rates when need arises.

Thus one could say that portal design is a hybrid of Web and Application design with a flexibility requirement thrown in to keep things exciting.

Programming Environment

3 PROGRAMMING ENVIRONMENT

3.1 TECHNICAL ARCHITECTURE

The portal is to be designed as a three-tiered application. The configuration includes a web server, an application or business logic server and a database server. A schematic representation of the proposed technical architecture for the portal is given in the figure below.

3.1.1 Client-tier

This is responsible for the presentation of the data, receiving user events and controlling the user interface. The actual business logic would be moved to the application or web server.

3.1.2 Application-server-tier

Business-objects that implement the business rules "live" here and are available to the client-tier. This tier protects the data from direct access by the clients. The object oriented analysis aims in this tier to record and abstract business processes in business-objects. This way it is possible to map out the application-server-tier directly from the CASE tools that support OOA. Further more the term component is also applicable here. Components on the server side can be defined as configurable objects, which can be put together to form new application processes.

3.1.3 Data-server-tier

This tier is responsible for data storage. Besides the widespread relational database systems, existing legacy systems are often reused here. It is important to note that the boundaries between the three tiers are logical. It is quite possible to run all the three tiers on one and the same physical machine. The main point is that the system is neatly structured and that there is a well-planned definition of the software boundaries between the different tiers.

Presentation Layer

Internet

Http Server

JSP

Servlet Container

Java beans

Application Laye

Database

Database Layer

The three-tier approach offers clear separation of user-interface control and data presentation from application logic. Through this separation more clients are able to have access to a wide variety of server applications. The middle tier is multithreaded to manage multiple clients simultaneously. The two most important advantages for client applications are quicker development through the reuse of the pre-built business-logic components and a shorter test phase, because the server components have already been tested.

Re-definition of the storage strategy will not influence the clients. RDBMS offer a certain independence from storage details for the clients. However cases like changing table attributes make it necessary to adapt the client's application. In well-designed systems, the client still accesses the data over a stable and well-designed interface, which incorporates all the storage details.

The authorization of servers is simpler than that of thousands of "untrusted" clients. Data protection and security is simpler to obtain. Therefore critical business processes that work with security sensitive data can be put on the server. Also if bottlenecks in terms of performance occur the server processes can be moved to other servers at runtime and the load are balanced dynamically. Change management will also be easier and faster. It is always easy to exchange a component on the server than to furnish numerous clients with new program versions. It is however compulsory that interfaces remain stable and that old version are still compatible. In addition such components require a high standard of quality control. This is because low quality components can, at worst endanger the functions of a whole set of client applications.

The other advantages that a three-tier architecture gives the middle-tier are that it can accept connections from a wide variety of vendor neutral protocols. (From HTTP to TCP/IP), then hand off the requests to appropriate vendor specific database servers, returning the replies to the appropriate clients. The middle tier can also be programmed with a set of "business rules " that manage the manipulation of data. Business rules could include anything from restricting

access to certain portions of data to making sure that the data is properly formatted before being inserted or updated. It isolates the client application from the database system and frees a company to switch database systems without having to rework the business rules. It also prevents the client from becoming too heavy by centralizing process intensive tasks and abstracting data representation to a higher level.

The components of the technical architecture are as follows:

Architectural Layer	Technology
Presentation Layer	
User Interfaces	HTML
Application Layer	
Web Server	Apache web Server
Database Layer	
Database	Oracle 9i

Other Attributes	Description
Operating System used for development	Windows NT / 2000 / 98
Operating system at the server	Linux
Processor	Pentium III and higher
Processor Speed	1 GHz
RAM capacity	128 MB
Browsers	IE 5 (or above) from Microsoft or Netscape Navigator
Front End	JSP, XML
Scripting Language	Java Script
Clients	Any compatible PC with sufficient processor speed

3.2 ABOUT SOFTWARE

3.2.1 HTML

Html is the lingua franca for publishing hypertext on the World Wide Web. It is a non-proprietary format based upon SGML, (standard generalized mark up language) html is a content-based or structural mark up language, where the codes describe what the contents of the document are. This means that the codes are used to indicate the various parts of the document, such as headings, paragraphs, lists, etc. html organizes its element codes into a hierarchical structure that describes an entire document by its sections and their relationship to the whole. Html allows us to identify each component of a document as a particular piece of information. Those components can then be extracted, searched, or presented in a variety of ways; whichever is appropriate for the particular user.

The html instructions (the mark up indicators) are themselves called tags. Any further words and characters included with the tags are the attributes. These attributes are arguments that pass parameters to the interpreter handling the element. Attributes are used to qualify, or modify, the presentation of specific structural elements of an html document.

Html supports interactive forms. When a user fills out the form and presses a button indicating the form should be "submitted," the information on the form is sent to a server for processing. The server will usually prepare an html document using the information supplied by the user and return it to the client for display. It also supports "hotspots" in pictures, more versatile formatting choices and styles, and formatted lists, as well as several other improvements, such as an e-mail url, so hyperlinks can be made to send e-mail mechanically. For example,

choosing an e-mail address in a portion of hypertext opens a mail application, ready to send e-mail to that address.

Another important concept in HTML is the "Tables " with which the authors can have greater control over structure and layout (e.g., column groups). The ability of designers to recommend column widths allow user agents to display table data incrementally (as it arrives) rather than waiting for the entire table before rendering. Style sheets simplify HTML markup and largely relieve HTML of the responsibilities of presentation. They give both authors and users control over the presentation of documents -- font information, alignment, colors, etc. Style information can be specified for specific elements or groups of elements either within an HTML document or in separate style sheets. HTML also supports Scripting. Through scripts, authors may create "smart forms" that react as users fill them out. Scripting allows designers to create dynamic Web pages, and to use HTML as a means to build networked applications. Also, HTML documents are free-format - we can use spaces and tabs anyhow we like, and break lines anywhere.

HTML 4.0 is the most recent version. It is the official recommendation of the World Wide Web. Among the new features in HTML 4.0 are:

- Cascading Style Sheets, the ability to control web page content at multiple levels.
- The ability to create richer forms.
- Support for frames
- Enhancements for tables that make it possible to use captions to provide table content for Braille or speech users.
- The capability to manage pages so that they can be distributed in different languages.
- Supports more multimedia options.
- Also takes great strides towards the internationalization of documents, with the goal of making the Web truly worldwide.

3.2.2 JavaServerPages (JSP)

JavaServerPages (JSP) technology provides an easy way to create dynamic web pages and simplify the task of building web applications that are platform independent and work with a wide variety of web servers, application servers, browsers and development tools. JSP separates user interfaces from content generation, enabling designers to change the overall page layout without altering the underlying dynamic content. It enables developers to separate programming logic from page design through the use of components that are called from the page itself. Also this component-based model speeds application development because it enables developers to build quick prototype applications using lightweight subcomponents, and then integrate additional functionality as it becomes available. It provides an alternative to creating CGI scripts that makes page development and deployment easier and faster.

The Java 2 Platform, Enterprise Edition (J2EE) is the Java architecture for developing multitier enterprise applications. As part of J2EE, JSP pages have access to all J2EE components, including Java Beans and Enterprise Java Beans components and Java servlets, JDBC, JAVA MAIL etc. In its basic form, a JSP page is simply an HTML web page that contains additional bits of code that execute application logic to generate dynamic content. This application logic may involve Java Beans, JDBC objects, Enterprise Java Beans (EJB), and Remote Method Invocation (RMI) objects.

3.2.2.1 JSP and Servlets

Servlets allow us to create dynamically generated web pages that include data from server-side Java objects. The Servlet approach to generating web pages is to embed HTML tags and presentation code within a Java class. This means that

changes to presentation code requires modification and recompilation of the servlet source file. Because web authors who design HTML pages may not be the same folks as the developers who write servlet code, updating servlet-based web applications can be an involved process. JavaServerPages, are an extension of the Servlet API. In fact, JSP pages are compiled into servlets before they are used, so they have all of the benefits of servlets, including access to Java APIs. While JSP pages mainly provide a higher-level method of creating servlets, they bring other benefits as well. JSP pages are compiled dynamically into servlets when requested, so page authors can easily make updates to presentation code. JSP pages can also be precompiled if desired.

3.2.2.2 Components of JSP Pages

The various components of a JSP page include the following:

Directives are instructions that are processed by the JSP engine when the page is compiled to a servlet. Directives are used to set page-level instructions, insert data from external files, and specify custom tag libraries. Directives are defined between <%@ and %>. There are three directives in JSP. They are taglib, include and page.

Declarations are similar to variable declarations in Java, and define variables for subsequent use in expressions or scriptlets. Declarations are defined between <%! and %>.

Expressions are variables or constants that are inserted into the data returned by the web server, and are defined with the <%= and %>.

Scriptlets are blocks of Java code embedded within a JSP page. Scriptlet code is inserted verbatim into the servlet generated from the page, and is defined between <% and %>.

3.2.2.3 ACTIONS

Actions provide an abstraction that can be used to easily encapsulate common tasks. They typically create or act on objects, normally java beans. the jsp technology provides the following actions:

- <jsp:useBean> : associates an instance of a JavaBean defined within a given scope and ID, via a newly declared scripting variable of the same <ID>.
- <jsp:setProperty>: sets the value of a bean's property.
- <jsp: getproperty> :takes the value of the referenced bean instance's property, converts it to a java.lang.String and places it into the implicit out object.
- <jsp:include> : provides a mechanism for including additional static and dynamic resources in the current JSP page.
- <jsp:forward>: enables the JSP engine to dispatch, at runtime, the current request to a static resource, servlet or another JSP. The appearance of this action effectively terminates the execution of the current page.
- <jsp:param> : is used to provide tag/value pairs of information by including them as sub attributes of the <jsp:include>, <jsp:forward> and the <jsp:plugin> actions.
- <jsp:plugin> : gives a JSP author the ability to generate HTML that contains the appropriate client-browser -dependent constructs. That will result in the download of a Java plug-in and subsequent execution of the specified applet or Java Beans component.

3.2.2.4 Implicit Objects

A JSP author has access to implicit objects that are available for use without being declared first. These objects are application, config, (which helps us to access configuration information of the environment), exception (which represents the uncaught throwable error that results from a call to an error page), out (represents the JSPWriter object to the output stream), page, pagecontext request (represents the request object that triggered the request), response (represents the response object that triggered the request) and the session that represents the session object, if any created for the client during an HTTP request.

3.2.2.5 Using Custom Tags

JSP technology enables developers to extend the JSP tags available. JSP developers can create custom tag libraries, so page authors can access more functionality using XML-like tags and depend less on scripting. With custom tags, developers can shield page authors from the complexities of page creation logic and extend key functions to a broader range of authors. In other words, our JSP pages can generate dynamic content using simple tag syntax instead of Java code. When using custom tags we don't need to import Java classes, declare variables, or write any Java code: It doesn't involve initializing objects and executing their methods. When using custom tags the following three components are to be present .

Before using a custom tag, a page must specify the taglib directive to provide the location of the tag library descriptor that defines the tag. When executing a custom tag, a page typically defines one or more tag attributes to determine dynamic content. A tag library descriptor is an XML file that defines the custom tag and connects it to its tag handler class. A tag library descriptor includes the various attributes of the tag; the name (and location) of the tag handler class associated with it, and any other information that JSP engine needs to process the custom tag. A tag handler is a Java class that executes the operations associated with the custom tag.

3.2.2.6 The Java Advantage

The java language used by jsp for scripting is a mature, powerful, and scalable programming language that provides many benefits. for example, the java language provides superior performance to the interpreted vbscript or jscript languages. Because they use java technology and are compiled into java servlets, jsp pages provide a gateway to the entire suite of server-side java

job easier in other ways as well. For example, it helps protect against system crashes. The java language also helps in the area of memory management by providing protection against memory leaks and hard-to-find pointer bugs that can slow application deployment. Plus, jsp provides the robust exception handling necessary for real-world applications.

3.2.2.7 Easier Maintenance

Applications using JSP technology are easier to maintain over time. Because the Java language is structured, it is easier to build and maintain large, modular applications with it. JSP technology's emphasis on components over scripting makes it easier to revise content without affecting logic, or revise logic without changing content. Because JSP technology is an open, cross-platform architecture, Web servers, platforms, and other components can be easily upgraded or switched without affecting JSP-based applications. This makes JSP suitable for real-world Web applications, where constant change and growth is the norm. Finally, because JSP technology was developed through the Java Community Process, it has wide support from tool, Web server and application server vendors. This enables users and partners take a best-of-breed approach, selecting the best tools for their specific applications while protecting their investment in code and in personnel training.

3.2.3 JDBC

JDBC is an API that allows java programs to connect to and interact with databases. The API is a set of classes and interfaces packaged under the Java packages java.sql and javax.sql. The goal of JDBC API is to provide a consistent and standard way of accessing databases from a number of diverse vendors. The JDBC API strives to shield developers from having to deal with the details of which database vendor is being used. This is achieved by using drivers provided by the database vendors. Using JDBC drivers we can obtain connection to a database and then use the connection to query and update the database. JDBC interacts with the underlying database in terms of SQL.

There are mainly four JDBC driver types. The first type of JDBC driver is the JDBC-ODBC Bridge. It provides JDBC access to databases through ODBC drivers. The ODBC driver must be configured on the client for the bridge to work. This driver type is commonly used for prototyping or when there is no JDBC driver available for a particular DBMS. For our application we have used this driver type.

The Type 2:Native-API driver converts JDBC commands into DBMS specific native calls. For this type of drivers the client must have some binary code loaded on its machine.

The Type 3:JDBC-Net, Pure Java Driver is a three-tier solution. This type of driver translates JDBC calls into a database-independent network protocol that is sent to the middleware server. This server then translates this DBMS-independent protocol into a DBMS-specific protocol, which is sent back to the client. This type of solution makes it possible to swap databases without affecting the client. This is by far the most flexible JDBC solution.

The Type 4: Native-Protocol drivers are pure Java drivers that communicate directly with the vendor's database. They do this by converting JDBC commands directly into the database engine's native protocol. The Type 4 driver has a very distinct advantage over all other driver types. It has no additional translation or middleware layers, which improves performance tremendously.

There are mainly five JDBC classes and interfaces that are usually used. These are the driver class for database, the DriverManager class, the Connection interface, the Statement interface and the ResultSet interface.

The JSP code instantiates loads and registers the DriverManager by passing the name of the driver class to a method by name Class.forName(). The DriverManager is used to obtain a Connection object with DriverManager.getconnection()method. This connection object provides methods to manage the lifecycle of a connection to a database as well as methods to create different types of SQL statement objects. A statement object is created with the Connection.createStatement() method. The JSP code interacts with the database by executing queries or updates with the Statement.executeQuery()

method or Statement.executeUpdate() method. If the query is executed, the JSP code processes the Resultset object returned by the Statement.executeQuery() method.

3.2.4 XML

XML stands for Extensible Markup Language, which was designed to describe data. Like HTML it is an application profile or restricted form of SGML, the Standard Generalized Markup Language. While HTML was designed to display data and to focus on how data looks, XML was designed to describe data and to focus on what data is. XML is created to structure, store, and to send information. XML is free and extensible and is license-free, platform-independent and well-supported

XML is primarily intended to meet the requirements of large-scale Web content providers for industry-specific markup, vendor-neutral data exchange, media-independent publishing, workflow management in collaborative authoring environments, and the processing of Web documents by intelligent clients. It is also expected to find use in certain metadata applications. The language is designed for the quickest possible client-side processing consistent with its primary purpose as an electronic publishing and data interchange format.

Like HTML, XML makes use of tags (words bracketed by '<' and '>') and attributes (of the form name="value"). While HTML specifies what each tag and attribute means, and often how the text between them will look in a browser, XML uses the tags only to delimit pieces of data, and leaves the interpretation of the data completely to the application that reads it. The tags used to mark up HTML documents and the structure of HTML documents is predefined. However XML tags are not predefined. We must "invent" our own tags. XML allows the author to define his own tags and his own document structure. XML is a complement to HTML. But the rules for XML files are strict. XML uses a Document Type Definition (DTD) or an XML Schema to describe the data. XML with a DTD or XML Schema is designed to be self-descriptive. CSS, the style sheet language, is applicable to XML as it is to HTML. XSL is the advanced

language for expressing style sheets. It is based on XSLT, a transformation language used for rearranging, adding and deleting tags and attributes. The DOM and SAX are standard sets of function calls for manipulating XML (and HTML) files from a programming language. With JSP we can use the SAX parser.

3.2.5 JAVASCRIPT

JavaScript is a scripting language for versions 3.0 and above of Netscape Navigator and Internet Explorer. Java Script "scripts" are small programs that interact with the content of a web page, or operate to control the browser. Its main function is to make the HTML more flexible and interactive. They are always embedded within a HTML document. We can create a JavaScript program to do such things like add sound or simple animation, pre-validate a form before the users response is sent to the server, search through a small database, test options based on user preferences, test the identity of the browser, automatically change a formatted date on a web page, cause a linked page to appear in a popup window, cause text or a graphic image to change during a mouse rollover etc.

3.2.5.1 Key Features of JavaScript

- Much of JavaScript's syntax and some of its semantics are adopted from C and C++. Data, types, variables and the basic language constructs that handle them like if statement, do.while, for loop etc lie at the core of JavaScript and are the nuts and bolts we use to screw everything together. Support for basic mathematics and logic and a step-by-step execution model are fundamental to JavaScript.
- JavaScript is an interpreted language.
- Regular expressions are a prominent feature of JavaScript. These allow strings to be matched to certain patterns and empower JavaScript significantly as a tool for manipulating the text content of web pages.
- Functions are treated as first class objects, which frequently make code elegant and concise.

- JavaScript is well designed for object-oriented programming. Objects are at the root of JavaScript's data manipulation model.
- JavaScript objects are also associative arrays The strings that index the properties and methods of an object can be constructed at runtime

Since JavaScript scripts can only be placed in HTML documents in certain spots, opportunities for acting upon the documents or the browser displaying the document are limited. However what JavaScript can do in an HTML document is:

Affect document layout when HTML tags and content are still being loaded by the browser.
Affect document layout after HTML tags and content have been loaded by the browser.
Affect the number of browser windows and window like objects currently displayed.
Capture, mimic and modify actions the user of the browser might make
Perform basic automation and basic feedback tasks.
Forward user actions onto applets, plugins and other foreign bodies embedded in the document.

JavaScript can also improve on the simple forms that HTML supports in the following ways.

- Write out form element tags with inline JavaScript, as for other HTML tags.
- Act as event handlers for form elements, via HTML tag attributes or host object properties.
- Read and modify the form elements.
- Validate and correct user data.
- Perform calculations on user data.
- Store and forward user data.
- Control user navigation through the data input process.

Because all these tasks can happen solely inside the browser, without any need

both the user and the web sever, by reducing the number of packets that are sent /requested by the server/client, effectively freeing network band width and allowing the server more time available to spend on other tasks.

3.2.6 ORACLE-THE DATABASE SERVER

A database server is the key to solving the problems of information management. In general, a server must reliably manage a large amount of data in a multi-user environment so that many users can concurrently access the same data. All this must be accomplished while delivering high performance. A database server must also prevent unauthorized access and provide efficient solutions for failure recovery.

The Oracle server provides efficient and effective solutions with the following features:

- Client/server environments (distributed processing): To take full advantage of a given computer system or network, Oracle allows processing to be split between the database server and the client application programs. The computer running the database management system handles all of the database server responsibilities while the workstations running the database application concentrate on the interpretation and display of data.
- Large databases and space management. Oracle supports the largest of databases, which can contain terabytes of data. To make efficient use of expensive hardware devices, Oracle allows full control of space usage.
- Concurrency: Oracle supports large numbers of concurrent users executing a variety of database applications operating on the same data. It minimizes data contention and guarantees data concurrency.
- Connectibility: Oracle software allows different types of computers and operating systems to share information across networks.
- High transaction processing performance: Oracle maintains the preceding features with a high degree of overall system performance. Normal system

operations such as database backup and partial computer system failures do not interrupt database use.

- Controlled availability: Oracle can selectively control the availability of data, at the database level and sub-database level. For example, an administrator can disallow use of a specific application so that the application's data can be reloaded, without affecting other applications.
- Openness, industry standards: Oracle adheres to industry-accepted standards for the data access language, operating systems, user interfaces, and network communication protocols. It is an open system that protects customer's investment.
- Support for heterogeneous systems: Oracle also supports the Simple Network Management Protocol (SNMP) standard for system management. This protocol allows administrators to manage heterogeneous systems with a single administration interface.
- Manageable Security: To protect against unauthorized database access and use, Oracle provides fail-safe security features to limit and monitor data access. These features make it easy to manage even the most complex design for data access.
- Database enforced integrity: Oracle enforces data integrity, business rules that dictate the standards for acceptable data. This reduces the costs of coding and managing checks in many database applications.
- Portability: Oracle software works under different operating systems. Applications developed for Oracle can be ported to any operating system with little or no modification.
- Compatibility: Oracle software is compatible with industry standards, including most industry standard operating systems. Applications developed for Oracle can be used on virtually any system with little or no modification.
- Distributed systems: For networked, distributed environments, Oracle combines the data physically located on different computers into one logical database that can be accessed by all network users. Distributed systems have the same degree of user transparency and data consistency as non-distributed systems; yet receive the advantages of local database management. Oracle also offers the heterogeneous option that allows users

3.2.6.1 The Oracle Server

The Oracle server is an object-relational database management system that provides an open, comprehensive, and integrated approach to information management. An Oracle server consists of an Oracle database and an Oracle server instance.

3.2.6.2 An Oracle Instance:

Every time a database is started, a system global area (SGA) is allocated and Oracle background processes are started. The system global area is an area of memory used for database information shared by the database users. The combination of the background processes and memory buffers is called an Oracle instance. An Oracle instance has two types of processes: user processes and Oracle processes

3.2.6.3 Database Structure and Space Management

An Oracle database is a collection of data that is treated as a unit. The database has logical structures and physical structures. Because the physical and logical structures are separate, the physical storage of data can be managed without affecting the access to logical storage structures.

3.2.6.4 Logical Database Structures

The logical structures of an Oracle database include tablespaces, schema objects, data blocks, extents, and segments. A Tablespace is a logical portion of an ORACLE database used to allocate storage for table and index data. Each tablespace corresponds to one or more physical database files. Every ORACLE database has a tablespace called SYSTEM and may have additional tablespaces. A tablespace is used to group related logical structures together.

For example, tablespaces commonly group all of an application's objects to simplify certain administrative operations.

A schema is a collection of database objects. Schema objects are the logical structures that directly refer to the database's data. Schema objects include such structures as tables, views, sequences, stored procedures, synonyms, indexes, clusters, and database links. Schema objects are the logical structures that directly refer to the database's data. Schema objects include such structures as tables, views sequences, stored procedures, synonyms, indexes, clusters, and database links. There is no relationship between a tablespace and a schema objects in the same schema can be in different tablespaces, and a tablespace can hold objects from different schemas.

3.2.6.5 Physical Database Structures

Every Oracle database has one or more physical data files. A database's data files contain all the database data. The data of logical database structures such as tables and indexes is physically stored in the data files allocated for a database. A data file can be associated with only one database. Data files can have certain characteristics set to allow them to automatically extend when the database runs out of space. One or more data files form a logical unit of database storage called a tablespace.

3.2.7 SQL

SQL stands for Structured Query language. SQL is a nonprocedural language. The SQL implemented by Oracle Corporation is 100% compatible with the ANSI/ISO standard SQL data language. To communicate with the database, SQL supports the following commands

- DDL -> Data Definition Language (Create, Alter, Drop)
- DML -> Data Manipulation Language (Select, Insert, Delete, Update)
- DCL-> Data Control Language (Grand, Revoke)
- TCL -> Transaction Control Language (Commit, Save, Point, Rollback)

3.2.8 SQL PLUS

SQL Plus is the front-end tool for Oracle. It allows us to type in your statements, etc. and sees the results. For instance, we can create tables, stored procedures, etc. as well as issue a SQL Select Statement in a window and have the results presented in the same window as well.

Oracle9i is the most recent version and has rapidly evolved into a database for all our data, from simple to complex types. Multimedia data types such as images, maps, video clips and audio clips are now common in many Web-based applications. Other software solutions also need to store data dealing with complex financial instruments, engineering diagrams or molecular structures. With Oracle9i, Oracle is completing the database object-relational vision by supporting full object modeling capabilities, including inheritance and multilevel collections, with type evolution capabilities.

3.2.9 WINDOWS NT

Windows NT (New Technology) is comprised of two distinct products. Windows NT workstation and Windows NT Server. Windows NT is a multithreaded, multi-user operating system. It has the look and feel of Windows 95 on the front end but massive power on the back end. Windows NT has powerful private networking features. Windows NT has challenge and response login that ensures that only those authorized can access system and file resources. It has a user manager that let's us determine what a user can access and when they can access the system.

Windows NT Server is the only true multipurpose server operating system that provides the connectivity, the base services and the administrative tools to deliver services across a distributed network of computers. From rich application, communication, file and print services to advance media and web features it offers a complete end-to-end solution. Windows NT server is supported, but with a caveat. Because certain NT Server's services conflict with the ones being offered by computing services, specific protocols and services within the

operating system are banned. Specific optimization for the server include better memory usage in order to cache large amounts of data, higher priority for spooler threads, higher priority for remote users and improved efficiency in running 32-bit server applications.

Windows NT Workstation is the perfect companion to a Windows NT Server. With Windows NT workstation we can take full advantage of the security and customization offered by the Windows NT Server. We can even manage a remote Windows NT server from Windows NT workstation. Windows NT Workstation is a full 32-bit operating system that provides the power of a workstation with the ease of use, productivity and compatibility of a PC. Windows NT Workstation is supported by all major business software applications and delivers significant performance- increased reliability, enhanced security, Laptop support, compatibility and interoperability for a variety of network environments including UNIX and Novell NetWare.

3.2.10 THE APACHE WEB SERVER

A Web server's fundamental function is to respond to a request from an agent (typically a browser), determine whether to grant access to the desired item, and fulfill the request by either returning a file from the file system, passing the request to dynamic-content-generating code, or perhaps returning an error message. A Web server has also to support a number of technologies and many have modular designs that allow them to be extended, and third-party add-ons can often provide interfaces that aren't available natively. Web servers are relatively mature products, so features introduced in new versions tend to be more incremental than revolutionary. Still, the current crop of Web servers provides varying capability and scalability beyond their roles as page servers and development platforms.

The Apache Web Server has grown steadily over the last five years and it is the most popular Web server in use today because of its many characteristics, such as the ability to run on various platforms, its reliability, robustness, configurability and the fact that it provides full source code with an unrestrictive license. The

Apache Web Server is one of the fastest, most efficient and most functional web servers in existence. It has been shown to be substantially more stable, and more feature-full than many other web servers. It is powerful, flexible, and implements the latest protocols, including HTTP/1.1. It is highly configurable and extensible with third-party modules and can be customized by writing 'modules' using the Apache module API. It implements many frequently requested features listed below

- Allow you to easily set up password-protected pages with enormous numbers of authorized users, without bogging down the server.
- Customized responses to errors and problems

  Allows us to set up files, or even CGI scripts, which are returned by the server in response to errors and problems, e.g. setup a script to intercept 500 Server Errors and perform on-the-fly diagnostics for both users and our self.
- Multiple Directory Index directives
- Unlimited flexible URL rewriting and aliasing. Apache has no fixed limit on the numbers of Aliases and Redirects, which may be declared in the config files. In addition, a powerful rewriting engine can be used to solve most URL manipulation problems.
- Content negotiation i.e. the ability to automatically serve clients of varying sophistication and HTML level compliance, with documents which offer the best representation of information that the client is capable of accepting.
- Virtual Hosts: A much-requested feature, sometimes known as multi-homed servers. This allows the server to distinguish between requests made to different IP addresses or names (mapped to the same machine). Apache also offers dynamically configurable mass-virtual hosting.
- Apache supports the concept of "multithreading," which improves its performance. Threads are much easier for a computer to create, requiring less memory and other resources. They can be spawned faster than processes. A further advantage is that threads often can let software take better advantage of systems with multiple processors.

The most important feature of Apache is that it is totally free and is an open-source project, meaning anyone can modify and redistribute the software. Thus

those who benefit from it by using it often can contribute back to it by providing feature enhancements, bug fixes, and support for others in public newsgroups. The amount of effort expended by any particular individual is usually fairly light, but the resulting product is made very strong. Also many spawning companies that support and enhance the core software have begun.

3.2.11 THE LINUX OPERATING SYSTEM

One of the things that helped put Linux on the server map was its reliability. The emergence of Linux, an operating system that was almost notoriously crash free and rarely needed rebooting, was, for the system administrators, a godsend. Linux is stable--servers and workstation can literally run for years without a crash. Like Apache, Linux is open source, which means programmers, system administrators and others having the expertise can "open up the hood" on the operating system and fix or add to specific parts of the fundamental source code of the system. Security patches are available free for download from the Internet.

Linux's security is another area in which the open-source operating system tends to thrive. While widespread implementation of Linux will increase the overall instances of attacks on Linux systems, the ability to access its source code means that patches, fixes and other repairs can be deployed much more rapidly. It also means that many more security back doors and holes will be detected before these back doors and holes are exploited by crackers. Moreover Linux is Completely adaptable, can support large selection of applications and can be made available across multiple platforms.

Also Linux is flexible. This is probably the greatest advantage of all. Linux and OSS applications can be adapted for our specific needs, usually at low cost. Because the source code is available to everyone. A great pool of OSS makes it possible for developers to quickly add a company-specific function. Also Linux supports many ``legacy'' applications and systems.

System Design and Development

4 SYSTEM DESIGN AND DEVELOPMENT

4.1 System Design

Design has been described as a multistep process in which representations of data structures, program structures, interface characteristics and procedural details are synthesized from information requirements. Design serves as a foundation for all software engineering and software maintenance step that follow. It is an activity concerned with making decision, often of a structural nature. Firstly the design is concerned with the transformations of requirements into data and software architecture. Then the focus is on the refinements to the architecture that lead to detailed data structure and algorithmic representation of software.

Design builds coherent, well-planned representations of programs that concentrate on the interrelations parts at the higher level and the logical operations involved at the lower levels. Depending on the applications and project requirements, a good design is one, which allows efficient code to be produced, and whose implementation is as compact as possible. Design and specification of the system are in accordance with the prescribed rules and practices of the organization. Fundamental concepts of software design include abstraction, information hiding, structure, modularity, concurrency, and verification and design aesthetics.

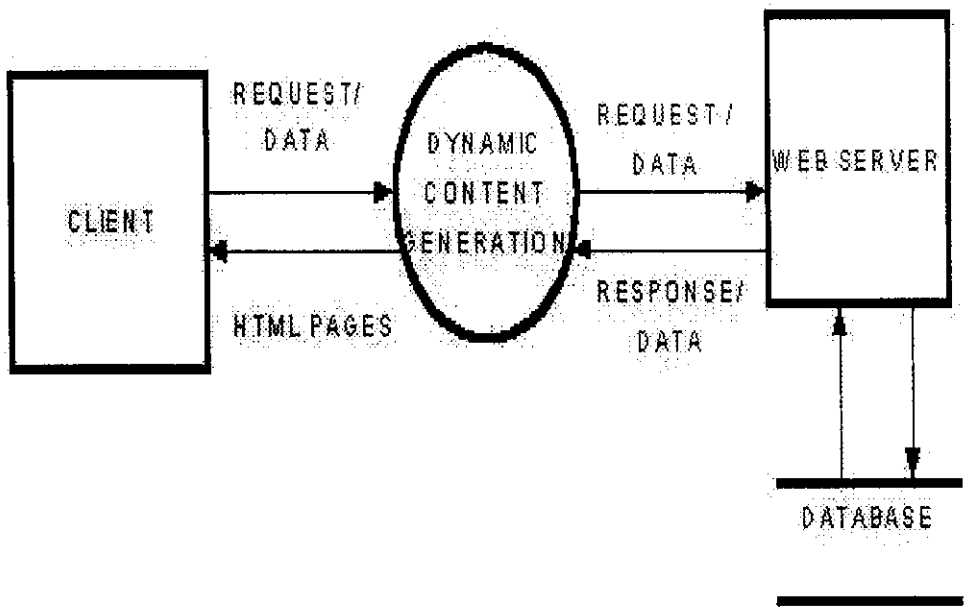
4.1.1 Data Flow Diagram (DFD)

Data Flow Diagram has the purpose of calcifying system requirements and identifying major transformation that will become programs in system design. So it is the starting point of the design phase and the functionality decomposes the requirements specification down to the lowest of details. DFD consists of a series of bubbles joined by lines/arrows. The bubbles represent the data transformation and the lines/arrows represent the data flow in the system. A rectangle represents source or sink, and is a net originator or consumer of data. External sources or destinations, which may be people, programs, organizations or other entities that interact with the system hold data and are outside its boundary. DFDs can be hierarchically organized which help in partitioning and analyzing large systems.

4.1.1.1 Data Flow Diagrams

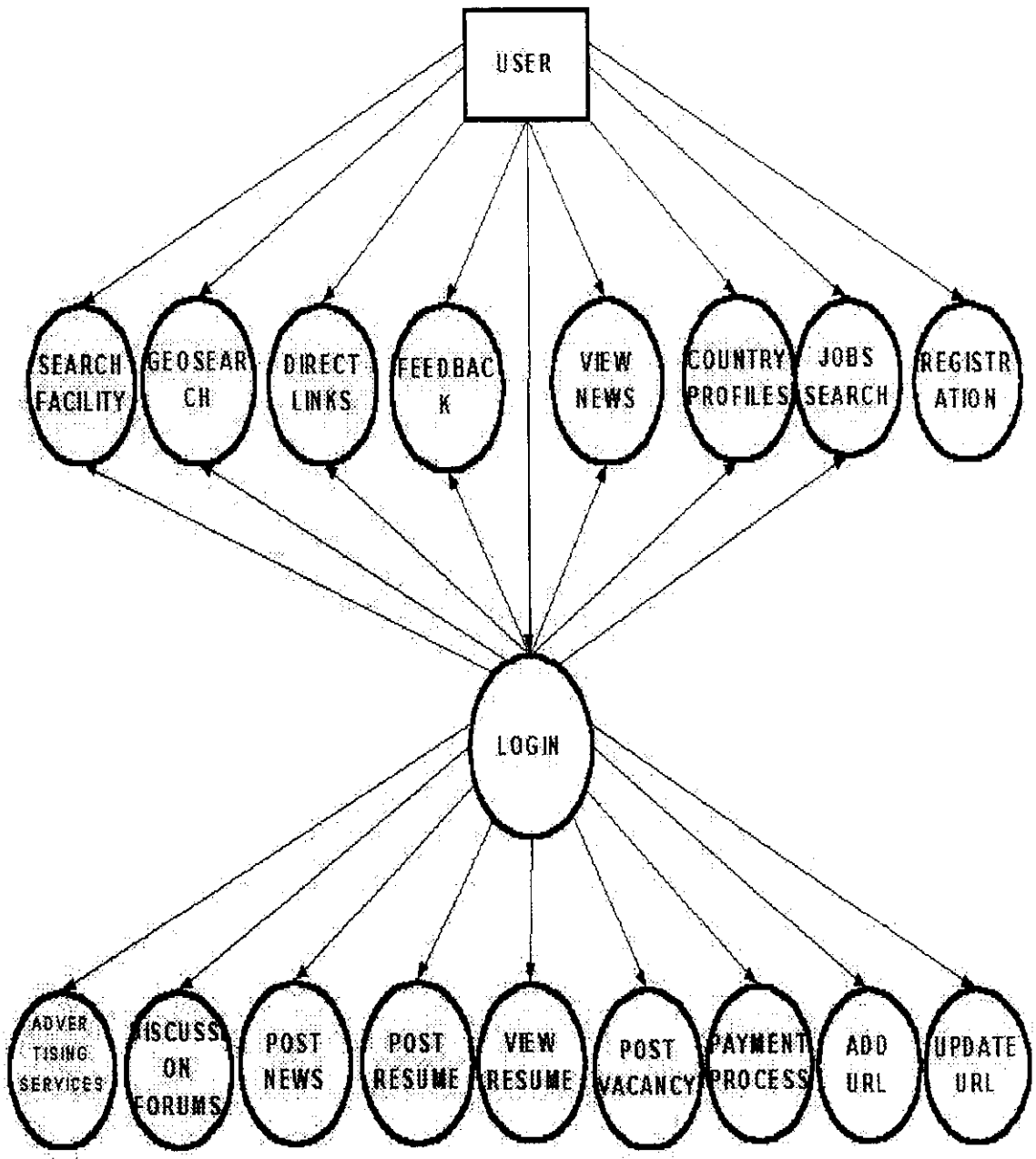
Context Level Diagram

Clients requests are going to the web server and from there the responses will come back.



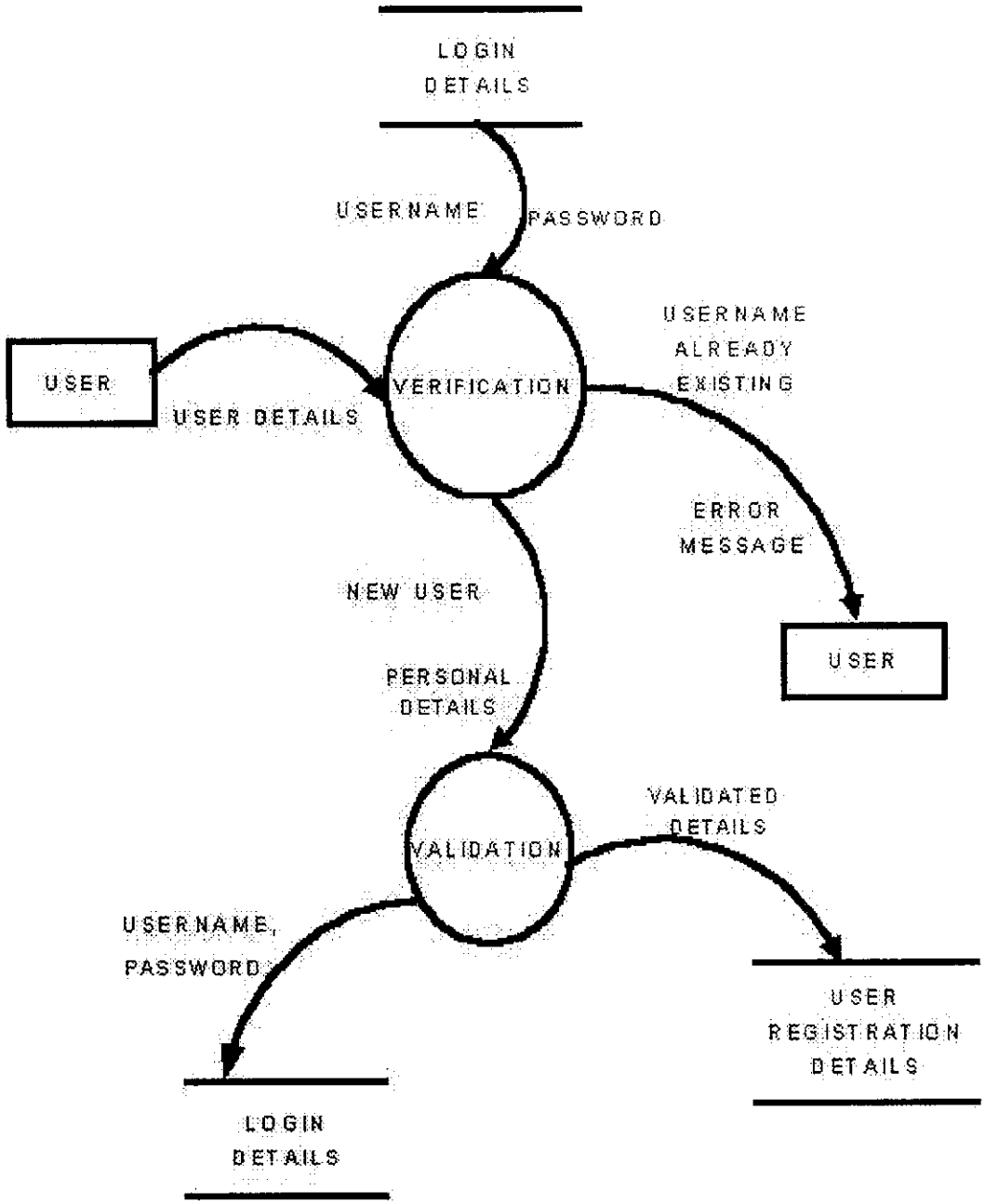
Level 1 DFD

In the level 1 DFD we can see that there are two types of users. The first type of the user is the common user who can only access the viewing services like job search, view news, geo search, and view country profiles. After registering to the site only he can access the services like Listing the Company Details, Advertising in the portal, Post Resume, Post Vacancy, Post News Releases, Discussion Forum.



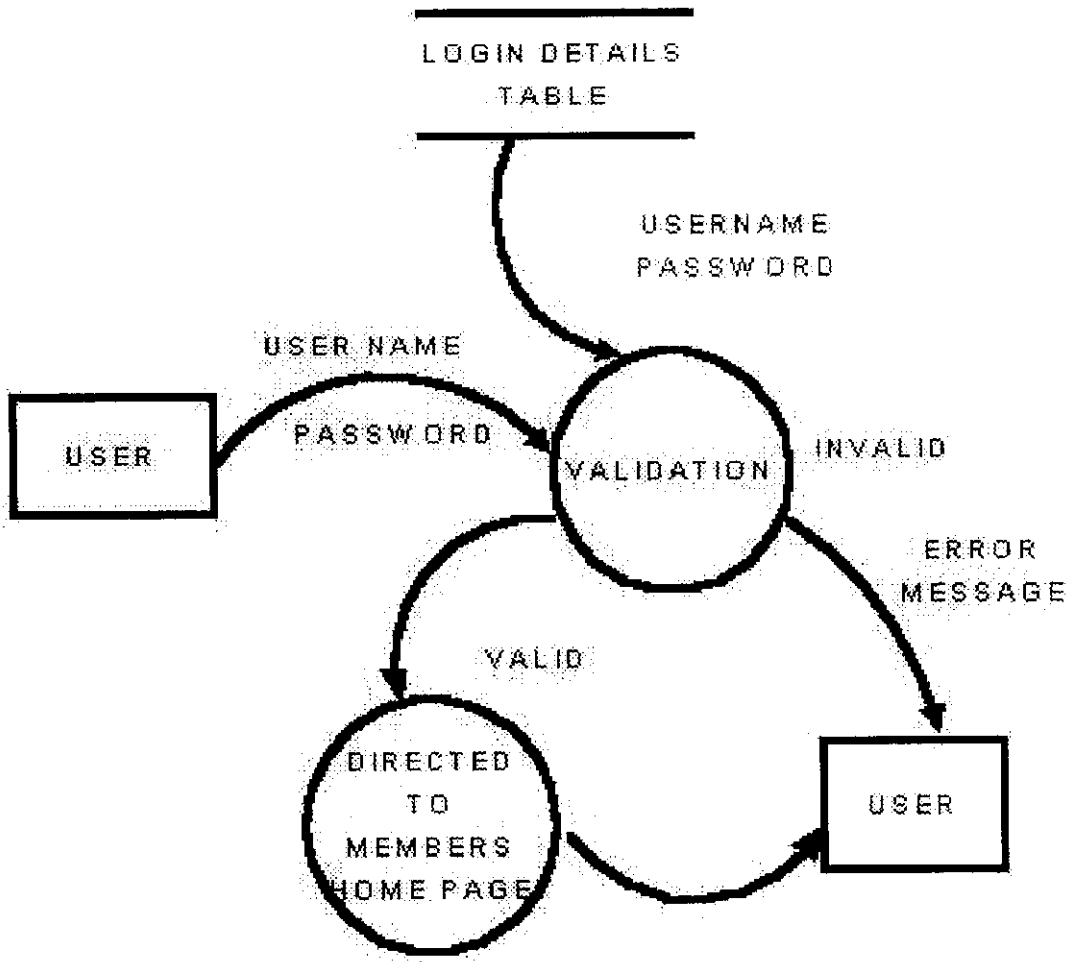
Level 2 DFD (Registration)

Here we will get the User Id, Which is unique and Password from the user and check these details with the Login table to find whether it exists or not. After this collect the personal details from the user. Next step is to insert all these details into the User Registration and Login table.



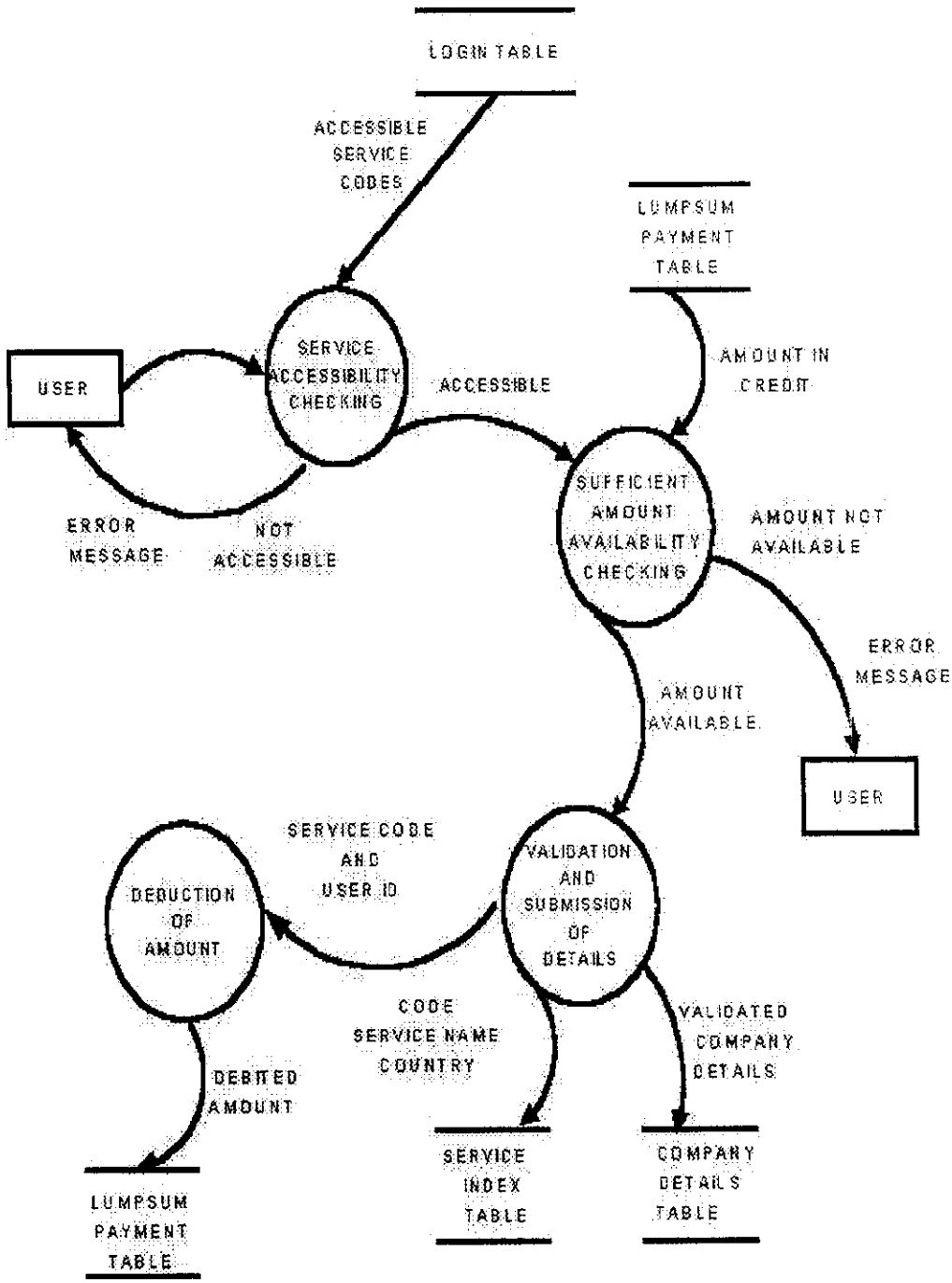
Level 2 DFD (Login)

Here we will get the User Id and Password from the user and check these details with the Login table to find whether it exists or not. If it is not there then then show an error message else redirect him to the members home page where he can access all the services.



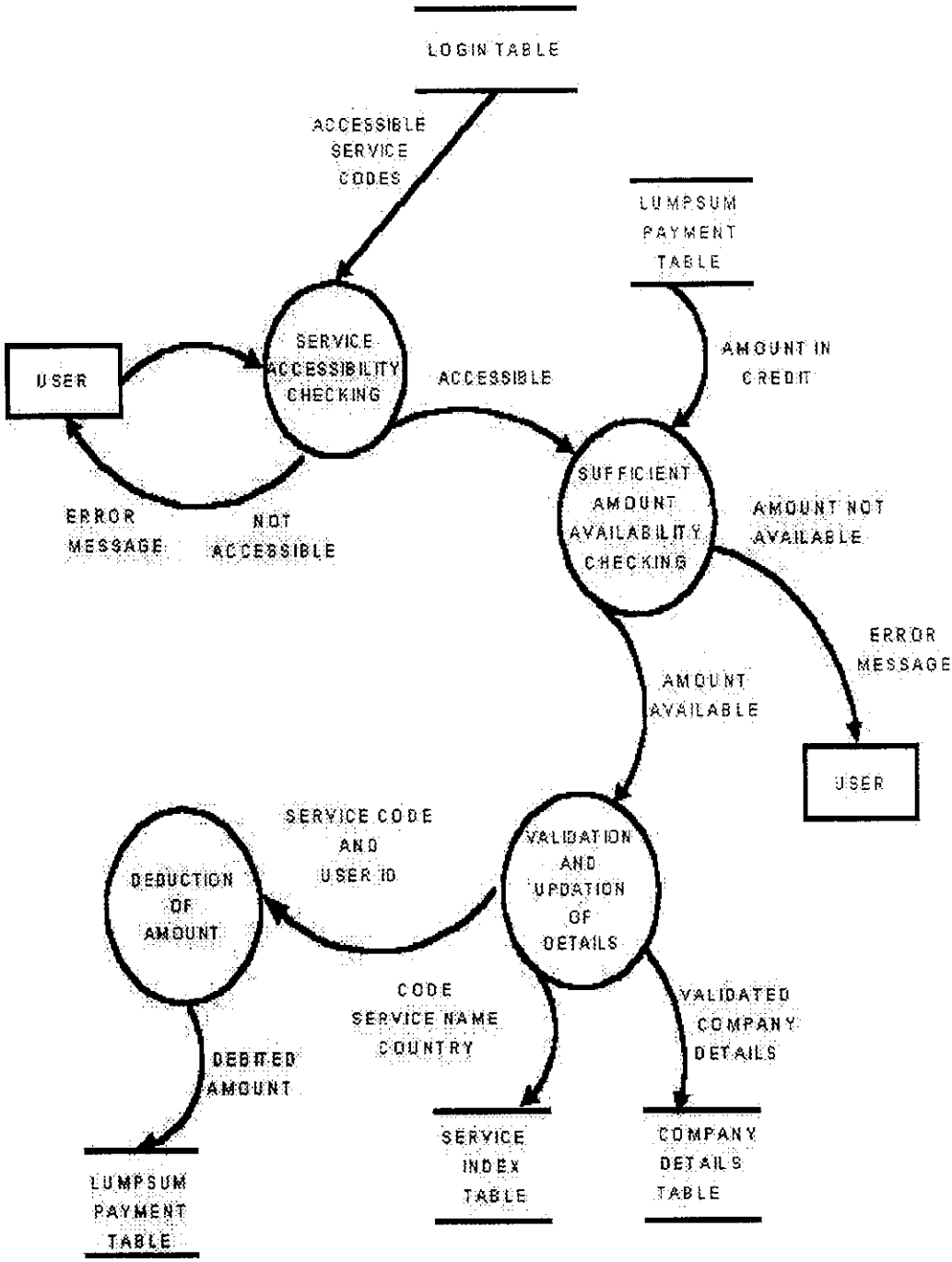
Level 2 DFD (Listing A Company In The Directory)

Here first we are checking whether the user can access the service or not from the Login Table. Then we will check whether the user have sufficient amount for accessing that service from the Lumpsum Payment Table. After all these steps we will enter the details into the Company Details and Service Index Table and deduct the amount from the Lumpsum Payment Table.



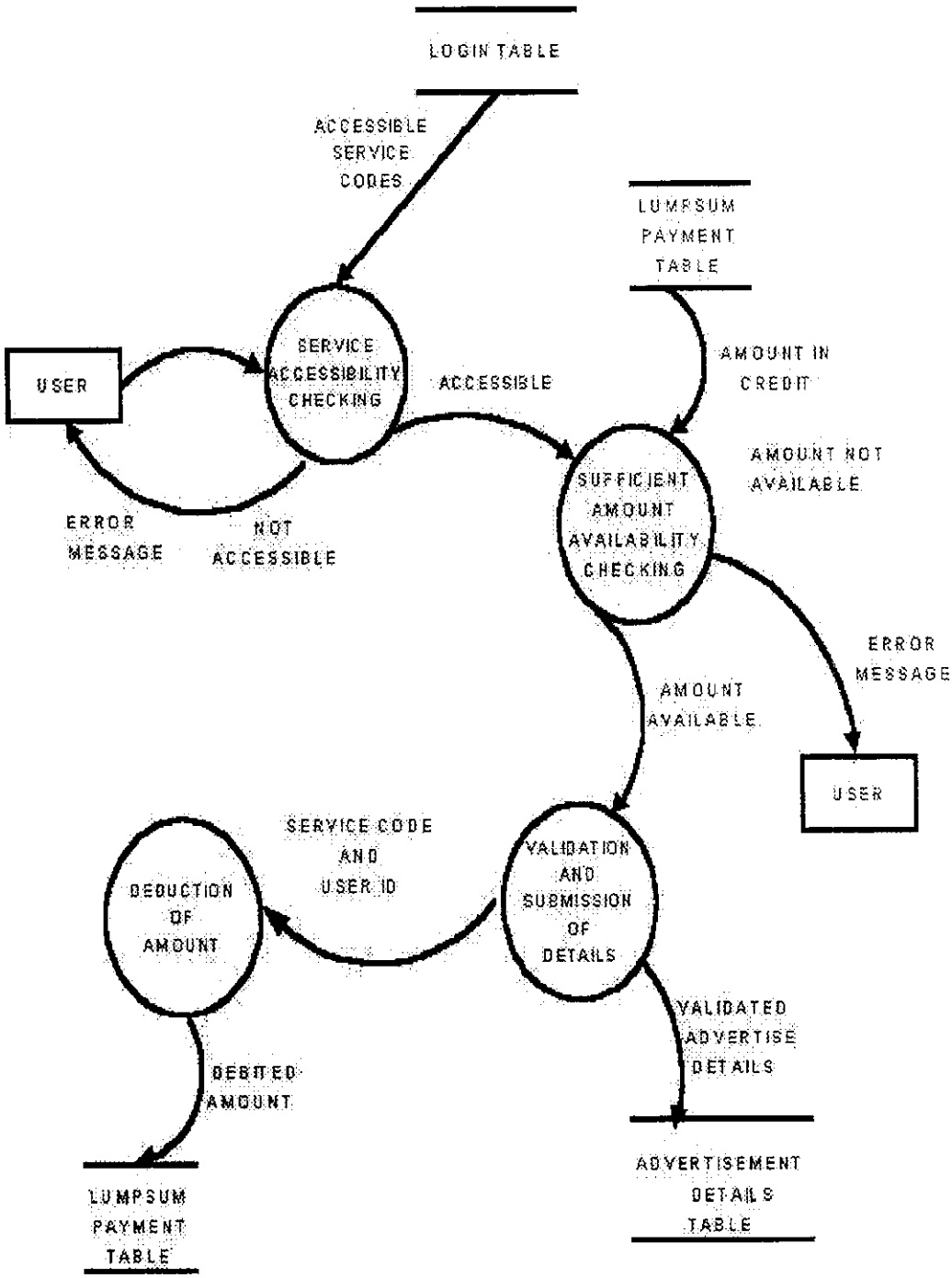
Level 2 DFD (Update The Company Listing From The Directory)

Here first we are checking whether the user can access the service or not from the Login Table. Then we will check whether the user have sufficient amount for accessing that service from the Lumpsum Payment Table. After all these steps we will update the details of the Company Details and Service Index Table and deduct the amount from the Lumpsum Payment Table.



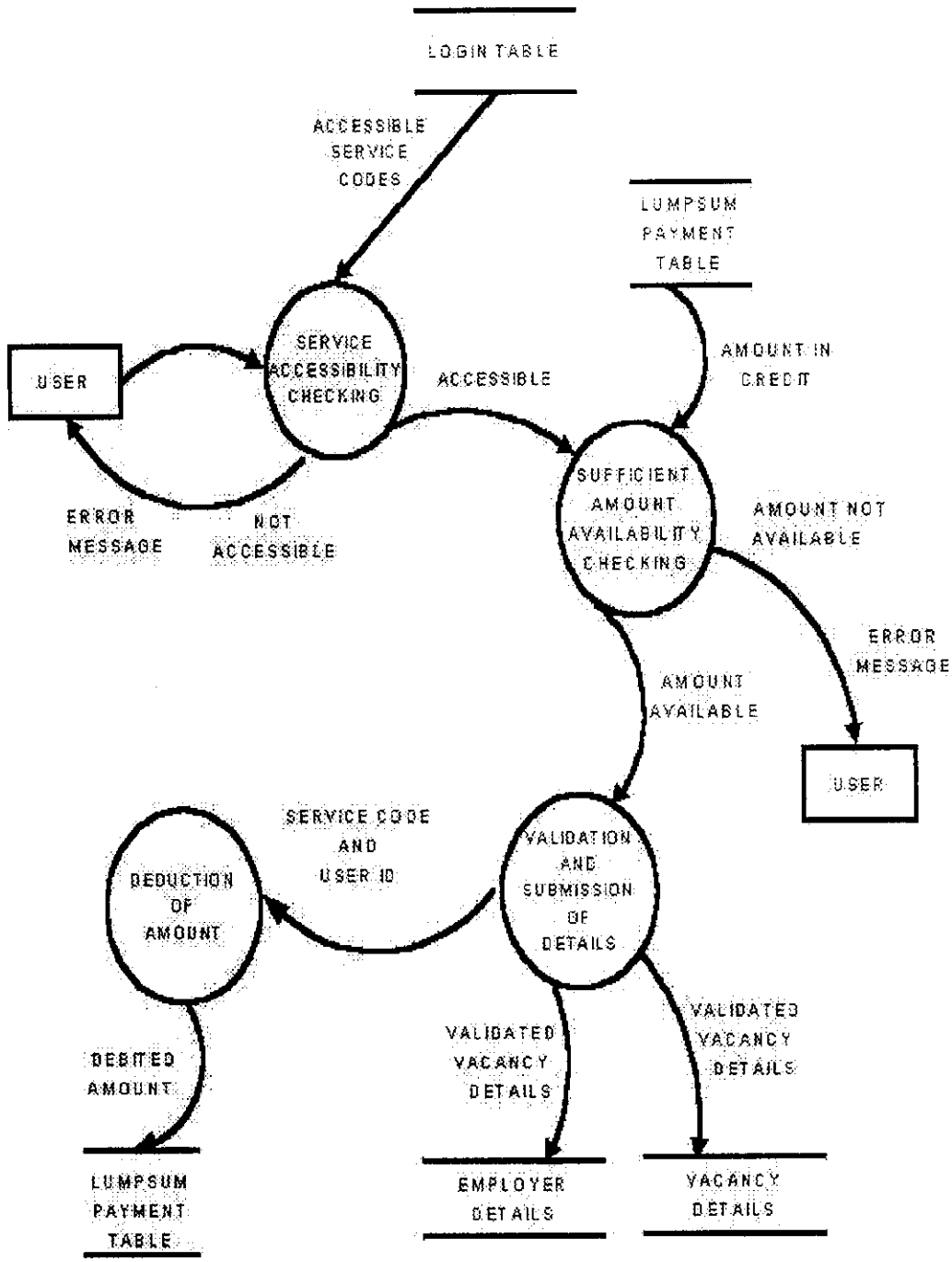
Level 2 DFD (Advertising)

Here first we are checking whether the user can access the service or not from the Login Table. Then we will check whether the user have sufficient amount for accessing that service from the Lumpsum Payment Table. After all these steps we will get the Company details and the Advertising image file and deduct the amount from the Lumpsum Payment Table.



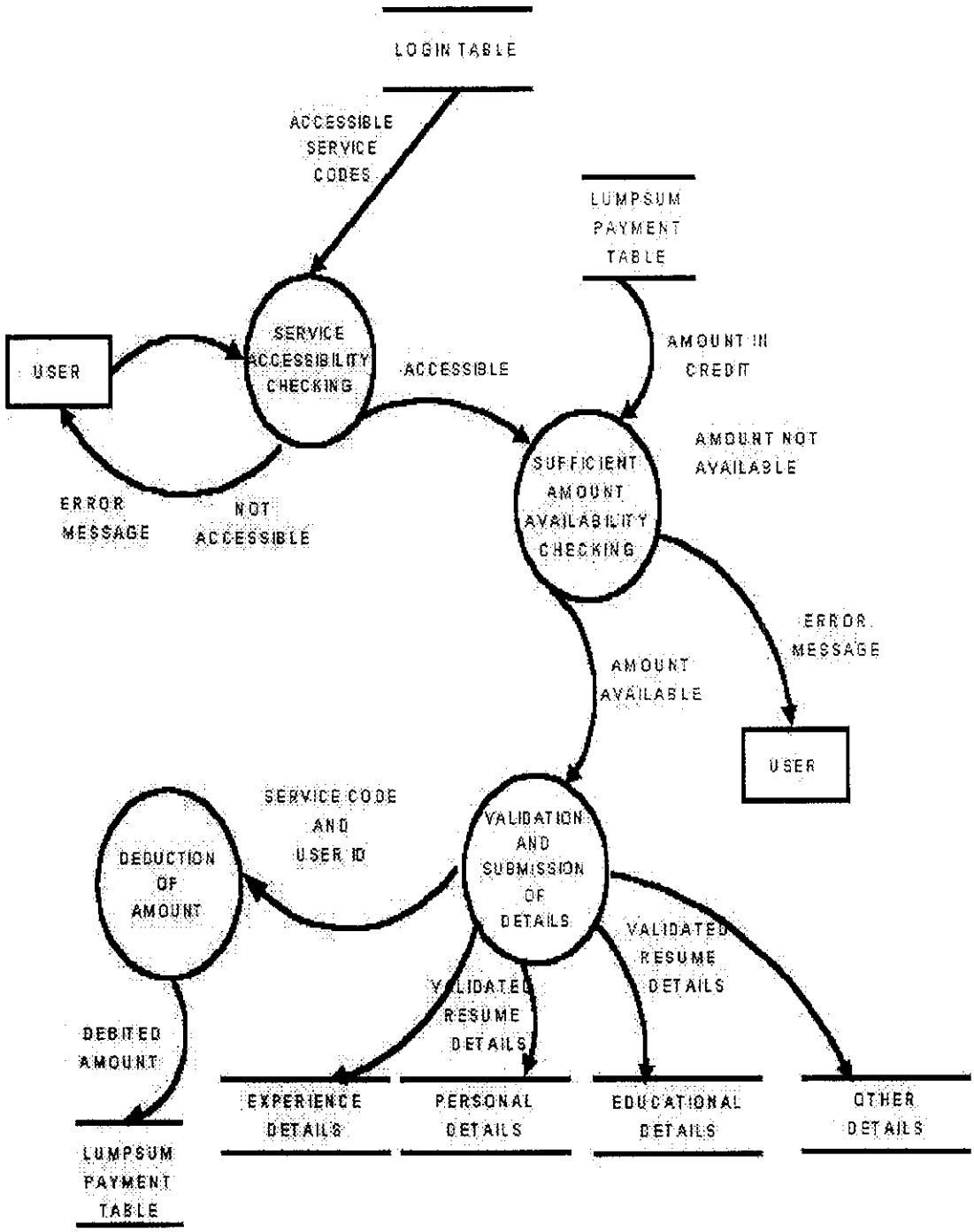
Level 2 DFD (Post vacancy)

Here first we are checking whether the user can access the service or not from the Login Table. Then we will check whether the user have sufficient amount for accessing that service from the Lumpsum Payment Table. After all these steps we will get the Employer details and the Vacancy details and deduct the amount from the Lumpsum Payment Table.



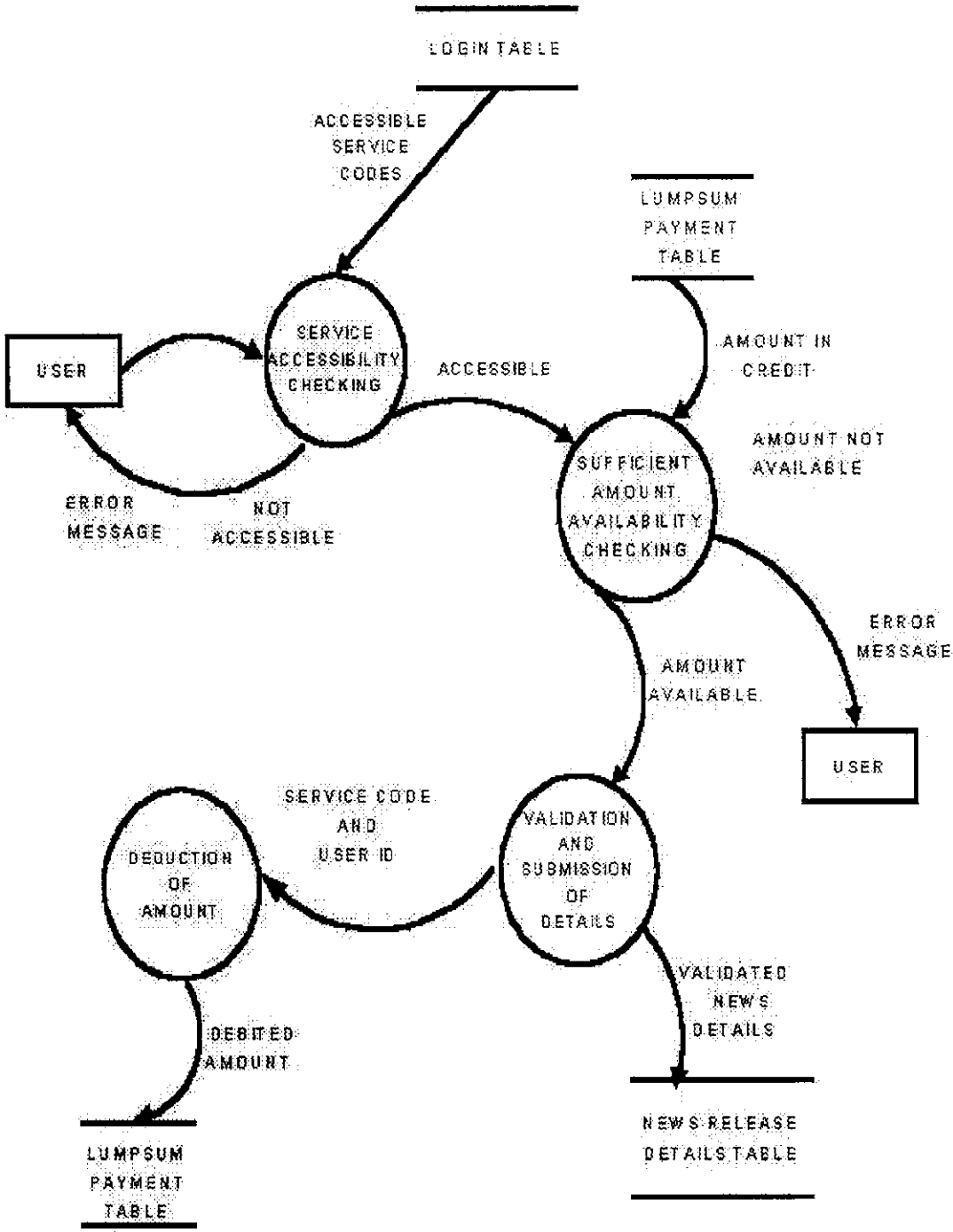
Level 2 DFD (Post Resume)

Here first we are checking whether the user can access the service or not from the Login Table. Then we will check whether the user have sufficient amount for accessing that service from the Lumpsum Payment Table. After all these steps we will get the Personal details and the Resume details and deduct the amount from the Lumpsum Payment Table.



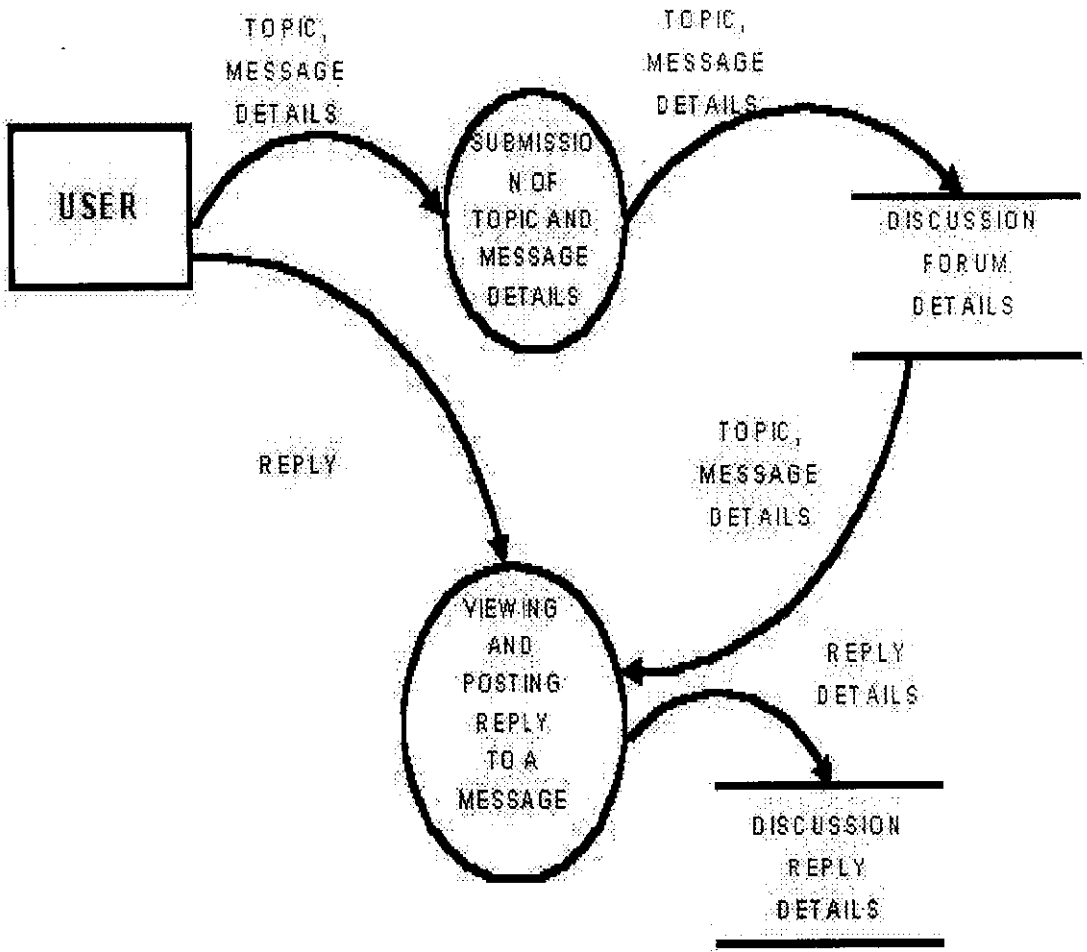
Level 2 DFD (Posting News Releases)

Here first we are checking whether the user can access the service or not from the Login Table. Then we will check whether the user have sufficient amount for accessing that service from the Lumpsum Payment Table. After all these steps we will get the News details and the News file and deduct the amount from the Lumpsum Payment Table.



Level 2 DFD (Discussion Forum)

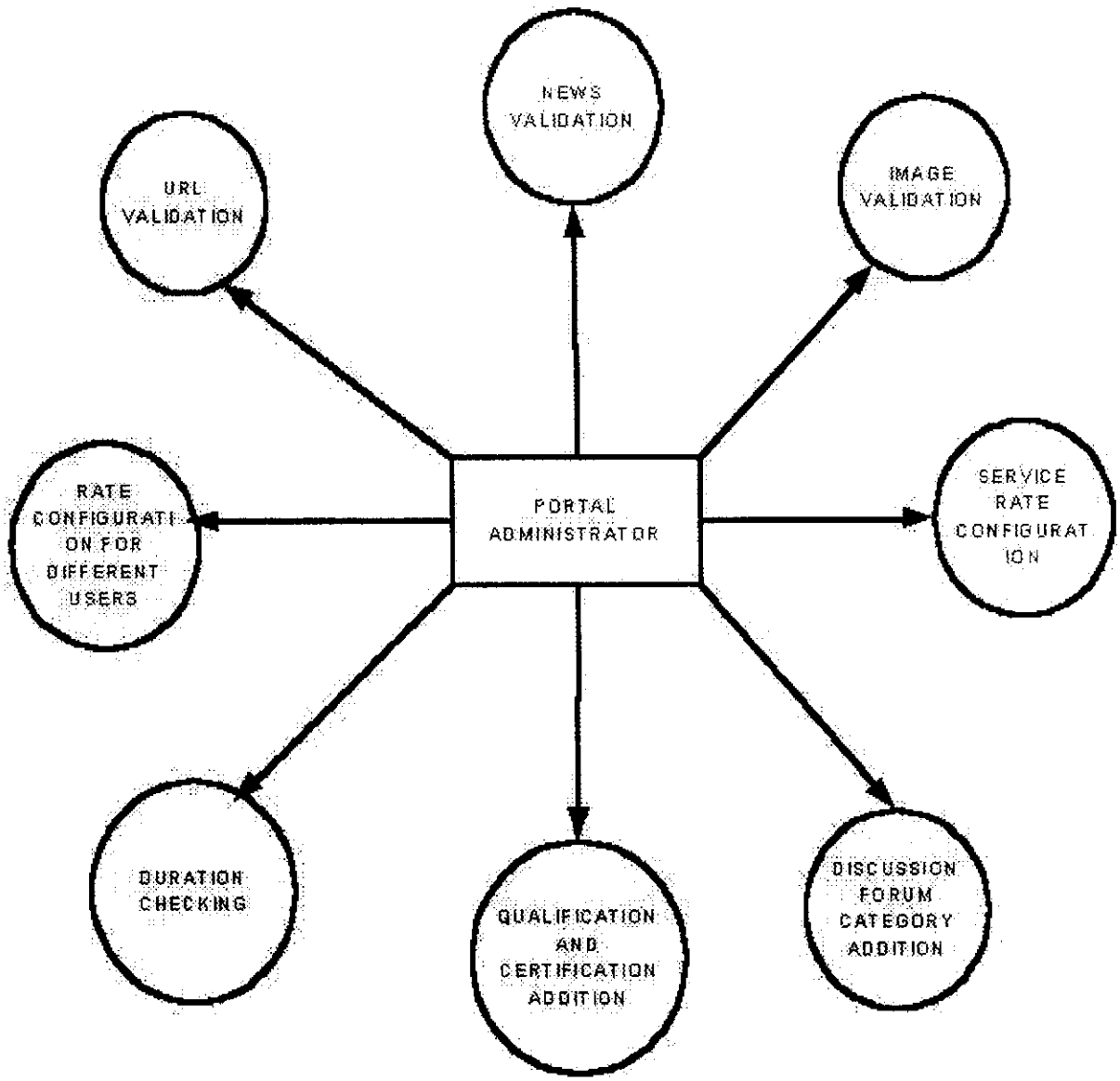
Here first we are checking whether the user can access the service or not from the Login Table. Then we will check whether the user have sufficient amount for accessing that service from the Lumpsum Payment Table. After all these steps we will get the Topic and Description from a particular category for the members who post messages and Reply from the members who post reply to the particular topic. Next step is to store the details into the Discussion Forum and Reply Tables.



Administrator DFD's

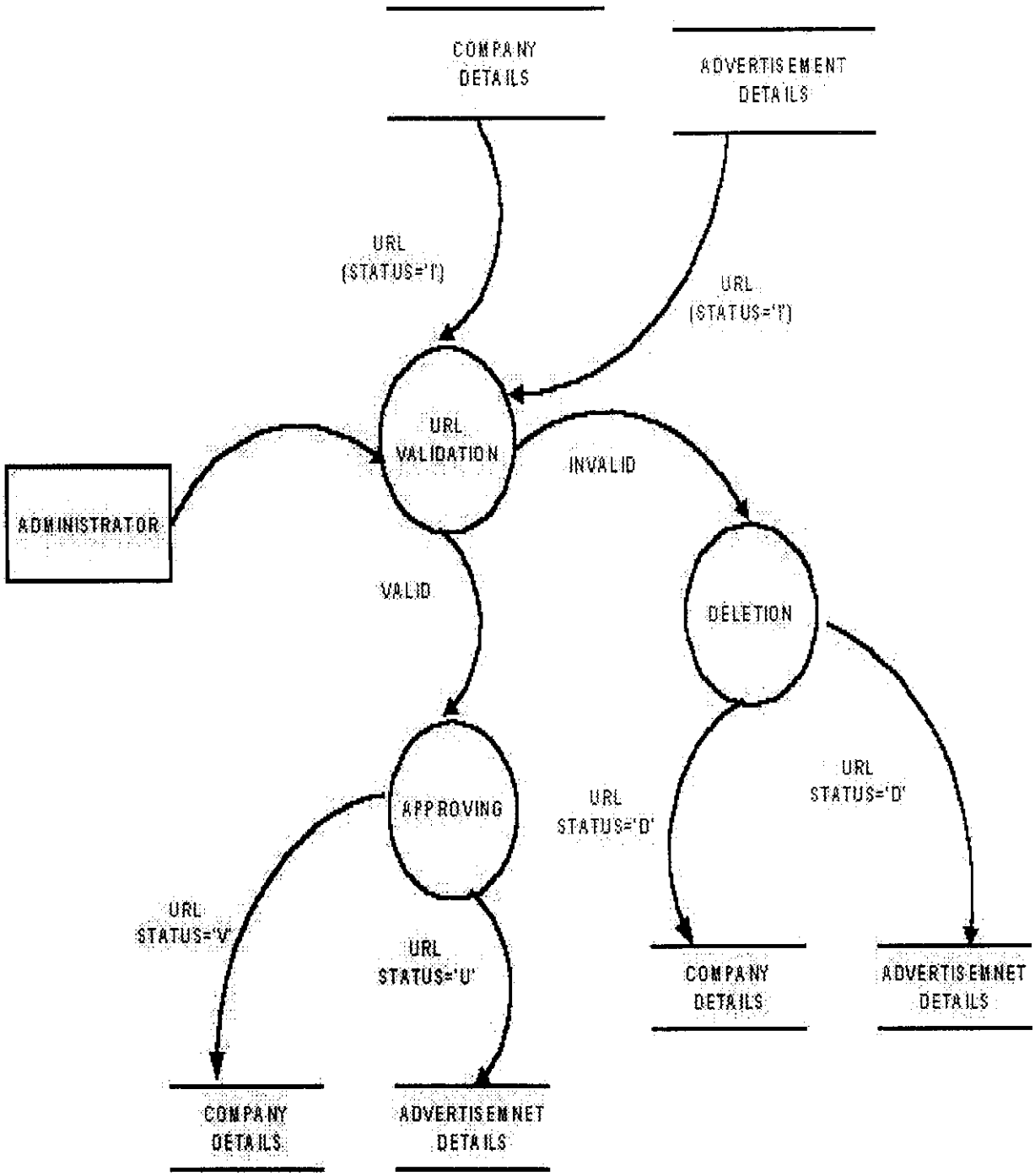
Level 1 DFD

The main duty of the portal administrator are the validation of URL, image, news releases posted by the members, rate updation, lumpsum payment configuration, duration checking, addition of qualification and certification and discussion forum category addition. He has to do these activities for the effective functionality of the portal. He has the universal login facility for doing all these.



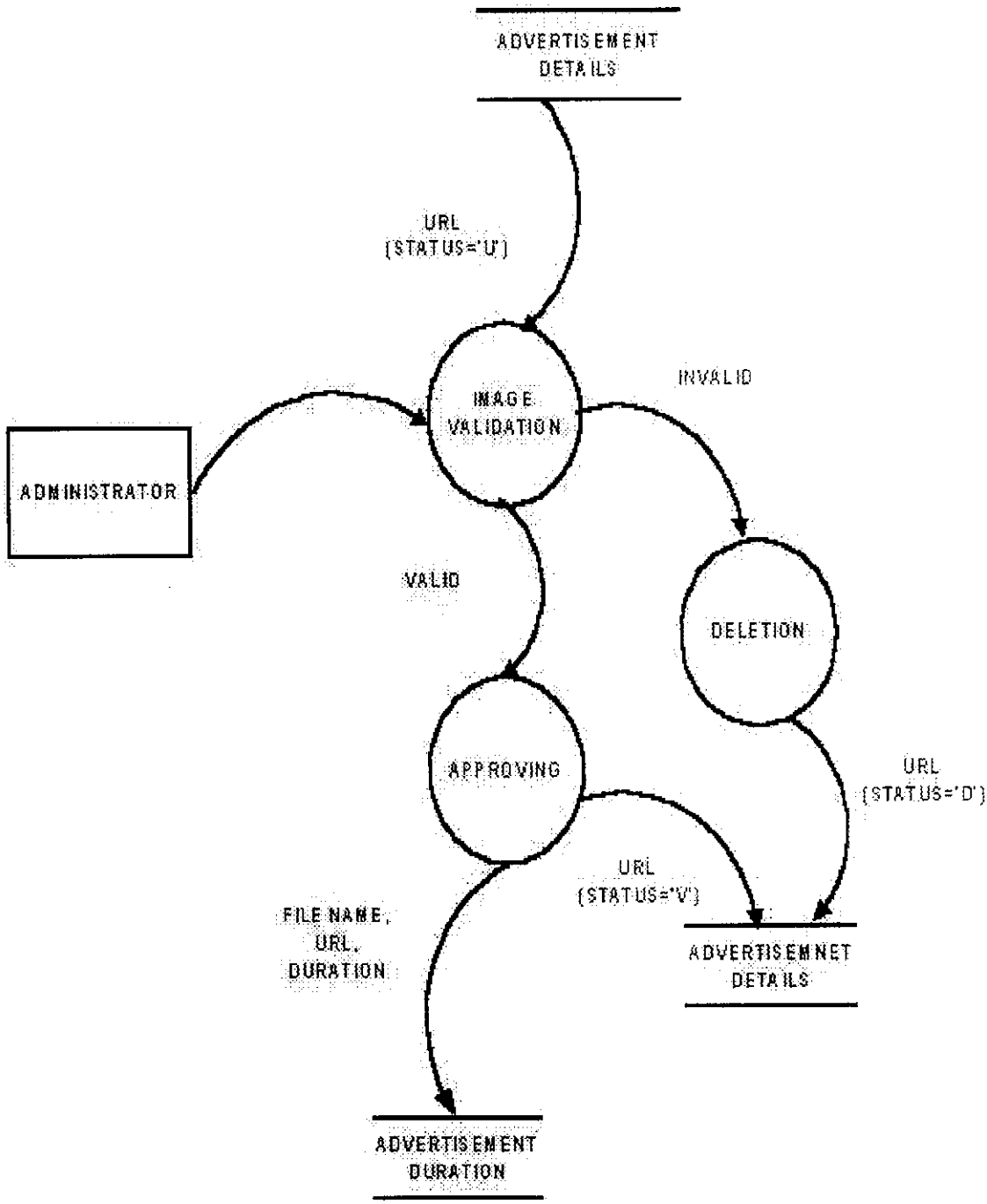
Level 2 DFD (URL Validation)

Here the URL of the company details and advertisement details are validated. After approval only it will display on the portal.



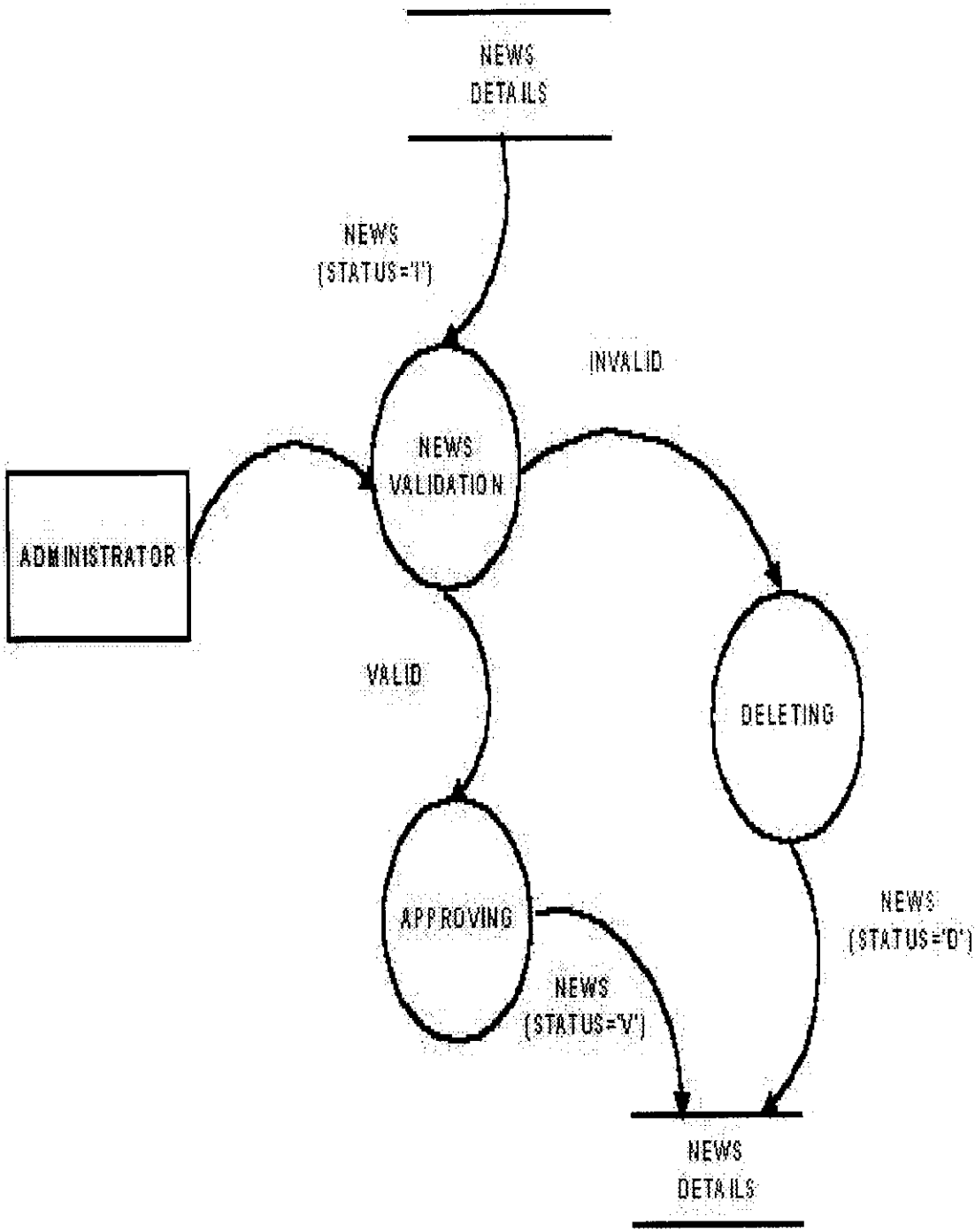
Level 2 DFD (Image Validation)

Here the image file from the advertisement details is validated. After approval only it will display on the portal.



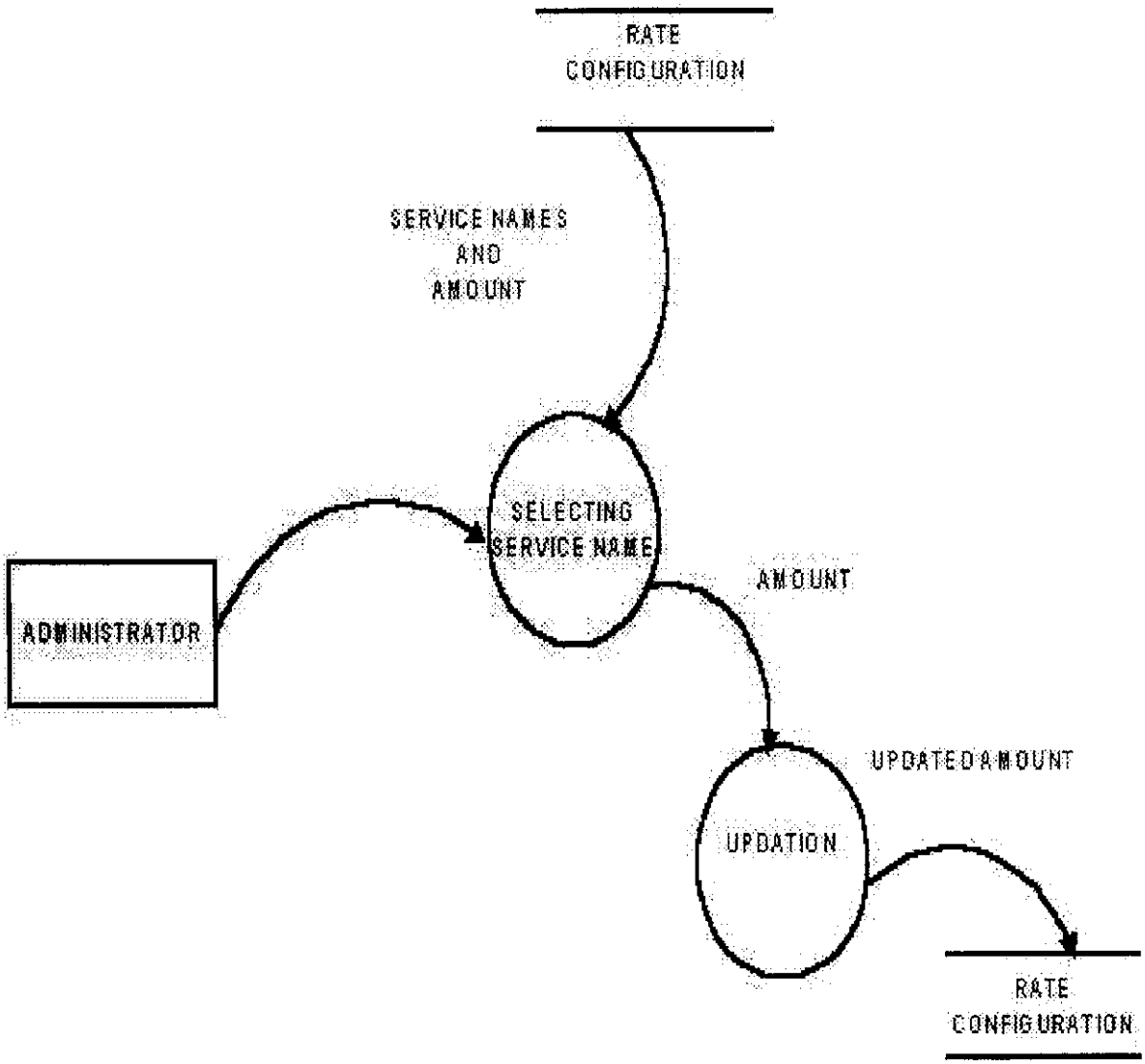
Level 2 DFD (News Validation)

Here the news description and file from the news details is validated. After approval only it will display on the portal.



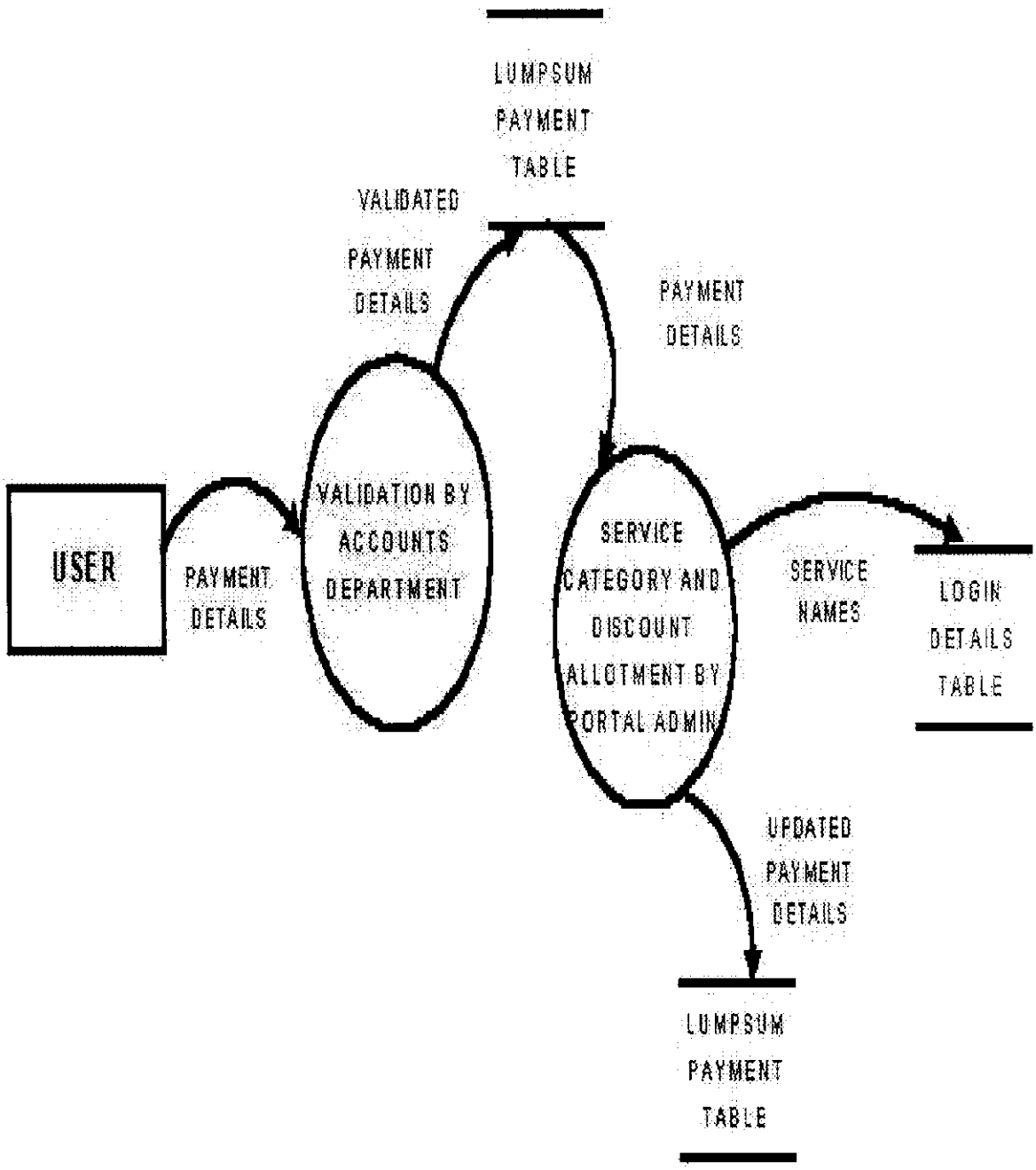
Level 2 DFD (Rate Configuration for services)

Here the Rate for accessing each services (Listing Company, Updating the Listing, Advertisement, News Releases, Jobs Data base) are configured and Updated in the Rate Configuration Table.



Level 2 DFD (Payment Processing)

Here the validated Payment details (Cheque or DD) from the accounting department and the Name of the service User want to access and the Amount for that service is inserted into the Lumpsum Payment Table. The Administrator can give a particular user discounts for accessing a particular service.



4.1.2 Database Design

This is one, which transforms the information domain model created during analysis into one, data structures that will implement the software. The primary activity during this design is to select logical representations of data objects identified during the requirement definition and specification phase.

The main tables required for the software are identified during the analysis phase. The tables are designed in such a way so as to store information efficiently and avoid unnecessary redundancy, yet making the retrieval of data easier. Above all, catering to the needs of the application, the database is normalized.

The advantages of normalization are:

- To structure the data so that any pertinent relationships between the entities can be represented.
- To permit retrieval of data in response to query and report requests
- To simplify the maintenance of data through updations, insertions and deletions.
- To reduce the need to restructure or recognize data when new application requirements arise.

The database is to be protected from accidental destruction. The organization of the database should be such that it achieves data integration, data integrity and data independence.

4.1.2.1 Table Structure

The different Tables designed for the system are the following

1. User Registration Detail
2. Login Details
3. Company Detail
4. Service index Detail
5. Advertisement Detail
6. Advertisement duration Payment Configuration Detail
7. Advertisement duration Detail
8. News release details of registered users
9. Discussion Group Category
10. Discussion Group Questions
11. Discussion Group Replies
12. Resume Detail
13. Experience Details
14. Education Details
15. Other Details
16. Employers Detail
17. Vacancy Detail
18. Qualification Detail
19. Certification Detail
20. VacancyResume Relation
21. Feedback Detail
22. News release details of Admin users
23. Currency Code
24. Rate configuration Detail
25. Lumpsum payment Detail
26. Continent Details
27. Country Details
28. SystemGenerated Number
29. System Parameters

User Registration Detail		LG_MemberRgstry			
#	Field Description	Field Name	Type	Len	Constraints
1	User_id	cMemberUsrId	Varchar2	10	pk
2	First name	cMemberFrstNm	Varchar2	30	Not Null
3	Middle name	cMemberMddlNm	Varchar2	30	
4	Last name	cMemberLstNm	Varchar2	30	Not Null
5	Address	cMemberAddrss	Varchar2	50	Not Null
6	Sex	cMemberSx	Varchar2	1	Not Null,
7	City	cMemberCty	Varchar2	30	Not Null
8	State	cMemberStt	Varchar2	30	Not Null
9	Country	cMemberCntry	Varchar2	30	Not Null
10	Postal/zip code	cmemberZp	Varchar2	10	Not Null
11	Phone at home	cMemberHmPhn	Varchar2	15	
12	Phone at work	cMemberOffcPhn	Varchar2	15	
13	Email_id	cMemberEml	Varchar2	50	Not Null
14	Fax	cMemberFx	Varchar2	15	Not Null
15	Registration date	dMemberRgstrtnDt	Date	8	Not Null
16	Password	cMemberPsswrd	Varchar2	8	Not Null
17	Secret question	cMemberQstn	Varchar2	50	Not Null
18	Answer	cMemberAnswr	Varchar2	20	Not Null
	Total size			432	

Login Details		LG_LoginDtls			
#	Field Description	Field Name	Type	Len	Constraints
1	User_id	cLoginUsrId	Varchar2	10	fk
2	Password	cLoginPsswrd	Varchar2	8	Not Null
3	Accessible Services(comma separated)	cLoginSrvcs	Varchar2	50	Not Null
	Total size			68	

Company Detail		LG_CompanyDtls			
#	Field Description	Field Name	Type	Len	Constraints
1	Company Code(refered by SERVICE_INDX.Code)	cCompanyCd	Varchar2	10	Not Null
2	Name of the organization	cCompanyNm	Varchar2	30	Not Null
3	Contact person name	cCompanyCPrsnNm	Varchar2	30	Not Null
4	Contact person designation	ccCompanyCPrsnDsgntn	Varchar2	30	Not Null
5	Address	cCompanyAddrss	Varchar2	50	Not Null
7	City	cCompanyCty	Varchar2	30	Not Null
8	State	cCompanyStt	Varchar2	30	Not Null
9	Country	cCompanyCntry	Varchar2	30	Not Null
10	Postal/zip code	cCompanyZp	Varchar2	10	Not Null
11	Phone	cCompanyPhn	Varchar2	15	

13	Url	cCompanyUrl	Varchar2	50	Not Null
14	Email_id	cCompanyEml	Varchar2	50	Not Null
15	Submission date	dCompanySbmtDt	Date	8	
16	User_id	cCompanyUsrId	Varchar2	10	fk
17	Keywords for search	cCompanySrchKy	Varchar2	30	Not Null
18	Product/service description	cCompanyPrdctDscrptn	Varchar2	3072	Not Null
19	Key service	cCompanySrvcsKy	Varchar2	30	Not Null
20	Title to be shown	cCompanyTtl	Varchar2	30	Not Null
21	Status	cCompanyStts	Varchar2	1	
22	Activation Date	dCompanyActvtnDt	Date	8	
	Total size			3569	

Service Index Detail		**LG_ServiceIndx**			
#	Field Description	Field Name	Type	Len	Constraints
1	Code	cServiceCd	Varchar2	16	Not Null
2	Service name	cServiceNm	Varchar2	30	Not Null
3	Country	cServiceCntry	Varchar2	30	Not Null
	Total size			65	

Advertisement Detail		**LG_AdvertisementDtls**			
#	Field Description	Field Name	Type	Len	Constraints
1	Advertisement Code	cAdvtCd	Varchar2	10	Not Null
2	Name of the organization	cAdvtOrgnstnNm	Varchar2	30	Not Null
3	Contact person name	cAdvtCPrsnNm	Varchar2	30	Not Null
4	Contact person designation	cAdvtCPrsnDsgntn	Varchar2	30	Not Null
5	Address	cAdvtAddrss	Varchar2	50	Not Null
6	City	cAdvtCty	Varchar2	30	Not Null
7	State	cAdvtStt	Varchar2	30	Not Null
8	Country	cAdvtCntry	Varchar2	30	Not Null
9	Postal/zip code	cAdvtZp	Varchar2	10	Not Null
10	Phone	cAdvtPhn	Varchar2	15	
11	Fax	cAdvtFx	Varchar2	15	
12	Url	cAdvtUrl	Varchar2	50	Not Null
13	Email_id	cAdvtEml	Varchar2	50	Not Null
14	Submission date	dAdvtDt	Date	8	Not Null
15	User_id	cAdvtUsrId	Varchar2	10	fk
16	Advertisement File	cAdvtFl	Varchar	250	Not Null
17	Status	cAdvtStts	Varchar2	1	Not Null
18	Activation date	dAdvtActvtnDt	Date	8	
19	Configuration code refers **LOGISTICS_ADVERTISE_PYMT_CONF**.vCode	cAdvtCnfgrtnCd	Varchar2	5	Not Null
	Total size			662	

Advertisement duration Payment Configuration Detail		LG_AdvertisementPymntCnf			
#	Field Description	Field Name	Type	Len	Constraints
1	Configuration Code	cAdvtCnfgrtnCd	Varchar	5	Not Null
2	Number of days	nAdvtDrtn	Number	5	Not Null
3	Amount	nAdvtAmnt	Number	20,10	Not Null
4	Currency code	cAdvtCrrncyCd	Varchar	3	Not Null
	Total size			33	

Advertisement duration Detail		LG_AdvertisementDrtn			
#	Field Description	Field Name	Type	Len	Constraints
1	Advertisement Code refers **ADVERTISE_DET.vAdvt Code**	cAdvtCd	Varchar	10	Not Null
2	Number of days	nAdvtDrtn	Number	5	Not Null
3	Advertising file path	cAdvtFl	Varchar2	500	Not Null
4	Submit date	dAdvtDt	Date		
5	Url	cAdvtUrl	Varchar2	50	Not Null
	Total size			565	

News release details of registered users		LG_Newsrelease			
#	Field Description	Field Name	Type	Len	Constraints
1	Submission date	dNewsreleaseSbmtDt	Date	8	Not Null
2	User_id	cNewsreleaseUsrId	Varchar	10	fk
3	Date upto which the news should be published	dNewsreleaseDt	Date	8	Not Null
4	Title of the news	cNewsreleaseTtl	Varchar	50	Not Null
5	Description of the news	cNewsreleaseDscrptn	Varchar	1024	Not Null
6	News File	cNerwsFl	Varchar	250	
7	Email Id	cNewsEml	Varchar	50	Not Null
8	Status	cNewsreleaseStts	Varchar	1	Not Null
9	Activation date	dNewsreleaseActvtnDt	Date	8	
	Total size			1459	

Discussion Group Category		LG_DiscussionGrpCtgry			
#	Field Description	Field Name	Type	Len	Constraints
1	code	cDiscussionCtgryCd	Varchar	5	Not Null
2	Name	cDiscussionCtgryNm	Varchar	15	Not Null
3	Details	cDiscussionCtgryDtls	Varchar	50	Not Null
	Total size			70	

Discussion Group Questions	LG_DiscussionGrp Qstns				
#	Field Description	Field Name	Type	Len	Constraints
1	code	cDiscussionGrpCd	Varchar	10	Not Null
2	User_id	cDiscussionUsrId	Varchar	10	fk
3	Category code	cDiscussionCtgryCd	Varchar	5	Not Null
4	Submission date	dDiscussionSbmtDt	Date	8	
5	Topic	cDiscussionTpc	Varchar	50	Not Null
6	Description	cDiscussionDscrptn	Varchar	3000	Not Null
7	Topic Status	cDiscussionStts	Varchar	1	
8	Topic posting date	dDiscussionDt	Date	8	
	Total size			3092	

Discussion Group Replys	LG_DiscussionGrp Rply				
#	Field Description	Field Name	Type	Len	Constraints
1	code	cDiscussionGrpCd	Varchar	10	Not Null
2	User_id	cDiscussionUsrId	Varchar	10	fk
3	Submission date	dDiscussionDt	Date	8	
4	Solution	cDiscussionSltn	Varchar	3000	Not Null
5	Solution Status	cDiscussionStts	Varchar	1	Not Null
6	Solution displaying date	dDiscussionSltnDt	Date	8	
	Total size			3037	

Resume Detail	LG_ResumeDtls				
#	Field Description	Field Name	Type	Len	Constraints
1	Resume Code	cResumeCd	Varchar2	10	Not Null
2	User_id	cResumeUsrId	Varchar2	10	fk
3	First name	cResumeFrstNm	Varchar2	30	Not Null
4	Middle name	cResumeMddlNm	Varchar2	30	
5	Last name	cResumeLstNm	Varchar2	30	Not Null
6	Address	cResumeAddrss	Varchar2	50	Not Null
7	Sex	cResumeSx	Varchar2	1	Not Null
8	City	cResumeCty	Varchar2	30	Not Null
9	State	cResumeStt	Varchar2	30	Not Null
10	Country	cResumeCntry	Varchar2	30	Not Null
11	Postal/zip code	cResumeZp	Varchar2	10	Not Null
12	Phone at home	cResumeHmPhn	Varchar2	15	
13	Phone at work	cResumeOffcPhn	Varchar2	15	
14	Email_id	cResumeEml	Varchar2	50	Not Null
15	Fax	cResumeFx	Varchar2	15	
16	Submission date	dResumeDt	Date	8	
17	Resume title	cResumeTtl	Varchar2	30	Not Null
19	URL	nResumeUrl	Number	50	
20	Office Phone Contact Possible	cResumeOffcPhnCntct	Varchar2	1	Not Null

21	First Preference for contact	cResumeCntctPrfrnc	Varchar2	1	Not Null
22	Type of the job	cResumeJbTyp	Varchar2	1	Not Null
23	Keywords to highlight	cResumeHlght	Varchar2	30	Not Null
24	Preferred Job Title	cResumeJbPrfrnc	Varchar2	30	Not Null
25	Preferred Location	cResumeLctnPrfrnc	Varchar2	30	Not Null
26	Salary Expected	nResumeSlryExpctd	Number	20,10	Not Null
27	Currency	nResumeCrrncyCd	Number	3	Not Null
28	Status	cResumeStts	Varchar2	1	
29	Resume Activation date	dResumeActvtnDt	Date	8	
	Total size			569	

Experience Details		LG_ResumeExprnc			
#	Field Description	Field Name	Type	Len	Constraints
1	Resume Code	cResumeCd	Varchar2	10	Not Null
2	Order of Employment (Current to Previous)	nResumeOrdr	Number	2	Not Null
3	Company name	cResumeCmpny	Varchar2	50	Not Null
4	Job Title	cResumeJbTtl	Varchar2	30	Not Null
5	Start Month / Year	dResumeFrmDt	Date	8	Not Null
6	End Month / Year	dResumeTDt	Date	8	
7	City	cResumeCty	Varchar2	30	Not Null
8	State	cResumeStt	Varchar2	30	Not Null
9	Country	cResumeCntry	Varchar2	30	Not Null
10	Description	cResumeDscrptn	Varchar2	1024	Not Null
11	Salary per Month	nResumeSlry	Number	20,10	Not Null
12	Currency Type Code	cResumeCrrncyCd	Varchar2	3	Not Null
	Total size			1245	

Education Details		LG_ResumeEdctn			
#	Field Description	Field Name	Type	Len	Constraints
1	Resume Code	cResumeCd	Varchar2	10	Not Null
2	Qualification Title Code	cResumeQlfctnCd	Varchar2	3	
3	Other Qualification	cResumeOthrQlfctn	Varchar2	30	
4	Order of Qualification(Most advanced to the least)	nResumeOrdr	Number	2	Not Null
5	Institution	cResumeInstttn	Varchar2	50	Not Null
6	City	cResumeCty	Varchar2	30	Not Null
7	State	cResumeStt	Varchar2	30	Not Null
8	Country	cResumeCntry	Varchar2	30	Not Null
9	Qualified Date	dResumeQlfdDt	Date	8	Not Null
10	Description	cResumeDscrptn	Varchar2	100	Not Null
11	Percentage	nResumePrcntgOfMrks	Number	3	Not Null
	Total size			296	

Other Details		LG_ResumeOthrs			
#	Field Description	Field Name	Type	Len	Constraints
1	Resume Code	cResumeCd	Varchar2	10	Not Null
2	Option	cResumeOptn	Varchar2	30	Not Null
3	Title	cResumeTtl	Varchar2	30	Not Null
4	Description	cResumeDscrptn	Varchar2	1024	Not Null
	Total size			1094	

Employers Detail		LG_EmployerDtls			
#	Field Description	Field Name	Type	Len	Constraints
1	Code	cEmployerCd	Varchar2	10	Not Null
2	User_id	cEmployerUsrId	Varchar2	10	fk
3	Name of the organization or Consultancy service	cEmployerOrgnstnNm	Varchar2	30	Not Null
4	Contact person name	cEmployerCPrsnNm	Varchar2	30	Not Null
5	Contact person designation	CEmployerCPrsnDsgntn	Varchar2	30	Not Null
6	Address	cEmployerAddrss	Varchar2	50	Not Null
7	City	cEmployerCty	Varchar2	30	Not Null
8	State	cEmployerStt	Varchar2	30	Not Null
9	Country	cEmployerCntry	Varchar2	30	Not Null
10	Postal/zip code	cEmployerZp	Varchar2	10	Not Null
11	Phone	cEmployerPhn	Varchar2	15	
12	Fax	cEmployerFx	Varchar2	15	
13	Url	cEmployerUrl	Varchar2	50	
14	Email_id	cEmployerEml	Varchar2	50	Not Null
15	Submission date	dEmployerSbmtDt	Date	8	
	Total size			398	

Vaccancy Detail		LG_VacancyDtls			
#	Field Description	Field Name	Type	Len	Constraints
1	Code	cVacancyCd	Varchar2	10	Not Null
2	User_id	cVacancyUsrId	Varchar2	10	fk
3	Title of the vacancy	cVacancyTtl	Varchar2	30	Not Null
4	Number of Posts vacant	nVacancyPsts	Number	4	Not Null
5	Type of the job	cVacancyJbTp	Varchar2	1	Not Null
6	Job description	cVacancyDscrptn	Varchar2	3072	Not Null
7	Qualification code(s) separated by comma	cVacancyQlfctnCd	Varchar2	30	Not Null
8	Certification code(s) separated by comma	cVacancyCrtfctnCd	Varchar2	50	Not Null
9	Skill set required	cVacancySkllCd	Varchar2	50	Not Null

	separated by comma				
10	Experience Required	nVacancyExprncRqrd	Number	3	Not Null
11	Preferred location	cVacancyLctnPrfrnc	Varchar2	30	Not Null
12	Expected salary	nVacancySlry	Number	20,10	Not Null
13	Currency Code	cVacancyCrrncyCd	Varchar2	3	Not Null
14	Keywords to highlight	cVacancyHghlght	Varchar2	30	Not Null
15	Deadline of the application	dVacancyDdln	Date	8	Not Null
16	Vacancy Activation date	dVacancyActvtnDt	Date	8	
	Total size			3359	

Qualification Detail		LG_QualificationCnf			
#	Field Description	Field Name	Type	Len	Constraints
1	Qualification code	cQualificationCd	Varchar2	3	Not Null
2	Qualification name	cQualificationNm	Varchar2	30	Not Null
	Total size			33	

Certification Detail		LG_CertificationCnf			
#	Field Description	Field Name	Type	Len	Constraints
1	Certification code	cCertificationCd	Varchar2	3	Not Null
2	Certification name	cCertificationNm	Varchar2	30	Not Null
	Total size			33	

VacancyResume Relation		LG_VacancyRsmRln			
#	Field Description	Field Name	Type	Len	Constraint
1	User Id	cVacancyUsrId	Varchar	10	fk
2	Vacancy Code	cVacancyCd	Varchar	10	Not Null
3	Resume Code	cResumeCd	Varchar	10	Not Null
4	Status	cStatus	Varchar	1	
	Total size			31	

Feedback Detail		LG_Feedback			
#	Field Description	Field Name	Type	Len	Constraints
1	Username	cFeedbackUsrNm	Varchar2	30	Not Null
2	Email_id	cFeedbackEml	Varchar2	50	Not Null
3	Comments/feedback	cFeedbackCmmnts	Varchar2	1024	Not Null
4	Rate this site	cFeedbackRtng	Varchar2	10	Not Null
	Total size			1114	

News release details of Admin users		LG_NewsreleaseAdmnstr			
#	Field Description	Field Name	Type	Len	Constraints
1	Submission date	dNewsreleaseSbmtDt	Date	8	Not Null
2	User_id	cNewsreleaseUsrId	Varchar	10	fk
3	Title of the news	cNewsreleaseTtl	Varchar	50	Not Null
4	Description of the news	cNewsreleaseDscrptn	Varchar	1024	Not Null
	Total size			1092	

Currency Code		LG_CurrencyCnfgrtn			
#	Field Description	Field Name	Type	Len	Constraint
1	Currency Code	cCurrencyCd	Varchar2	3	Not Null
2	Currency details	nCurrencyDtls	Varchar2	50	Not Null
	Total size			53	

Rate configuration Detail		LG_RateCnf			
#	Field Description	Field Name	Type	Len	Constraints
1	Code	cRateCd	Varchar2	5	Not Null
2	Description	cRateDscrptn	Varchar2	100	Not Null
3	Amount	nRateAmnt	Number	20,10	Not Null
4	Currency Code	cRateCrrncyCd	Varchar	3	Not Null
	Total size			128	

Lumpsum payment Detail		LG_LumpsumPymnt			
#	Field Description	Field Name	Type	Len	Constraints
1	User_id	cLumpsumUsrId	Varchar2	10	Not Null
2	Service	cLumpsumSrvc	Varchar2	10	Not Null
3	Payment Id	cLumpsumPymntId	Varchar2	10	Not Null
4	Rate	nLumpsumRt	Number	20,10	Not Null
5	Amount at Credit	nLumpsumCrdtAmt	Number	20,10	Not Null
6	Currency Code	cLumpsumCrrncyCd	Varchar	3	Not Null
	Total size			73	

Continent Details		LG_ContinentLst			
#	Field Description	Field Name	Type	Len	Constraints
1	Continent Code	cContinentCd	Varchar2	5	Not Null
2	Continent Name	cContinentNm	Varchar2	30	Not Null
	Total size			35	

Country Details		LG_Country			
#	Field Description	Field Name	Type	Len	Constraints
1	Code	cCountryCd	Varchar	5	Not Null
2	Continent Code	cCountryCntnntCd	Varchar2	5	Not Null
3	Country Name	cCountryNm	Varchar	30	Not Null
	Total size			40	

SystemGenerated Number		LG_SystemGnrtdNmbr			
#	Field Description	Field Name	Type	Len	Constraints
1	Service Name	cSystemSrvcNm	Varchar	30	Not Null
2	Service Code	cSystemSrvcCd	Varchar	3	Not Null
3	Current Value	nSystemCrrntVl	Number	7	Not Null
	Total size			40	

System Parameters		LG_SystemPrmtrs			
#	Field Description	Field Name	Type	Len	Constraints
1	Parameter Code	cSystemPrmtrCd	Varchar	10	Not Null
2	Parameter Value	cSystemPrmtrVl	Varchar	10	Not Null
	Total size			20	

4.1.3 Architectural Design

It defines the relationship between major structural elements of the program. This design representation- the modular framework of a computer program can be derived from the analysis models and the interaction of the subsystems defined within the analysis models. The primary objective is to develop a modular program structure and data structure, defining interfaces that enable the conceptual view of the software product. This means performing a number of tasks such as decomposing the specification into software modules, identifying internal processing functions, decomposing of these into sub functions, identifying the interfaces and interconnections among the functions and sub functions, identifying the data used and passed among the functions and finally identifying where the data is stored.

4.1.4 User-interface Design

The interface design describes how software communicates within itself, to systems that interoperate with it and with humans who use it. An interface implies a flow of information. Therefore, the DFD and control flow diagrams provide the information required for interface design. User interface is the doorway into an interactive software application. The design of human computer interfaces demands an understanding of human factors and interface technology. Human perception, the skill level, the behavior profile of the user and the overall tasks that user must conduct are all factors to be considered in the design of the interface.

The interface tells the system what actions to take for entering, changing or retrieving data. It allows users to accomplish processing actions or activities actively and effectively in a manner they perceive as being a natural and reasonable way to request and carry out activities. The interface should be in such a manner as to include the use of methods that will not grow tiresome and unacceptable to frequent users who become familiar with the system but that which will facilitate equally effective use by novice users.

It should avoid user errors i.e., it should prevent the taking of any action that will create a processing error or interrupt the expected actions of the computer system. System analyst frequently considers the interface as a window into the system, a view of a portion of the entire system's features. Users in contrast, tend to view the interface window as the entire system. Their experience with the interface forms the basis for judging the system's features. If the interface does not allow easy entry of data or the initiation of actions, with simplicity and without the risk of making serious mistakes, we cannot expect users and others who are affected by the system to judge it to be acceptable.

Once proper classification standards are decided and the corresponding tables to be used are chosen, the next task is to design the user interface to enter data into these tables and to manipulate the data entered. With this objective several pages are designed.

Appropriate messages are displayed to convey feedback to users. Messages are system's way of communicating with users. It is a method of interaction between the user and the application so that alternative actions are obvious and the method for invoking each alternative is evident. Doing this minimizes the amount of explanation needed. Messages also provide the information that the user needs to control the system. In general messages indicate the status of processing, indicate that an error has been detected and request user to select action and verify that the selected action is correct. Messages should also tell the users what action to take and when. Every command entered should be acknowledged either by the immediate initiation of the requested action or by display of the concise message. Request that will produce significant changes or that may initiate long-running processes need verification.

4.1.5 Procedural Design

Procedural design occurs after data, architectural and interface design has been established. A good software structure design results in the development of a perfect working system. The software is divided into separate named and

addressable components that are integrated to satisfy the problem requirement. The modular design reduces the complexity, facilitate changes and result in easier implementation by encouraging parallel development of different parts of a system. The procedural design transforms the structural elements of the program architecture into a procedural description of software components.

Procedures specify what tasks must be performed in using the system and who is responsible for carrying them out. There should be methods for capturing transaction data and entering it into the information system. There should be run-time procedures, which are steps and actions taken by the system administrators and the end-users that are interfacing with the system to achieve the desired results. Error handling procedures should be there to take care of the system when unexpected results occur. Also, there should be actions to protect the system and its resources against damage.

The main modules of the required software are

- Registration and Login process
- Add/Update Listing processes
- Direct Links and Geosearch Provision
- Advertising Service Provision
- NewsRelease submission and viewing
- Country profile feature
- Search feature
- Discussion Forum management
- JobsDatabase
- Administrator Functions

The list of the JSP programs to be developed under each of the above modules is as follows.

REGISTRATION AND LOGIN PROCESS		
#	Name of The Program	Description
1	CheckRegistration.jsp	Checks whether provided username already exists and submits validated preliminary details into the Registration table.
2	AddRegistration.jsp	Inserts the personal details of the user into the corresponding table.
3	Login.jsp	Checks whether provided username and password exists.
4	ForgotPassword.jsp	Provides the password when the user types in a correct answer for a predetermined secret question.
5	ChangePassword.jsp	Changes the corresponding password for a provided username

ADD/UPDATE LISTING PROCESSES		
#	Name of The Program	Description
1	AddUrl.jsp	Inserts all the validated details required to be provided for adding a URL listing to the site, into the Company Details and Service Index table
2	UpdateUrl1.jsp	Fetches all the URLs corresponding to the username
3	UpdateUrl2.jsp	Fetches and presents all the details corresponding to the selected URL
4	UpdateUrl3.jsp	Inserts the updated URL details into the corresponding table.

DIRECT LINKS AND GEOSEARCH PROVISION		
#	Name of The Program	Description
1	DirectLinks.jsp	Retrieves and presents all the URL listings and corresponding descriptions for a selected category.
2	GeoSearch.jsp	Retrieves and presents all the URL listings and corresponding descriptions belonging to a specific country for a selected category.

ADVERTISING SERVICE PROVISION		
#	Name of The Program	Description
1	AdvertiseDetails.jsp	Inserts all the validated details to be provided for accessing the advertising service offered by the portal into the Advertisement table.
2.	AdvertFile.jsp	Uploads the advertisement banner ad files into a specific folder

NEWS RELEASE SUBMISSION AND VIEWING		
#	Name of The Program	Description
1	PostNews.jsp	Inserts all the validated details to be provided for submitting a news release into the corresponding table
2	NewsUpload.jsp	Uploads the submitted HTML news file into a predetermined specific folder.
3	ViewNews.jsp	This file is used for displaying the topics of news posted by the user from the news table. The user can view the news details by clicking the topic link.
4	NewsDetails.jsp	This file is used for displaying the news descriptions and the news file corresponding to the topic selected by the user.

COUNTRY PROFILES		
#	Name of The Program	Description
1	CountryProfiles.jsp	Searches, Retrieves and Presents required data from an XML file.

SEARCH FEATURE		
#	Name of The Program	Description
1	SearchService.jsp	Searches the entire portal archive based on a keyword provided by the user and a specific category also to be chosen by the user and also display an error page if the search process fails.

DISCUSSION FORUMS		
#	Name of The Program	Description
1	DisIndex.jsp	Retrieves the topic index from the Discussion table and displays it to the user. The user can view the message by clicking the topic link.
2	Createtopic.jsp	This file is used for getting the topic and corresponding message from the user and for adding those details in to the Discussion table.
3	Discussionreply.jsp	The file is used for getting the reply for a message and for adding that reply to the Discussion Reply table.

JOBS DATABASE		
#	Name of The Program	Description
1	Personal1.jsp	Inserts the validated personal details provided by a resume poster into the corresponding table
2	Educational.jsp	Inserts the educational details of the user into the corresponding table.
3	WorkExperience.jsp	Inserts the work experience details of the user into the corresponding table
4	Otherdetails.jsp	Inserts other relevant details like association membership, research work etc into the corresponding table
5	Postvacancy.jsp	Inserts the job vacancy details posted by registered users into the corresponding table
6	EmployerDetails.jsp	Inserts the employer details into the corresponding table
7	Viewvacancy1.jsp	Retrieves and displays vacancy details matching the users resume details
8	Viewvacancy2.jsp	Retrieves and displays all the posted vacancy details
9	Viewresume1.jsp	Retrieves and displays resume details matching the users vacancy details
10	Viewresume2.jsp	Retrieves and displays all the posted vacancy details

ADMINISTRATOR FUNCTIONS		
#	Name of The Program	Description
1	PostAdmnNews.jsp	Gets the news details and inserts that details to the AdmnNews table.
2	ViewAdmnNews.jsp	Displays the topics and news details corresponding to each topic selected by the user.
3	RateUpdation.jsp	Displays the rate of each service from the Rate Configuration table and allows the administrator to make changes to them.
4	NewsValidation.jsp	Retrieves and displays the news posted by the users and allows the administrator to validate them.
5	UrlValidation.jsp	Displays the url's of the selected company name and allows the administrator to view the company details by Clicking the url link and validate them.
7	ImageValidation.jsp	Displays all images from the Advertisement table, which have been submitted in a day and allows the administrator to validate them.
8	AddQualification.jsp	Gets and inserts the qualification name to the Qualification table.
9	AddCertification.jsp	Allows the administrator to add a new certification name to the Certification table.
10	LumpsumPayment.jsp	Allows the administrator to configure the discounts to be provided to the various users. The information retrieved and submitted will be from the Lumpsum Payment table.

4.2 SYSTEM DEVELOPMENT

This is the phase in which the proposed system is developed as per the user requirements. Obtaining positive results implies the need for a procedure to plan, organize and control project development. Project management necessitates modeling the development process itself. A principal activity includes the coding and testing of the computer programs that make up the component of the overall system.

The system flow charts and other charts are converted into modular programs. These have to be compiled, tested and debugged. The quality of the source code can be improved by the use of structural coding techniques, good coding style and a good format or coding standard, which also makes it easier to modify the code later on if need arises. Code is developed in such a way so as to reduce input, control errors and speed up the entire process.

A major work was the creation of forms, which are used by the user for the purpose of submission of data. These forms were first created in HTML and then embedded into JSP programs after incorporating into them JavaScript code for data validations. The forms were designed in such a way so as to make the data entry easier and free from logical errors. Radio boxes and Check boxes were provided wherever possible. For reducing typing errors by the user combo boxes with the list of values from which the user can select were provided. Validations were made for every data entered. Help messages were provided wherever possible, so that the user can understand what is to be entered. Error messages are also displayed and the user can move to the next field only after entering the correct data. Most of the forms contained date fields. So to provide an easier way for the user to enter dates a date picker program was exclusively developed in JavaScript. This program could provide the user with a pop up calendar from which the user could pick the required date.

Two important issues that had to be addressed were page expiration and session management. It was necessary for security purposes that some web pages like the one used to log in or in which critical information had to be filled in by the user expire after a stipulated amount of time so that the page is not accessible

even when the browser back button is clicked. And one of the shortcomings of the HTTP protocol is that it is stateless. That is HTTP servers do not keep any information about the browsers that are connecting to them from one request to another. This makes more advanced Web applications, such as personalized content generation, more difficult.If multiple customized pages will be viewed, a mechanism for keeping track of users is required. Similarly, if data input is spread across multiple forms prior to final processing, the results of each individual form submission must be stored and cross-referenced against the submitters' identities. This process of trying to maintain state across multiple HTTP requests is referred to as session management, the idea being that all of a user's requests for pages from a Web server during a given period of time are actually part of the same interactive session.

At a high level, the basis of the HTTP protocol is requests and responses. Requests can also be accompanied by header information, which is typically used for identifying the type and capabilities of the browser, controlling caching, and returning cookie data. Similarly, the HTTP protocol allows the server to send additional information back to the client in the form of response headers. These headers are sent back along with the requested Web content, which is therefore referred to as the body of the response. Response headers are primarily used for sending status information about the request back to the browser. Like request headers, they may also be used for controlling caching, and for setting cookie data. The solution to the page expiration issue was achieved by setting appropriate response headers (PRAGMA and CACHE CONTROL) both in the JSP pages as well as their counterparts - META HTTP headers in the HTML part to prevent the pages from getting cached. For the response headers to work two modules mod_expires and mod had to be enabled in the server.

Java Server Pages includes built-in support for session management, by taking advantage of the capabilities provided by the Java servlet API. Servlets can use either cookies or URL rewriting to implement session management, but the details of session management are hidden at the JSP level. From the perspective of JSP development, the availability of session management can simply be assumed. JSP provides an implicit object named session, which represents an

individual user's interactive session with the Web server. Any JSP page that participates in session management can store items in this session object, and subsequently retrieve or remove them later, based on the user's interaction with the site. For example, the session object could be used to store login information or any JSP page on the server can then access the contents of a shopping cart, and this stored data. All objects stored as session data for the JSP container will eventually reclaim a user whenever the user's session times out.

Using the session object we could restrict the users from gaining access to the paid services directly by copying the URL. If at any time the user object is null while accessing the paid services it was designed to prompt the user to log in first. The services that are accessible to a user was also be stored in session variables so that it was not necessary to access a database each time when the user accessed a service. It was also designed to expire a users session once he logs out or when the stipulated amount of time expires, whichever is earlier.

It was decided during the design phase that registered users would be able to access the portal services only after paying a certain amount. But provisions were provided by which the user himself could decide the amount he wishes to pay and could also configure the amount for the various services. Provisions were also provided by which the administrator could provide discounts to specific users after getting the validated payment details from the account department. In order to keep track of the payments that are being made by a user in a single session a randomly generated code, which the user is to provide when submitting the cheque or demand drafts to the account department, was made to be available to the user once he clicks the payment option. The generated code would be unique for each transaction. Random codes had also to be generated when the user submits a resume, a vacancy, a URL, Advertisement banners or when posting a problem in the discussion forums. Since data for all this features had to be stored in more than one database table this randomly generated unique code would help us to distinguish each transaction.

For implementing the advertisement feature first of all provisions were provided by which the administrator could check the size and validate the image files and corresponding URLs. The validated images were stored in a separate folder and the paths and names in a database table. Using the Ad Rotator provision the Image files and the corresponding URLS could be fetched at stipulated time intervals by means of a java applet.

Another important issue that was handled was file uploading. The users would provide HTML files for submitting News Releases, word files for resumes and JPEG or GIF files for advertisement banners. These files have to be uploaded from the corresponding forms and stored in specific folders. For this the first step was to change the encryption format of the file to a multipart format so that the file could be transmitted in parts after checking its size limit .For splitting the file a multipart parser is used. Once the file multiparts reach the destination they could be reconverted into standard file format and assembled into a single file using a file object. Before the file could be placed in the specified folder it had to be checked whether any such file with the same name exists. If it exists prefixing a number to it could modify the name.

To implement the Country Profiles feature wherein all the details of a country like population, geography, history, climate, terrain, government structure etc had to be provided an XML document was first created with custom tags. The details of each country were stored in a separate record in the XML document. A separate JavaScript program was developed to search the XML document for the particular country name chosen by the user and to retrieve the corresponding details. A style sheet was also prepared and included in the document by which the retrieved data could be formatted and displayed.

During the project development, some coding conventions like naming variables and functions with a capital letter as the first letter in the name and using

underscore for a database table name if it has two or more words and the like were followed. The primary aim behind this is to provide easily understood, straightforward and elegant code.

System Testing and Implementation

5 SYSTEM TESTING AND IMPLEMENTATION

5.1 SYSTEM TESTING

Software testing is defined as the process by which one detects the defects in the software. It is considered as the final opportunity to detect and convert or rectify any defects that may be there in the developed product. Testing is a process, which is done with the explicit intention of finding errors that would make the program fail. In short, system testing and quality assurance is a review of the software product and related documentation for completion, correctness, reliability and maintainability.

The first step in system testing is to prepare a plan that will test all the aspects of the system. System testing can be grouped as:

- Unit testing
- Integration Testing
- Validation testing
- Performance testing
- Load testing
- User interface testing

5.1.1 Unit Testing

This is the first level of testing in which different modules are tested against the specification produced during the design of modules. Unit Testing is done for the verification of the code produced during the coding phase and to test the internal logic of the modules. It refers to the verification of a single program module in an isolated environment.

After coding each page is tested and run individually. All unnecessary coding statements are removed and it is ensured that all the functionality works as expected. Any logical errors found are corrected.

5.1.2 Integration Testing

Integration Testing is a systematic technique for constructing the program structure while conducting test to uncover errors associated with interfacing. Many tested modules are combined into a subsystem, which is then tested. This testing is the verification of the interfaces among system parts. Integration Testing addresses the issues associated with the dual problems of verification and program construction.

5.1.3 Validation Testing

Validation Testing provides the final assurance that the software meets all functional, behavioral and performance requirements. The software is completely assembled as a package, interfacing errors are uncovered and collected and a final series of software test validation testing may begin. Validation succeeds when the software functions in a manner that is reasonably expected by the user. Validation testing refers to the process of using software in alive environment to find errors. The feedback from the validation phase generally produces changes in the software to deal with errors and failures that are uncovered so far.

Validation Testing is usually done by inputting dummy data. A test case is a set of data the system will process as normal input. However data are usually created with the intent of determining whether the system will process them correctly.

5.1.4 Performance testing

Performance testing is to verify the performance requirements have been achieved or not. It verifies the system response time for designated transactions and measure response times, transaction rates, and other time sensitive requirements.

5.1.5 Load testing

Load testing is performed by subjecting the system-under-test to varying workloads to evaluate the systems ability to continue to function properly beyond the expected maximum workload. It evaluates the performance characteristics (response time, transaction rates and other sensitive issues)

5.1.6 User interface testing

User interface testing is done to verify the users interactions with the software.
It ensures that the user interface provides the user with the appropriate access and navigation through the functions of the applications.
It also ensures that the objects within the function as expected and conform to industry standards. (To reflect business functions and requirements, including window to window, field to field and use of access methods (tab keys, mouse movements etc)

5.2 System Implementation

In this stage the theoretical design is converted into a full-fledged working system. The implementation involves careful planning, investigation of the constraints and design of methods to overcome them, training of the staff or administrators as in this case and the testing of the developed product. The more complex the system being implemented, the more involved will be the system analysis and design effort required just for implementation.

5.2.1 Implementation Plan Preparation

The implementation process begins with preparing a plan for the implementation of the system. In this plan, discussion is made regarding the equipment, resources and how to test the developed system.

5.2.2 Equipment Acquisition

According to the above plan, the equipment necessary to implement the system is acquired. Dimensions Cybertech Pvt., Ltd had already acquired all the necessary infrastructure.

5.2.3 Education And Training

Once the system is successfully developed the next important step is to ensure that the administrators are well trained to handle the system. This is because the success of a system invariably depends on how they are operated and used. The implementation depends upon the right people being at the right place at the right time. Education involves creating the right atmosphere and motivating the user. The administrators are familiarized with the run procedures of the system, working through the sequence of activities on an ongoing basis.

5.3 INSTALLING THE SYSTEM

The installation of the system takes place when the system has been proved to the satisfaction of the system analyst, users, managers, operational mangers and others related to the system. The system is tested and after it is found error free installed successfully.

Conclusion

6 CONCLUSION

The Logistics Portal software is being tested with real data. Flexibility is one of the major characteristics of the system. The system allows the user to access necessary information efficiently and effectively and in a manner, as they perceive as being a natural and reasonable way to request and carry out activities. All possible care has been taken to meet all user requirements. But as Peter Norton has said "**A software is never complete but it has to be shipped sometime**". Taking inspiration from this we would like to include in this section some of the improvisations that could be made to the system.

One of the most important aspects of a web-based application is the visual design, which takes into account the visual and graphical aspects of a web site. The visual design of a web-based application is important in terms of directing a user's attention to important elements of the web site and in prioritising the steps a user needs to take. Good graphics and page design can grab the viewer's attention, and may well make the difference between being book marked, and being forgotten - even if our content is brilliant. However due to time constraints we could not concentrate on this aspect. It was decided that a separate professional team would handle the visual design of the portal.

Scope for Future Development

7 SCOPE FOR FUTURE DEVELOPMENT

The future developments of the system mainly in two areas and they are automatic email notification and online payment.

An important service that is provided by portals is automatic email notification to users as well as providing interfaces by which users can directly email to the portal administrator. But this requires the use of a mail server and a separate Java Mail Service API and the site has to be hosted for testing while incorporating this feature. But since the system is in the testing phase it would take some time for it to be hosted. So we could not implement this functionality.

Secure financial transactions are vital to the success of portals as it is to ecommerce sites. And one of the most convenient and popular form of payment is credit card payment. Credit card payment can be guaranteed only after carrying out certain security measures, one of which includes checking the cardholder's signature. Server certificates or Digital IDs provide proof of authentication and security in the form of SSL, Secure Socket Layer, and encryption. However providing this feature was beyond the scope of our project. So provisions could be provided only for payments through cheques and demand drafts, which had to be designed to be processed, by a separate payment processing system that is to be integrated with the developed system.

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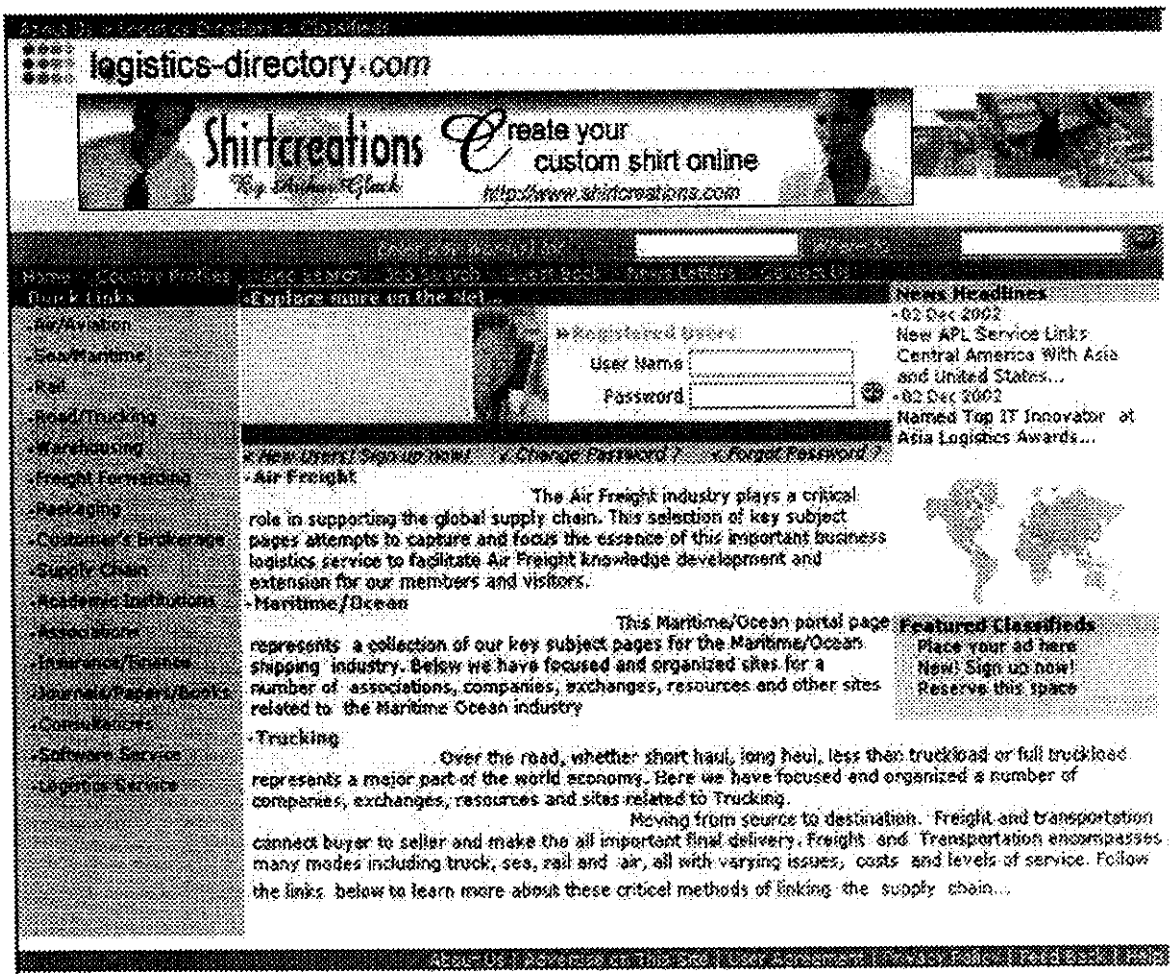
Appendix

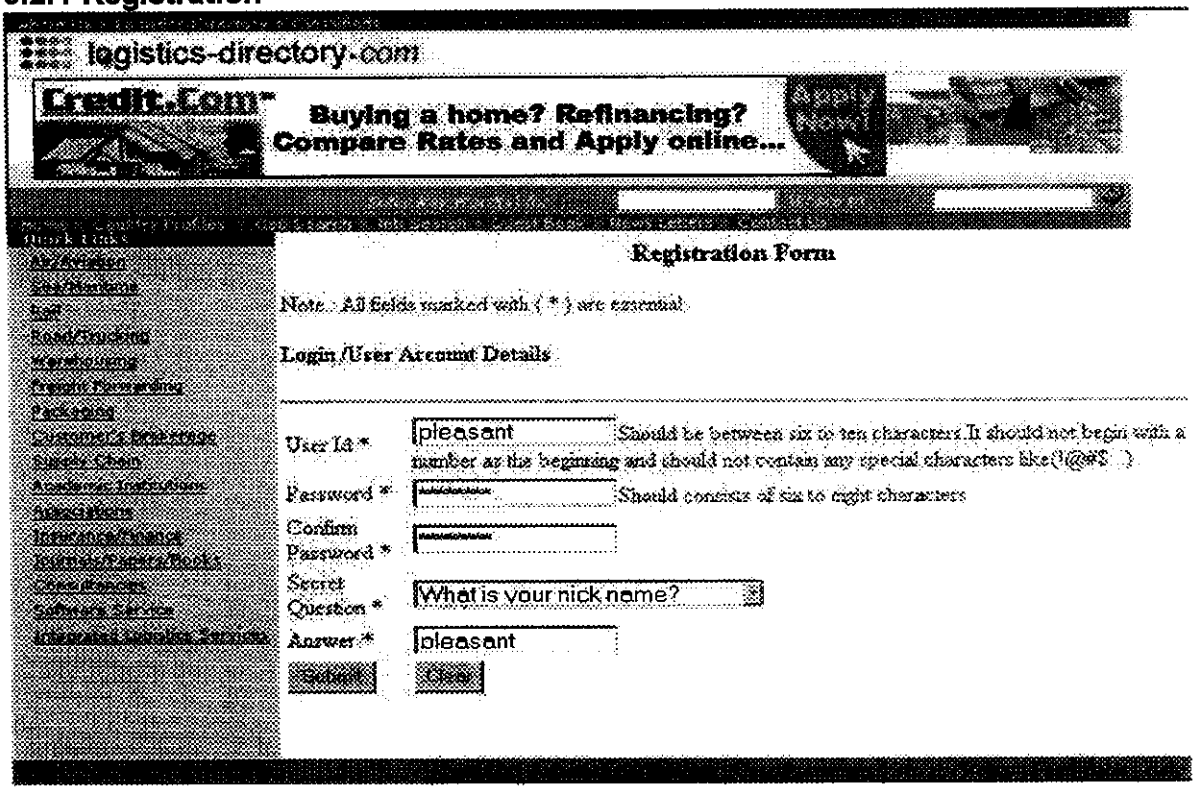
9. SCREEN SHOTS

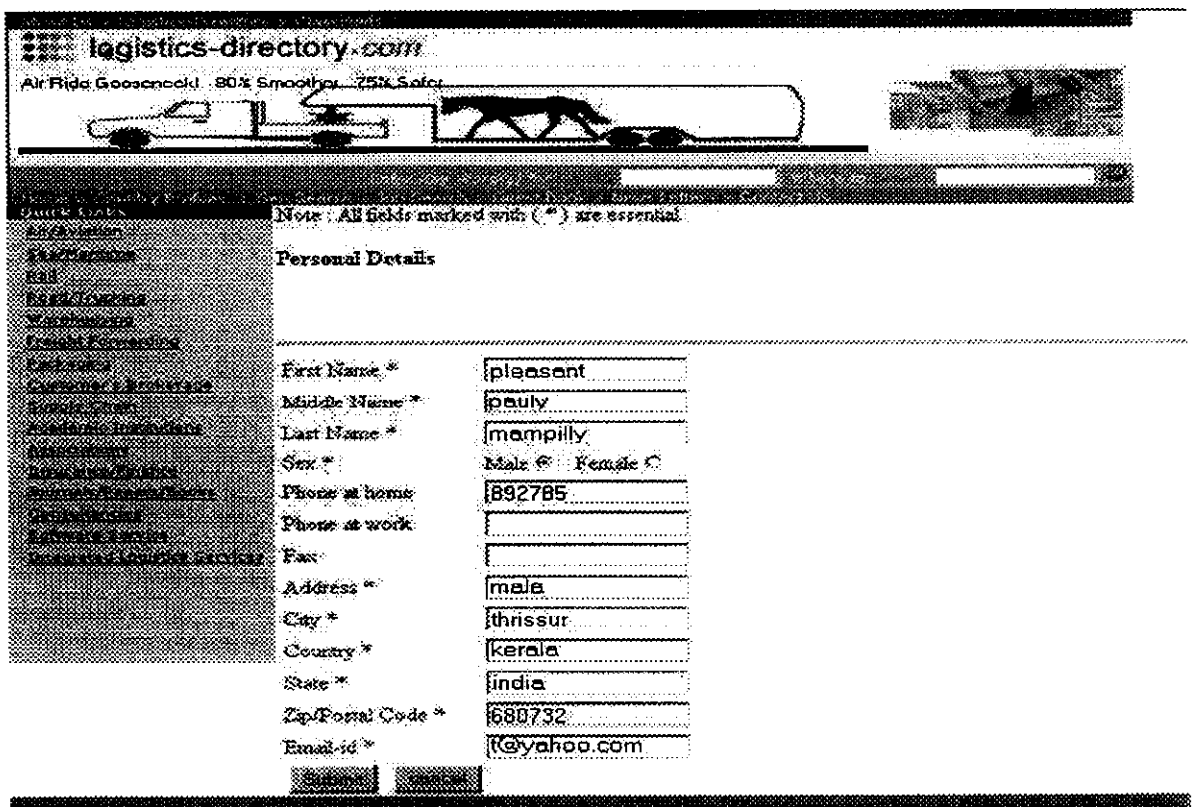
9.1 Home Page



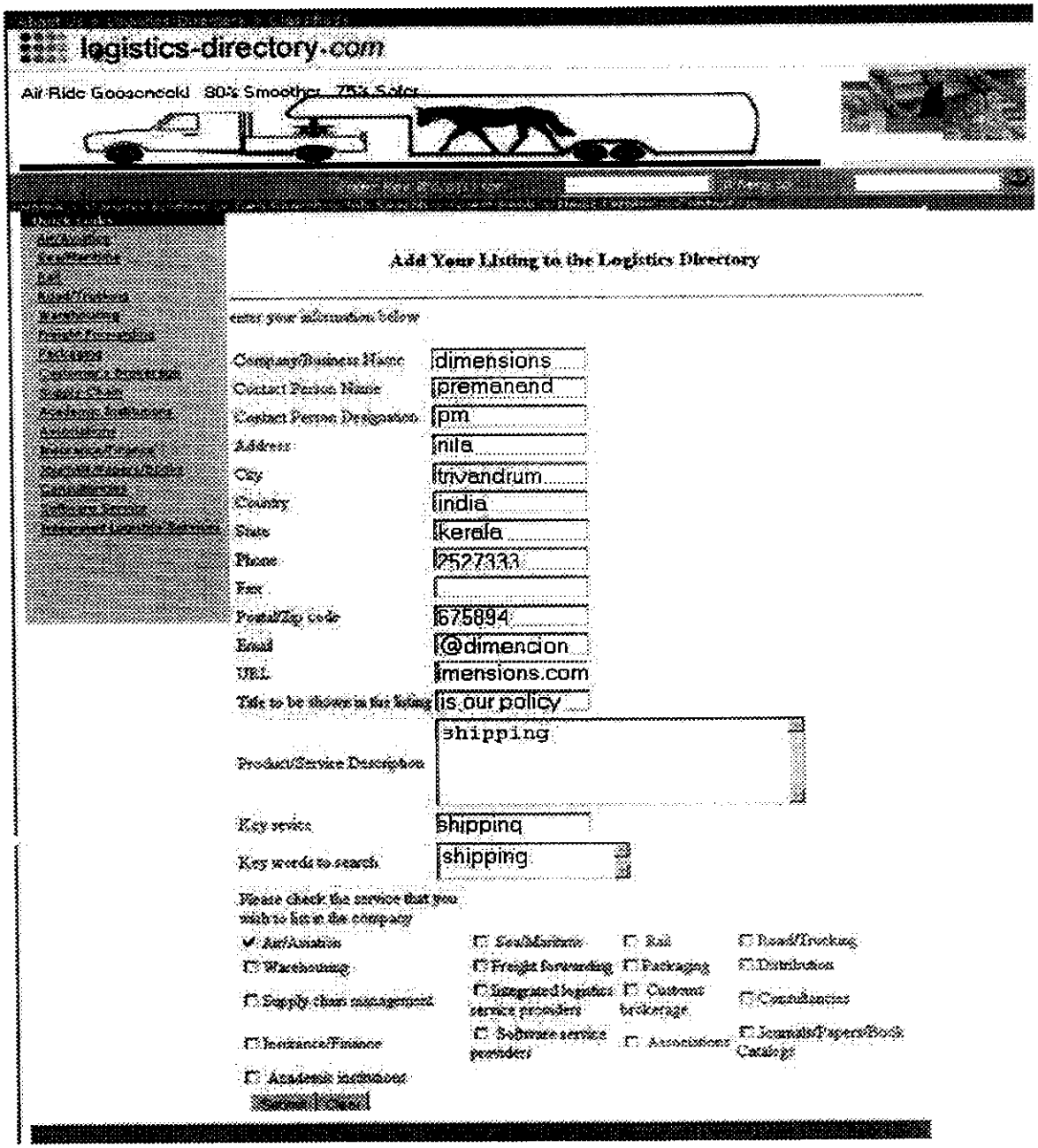
9.2 INPUT SCREENS

9.2.1 Registration

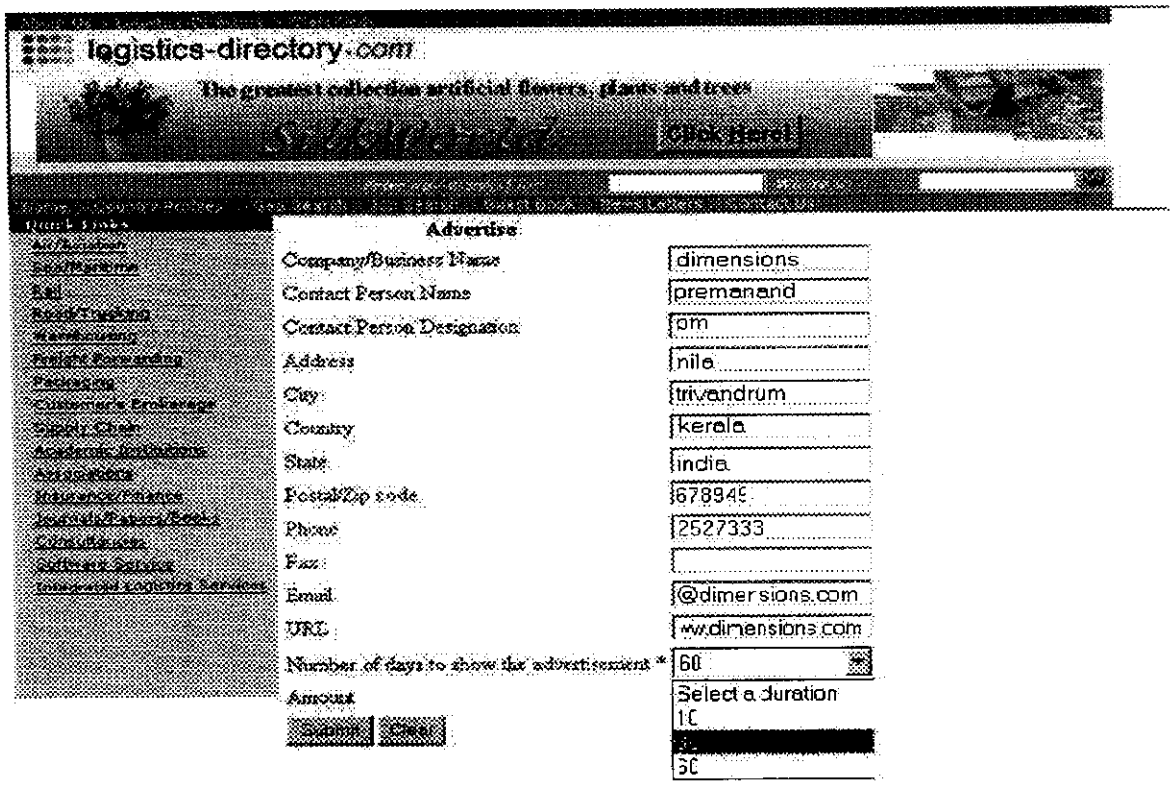


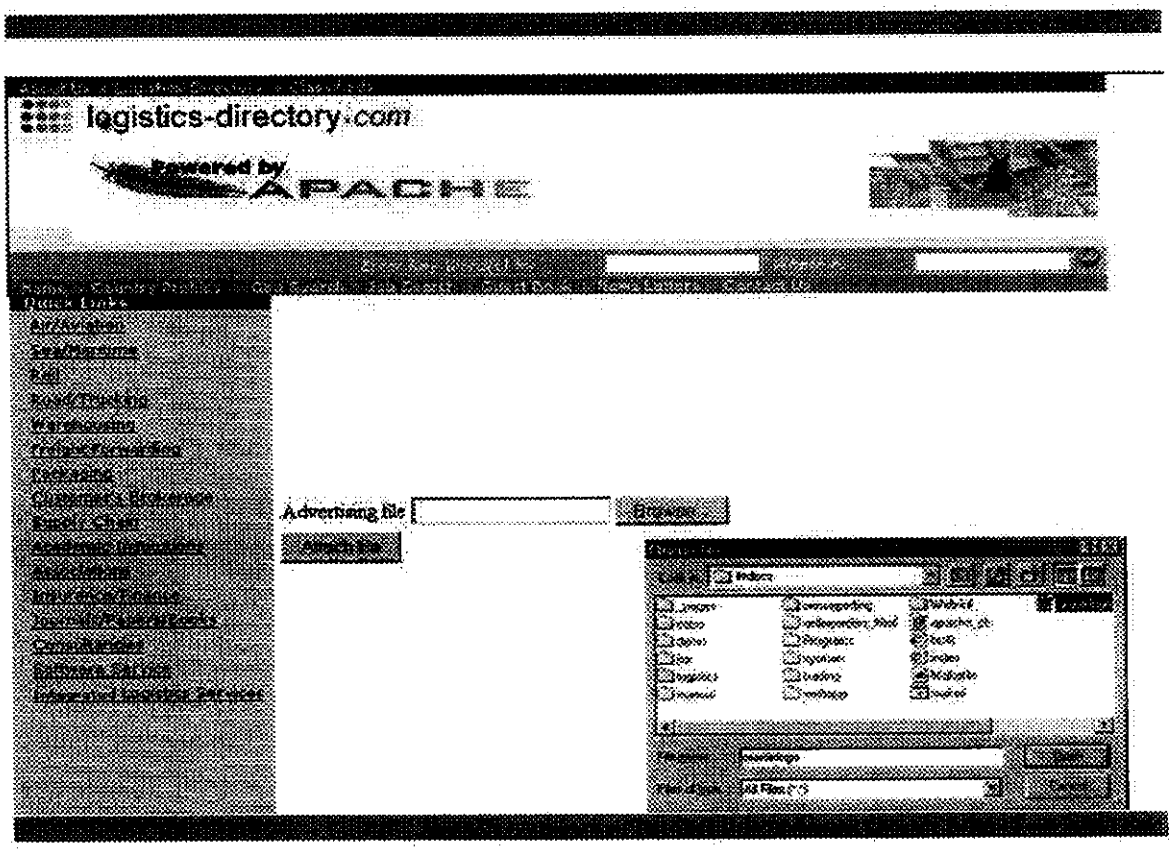


9.2.2 Listing a Company in the Directory

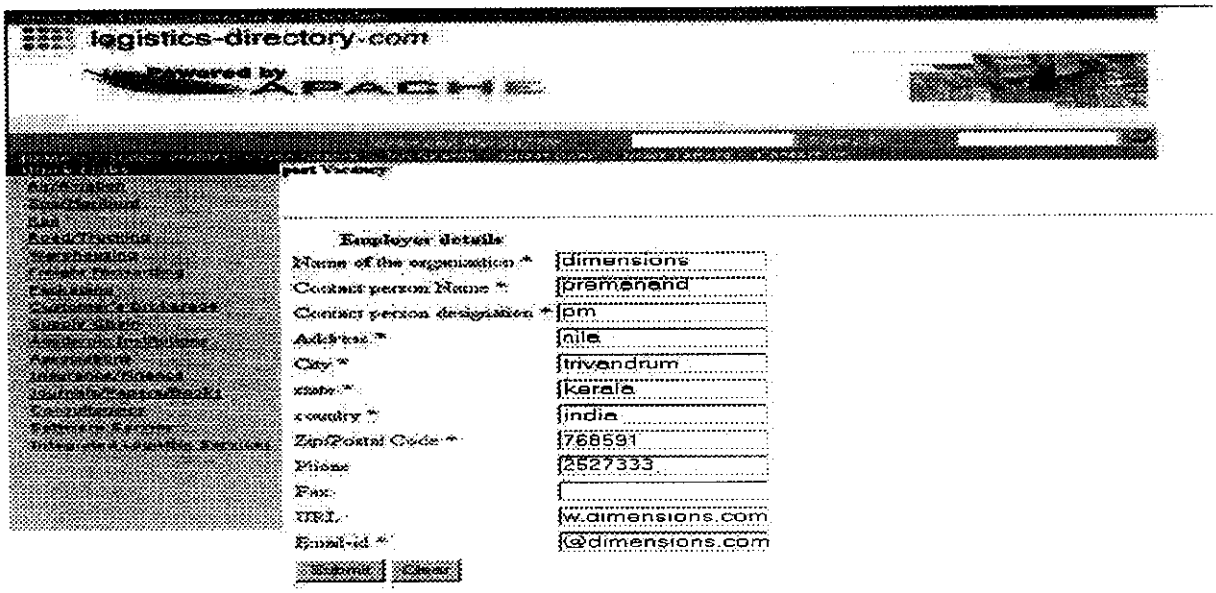


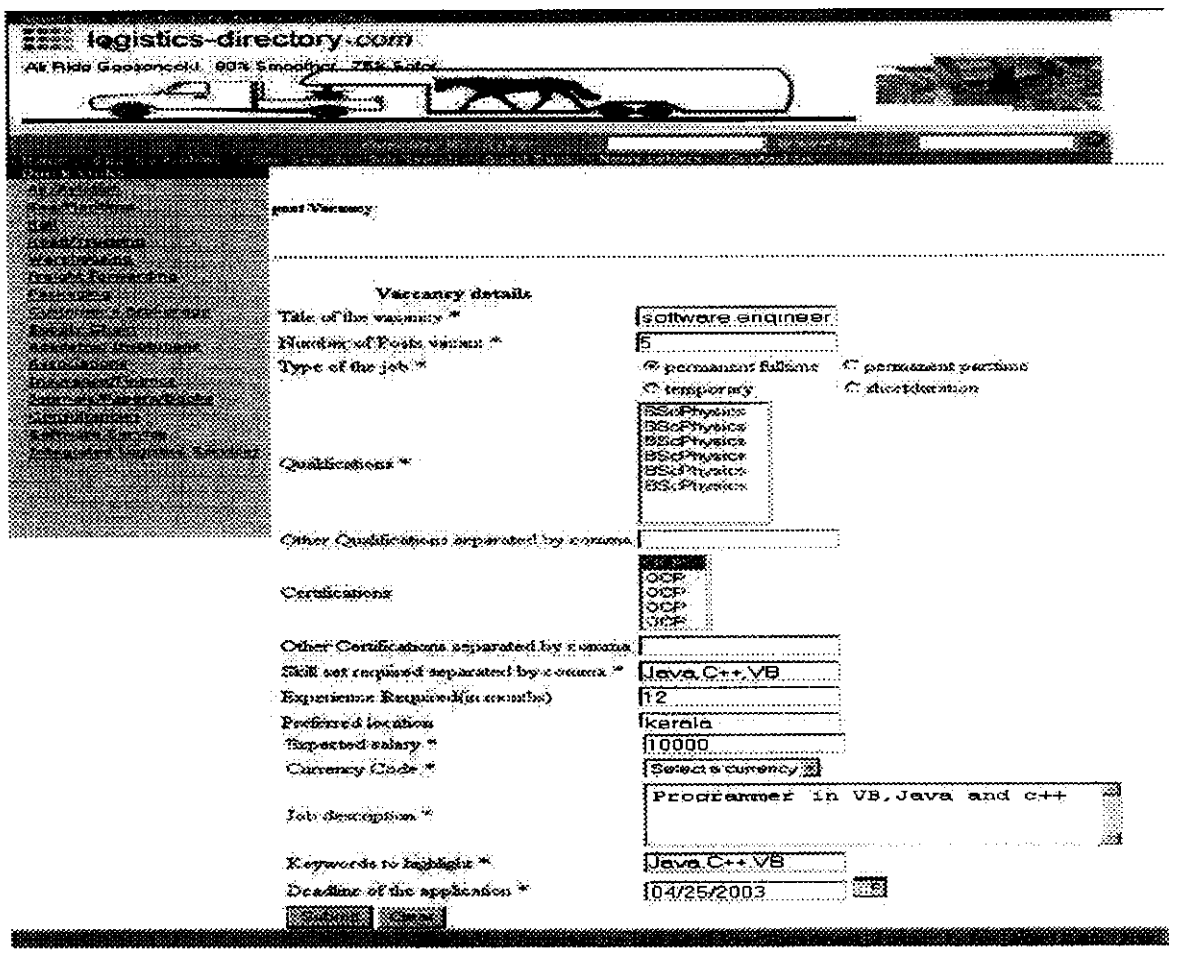
9.2.3 Advertisement in the Portal



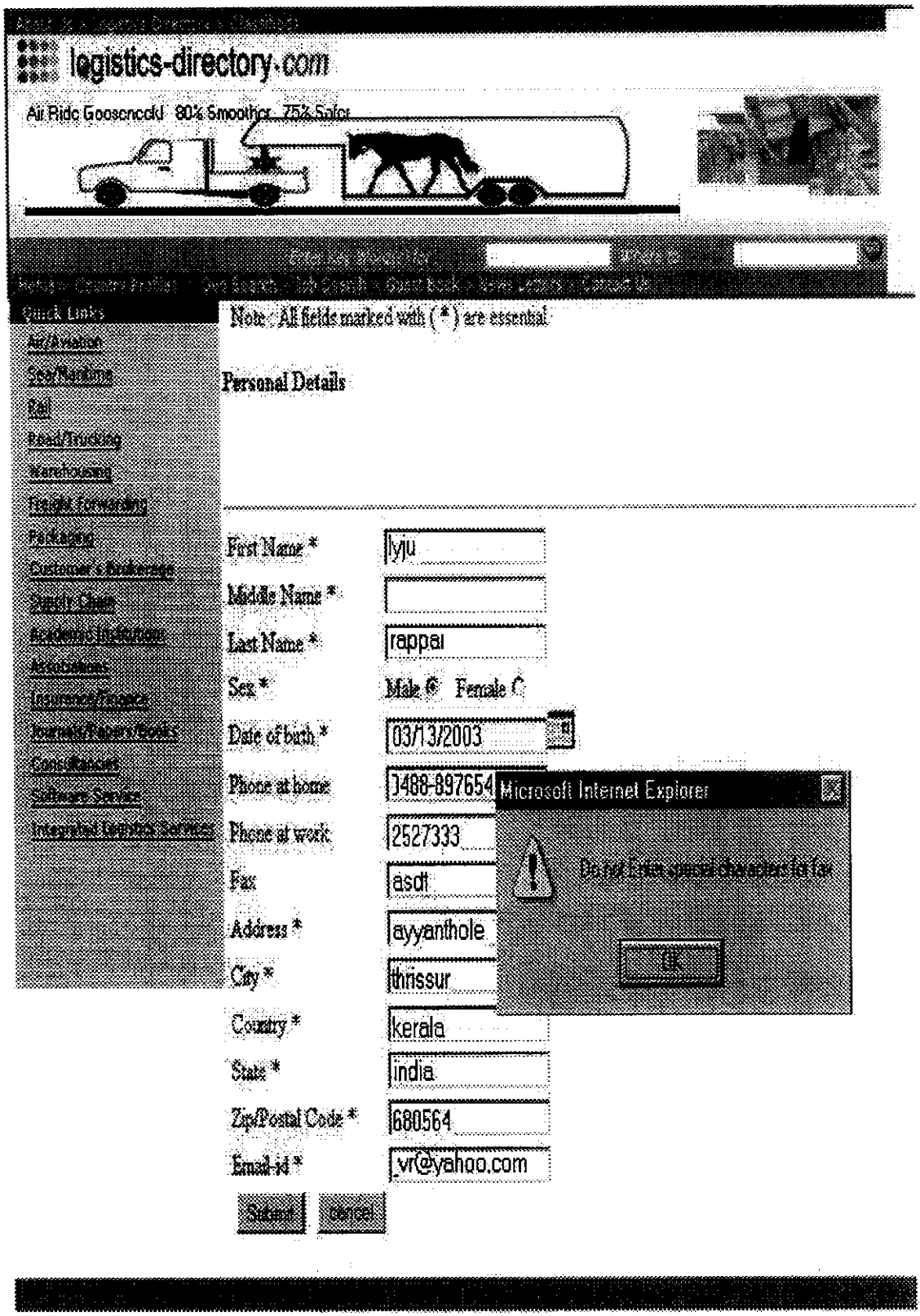


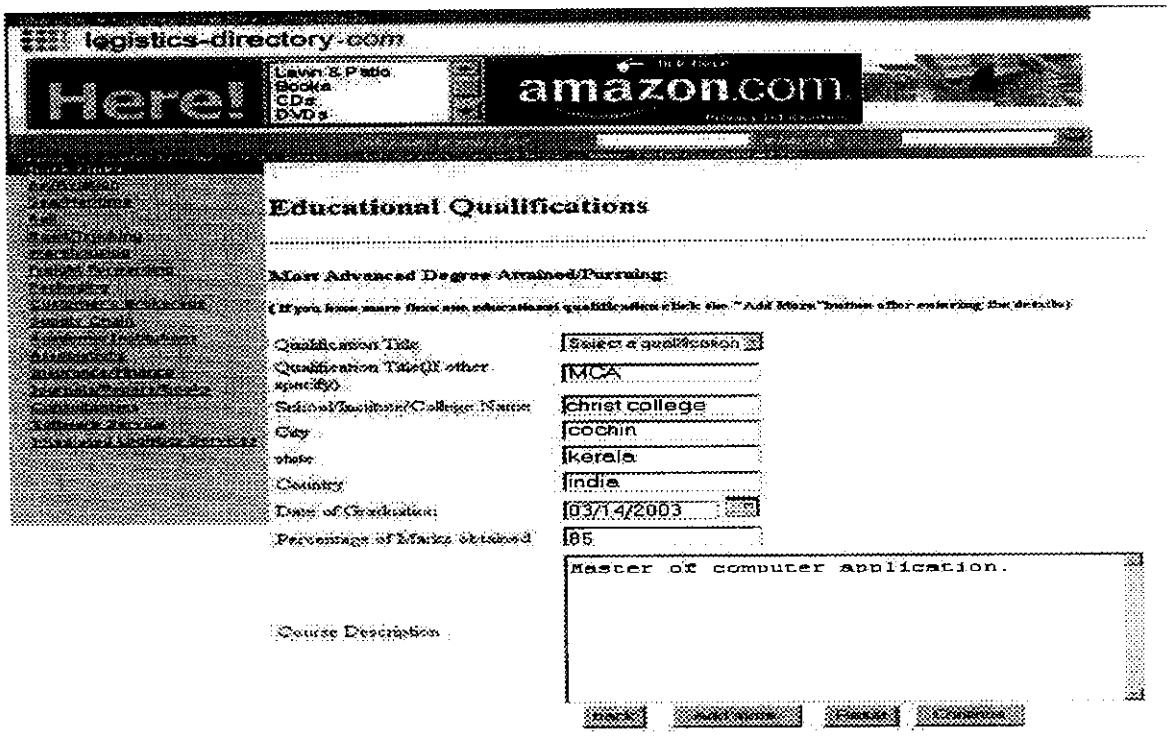
9.2.4 Posting a vacancy by an Employer

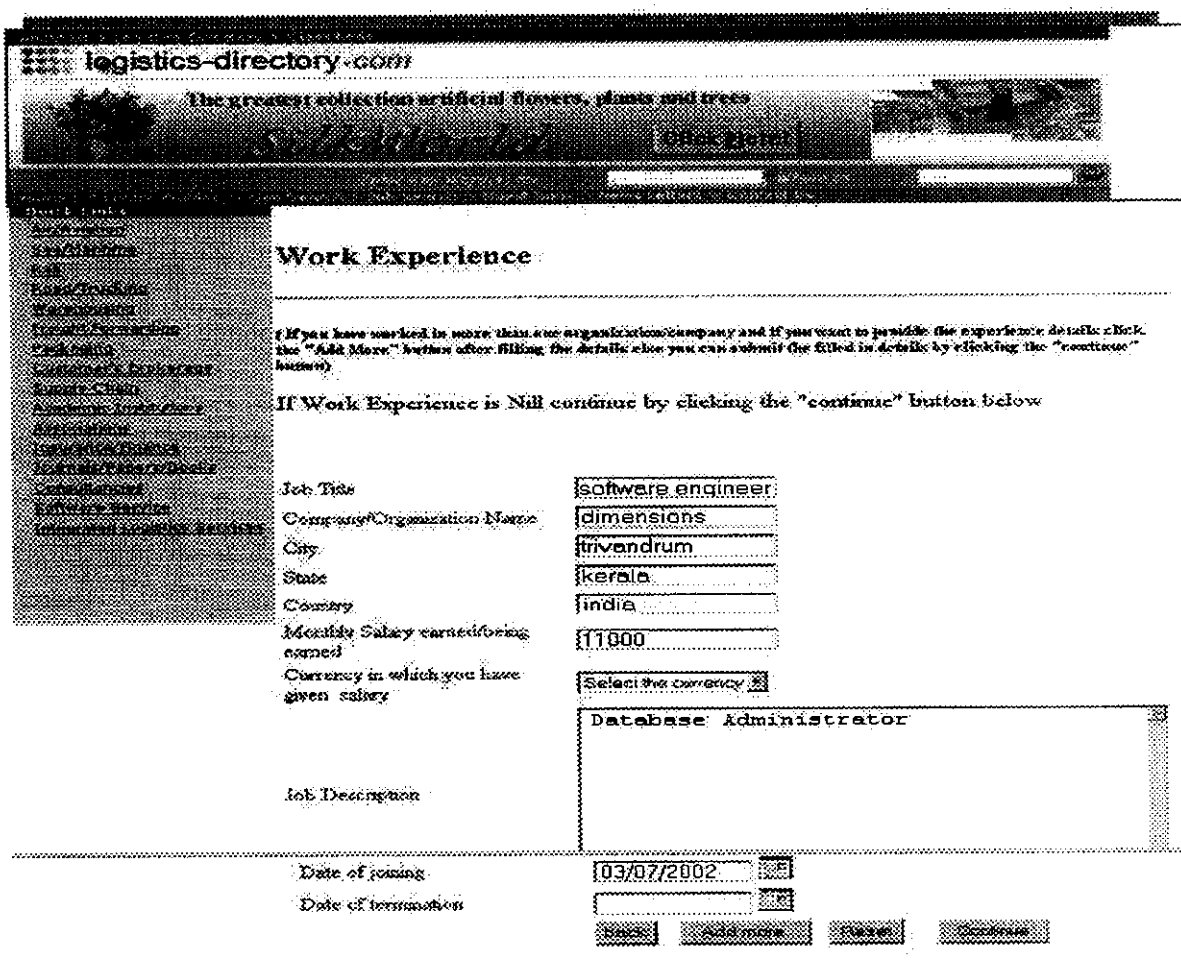




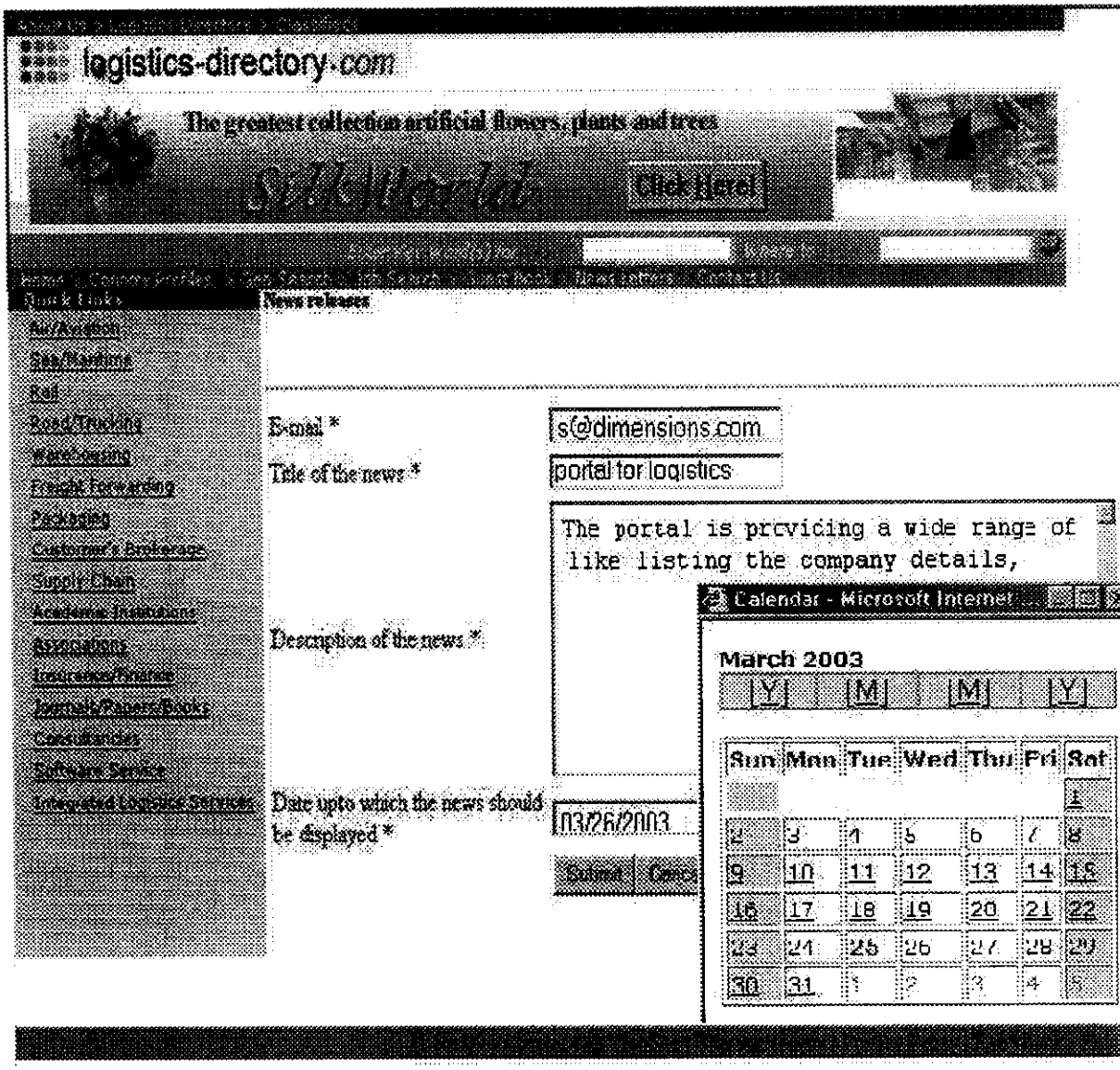
9.2.5 Posting Resume by a Job Seeker



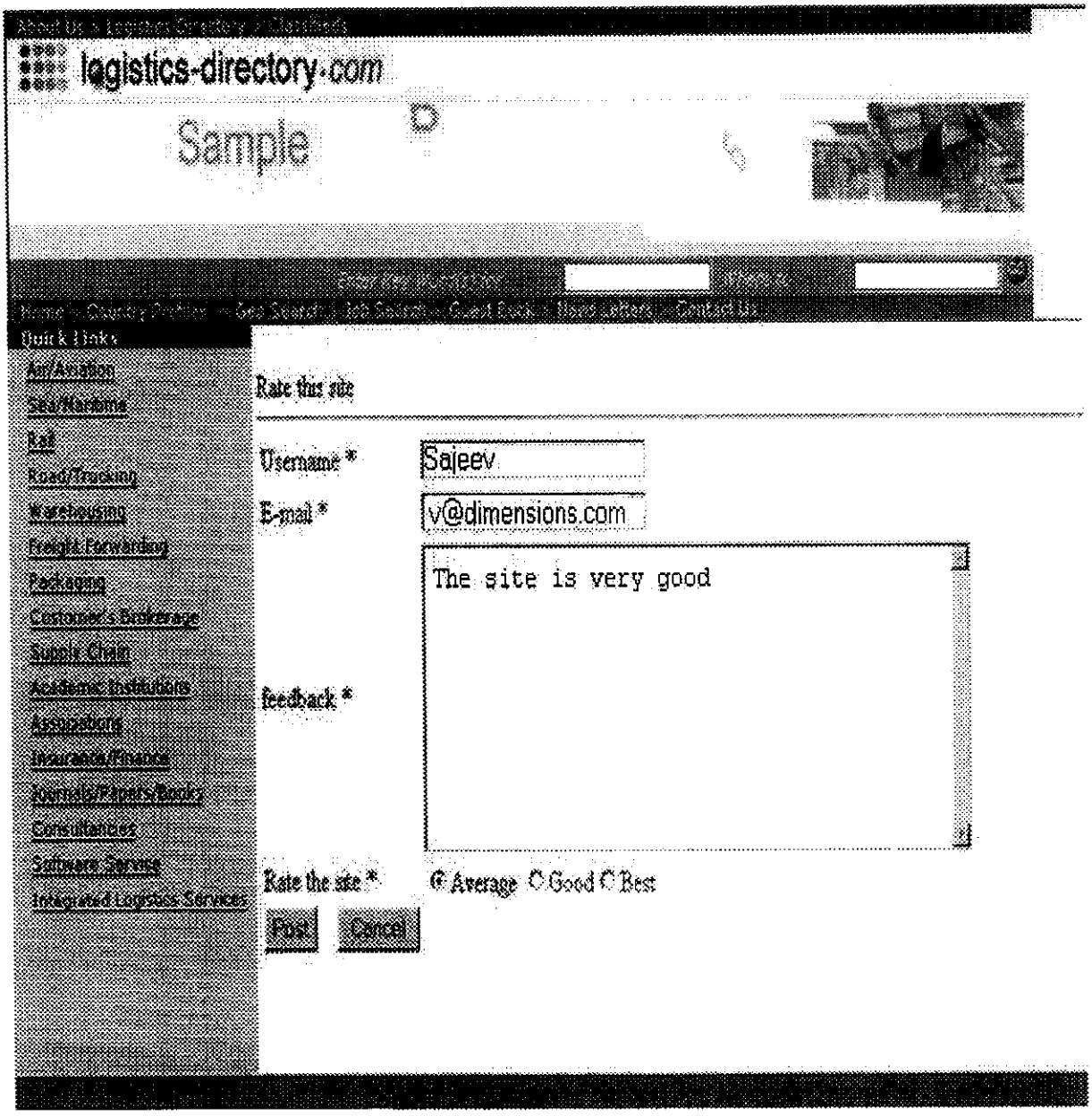

logistics-directory-com
Here!
amazon.com
Educational Qualifications
Most Advanced Degree Attained/Pursuing:
Qualification Title
Qualification Title(If other specify)
MCA
School/Institute/College Name
christ college
City
cochin
State
kerala
Country
india
Date of Graduation
03/14/2003
Percentage of Marks obtained
85
Course Description
Master of computer application.


logistics-directory-com
The greatest collection artificial flowers, plants and trees
Work Experience
If Work Experience is Nil continue by clicking the "continue" button below
Job Title
software engineer
Company/Organization Name
dimensions
City
trivendrum
State
kerala
Country
india
Monthly Salary earned/being earned
11000
Currency in which you have given salary
Job Description
Database Administrator
Date of joining
03/07/2002
Date of termination

9.2.6 News Releases by Registered Members

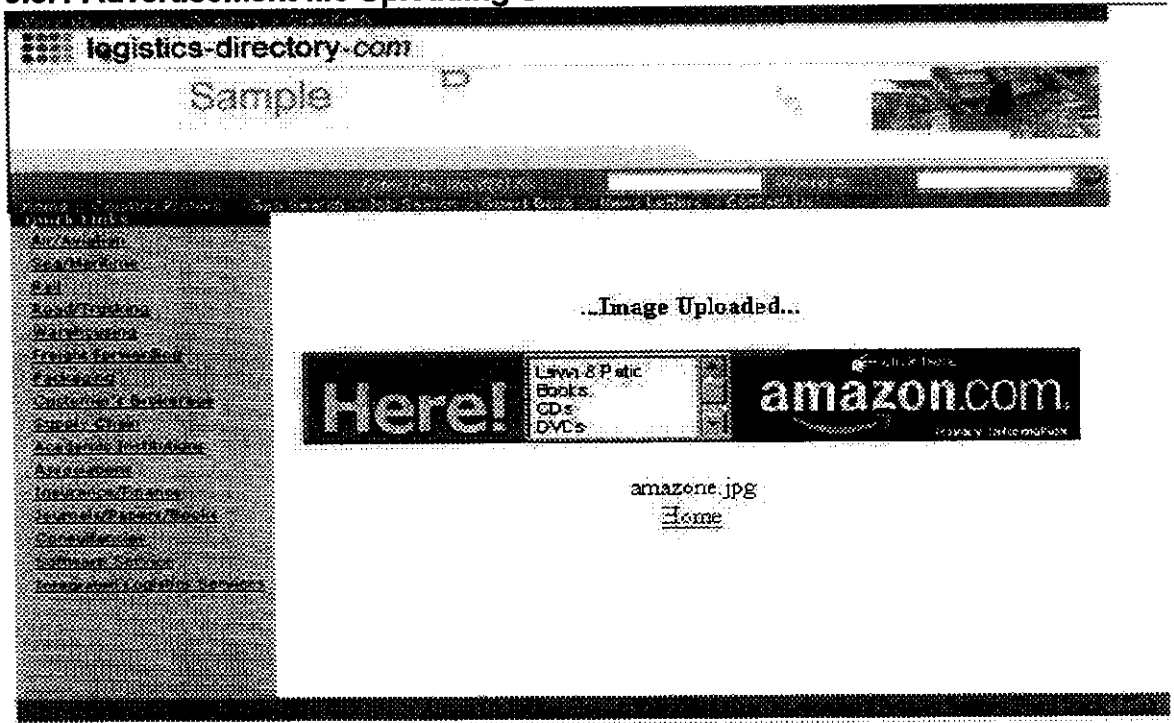


9.2.7 Feedback

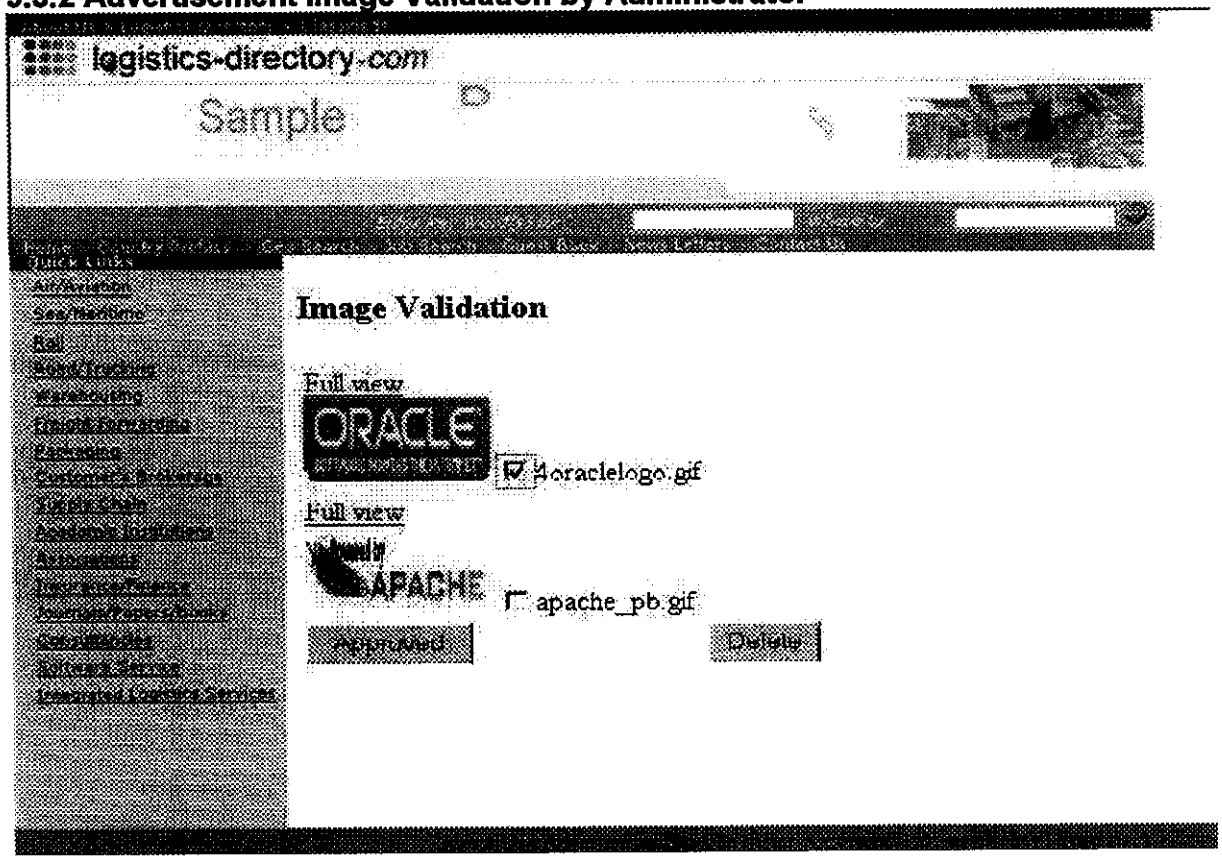


9.3 OUTPUT SCREENS

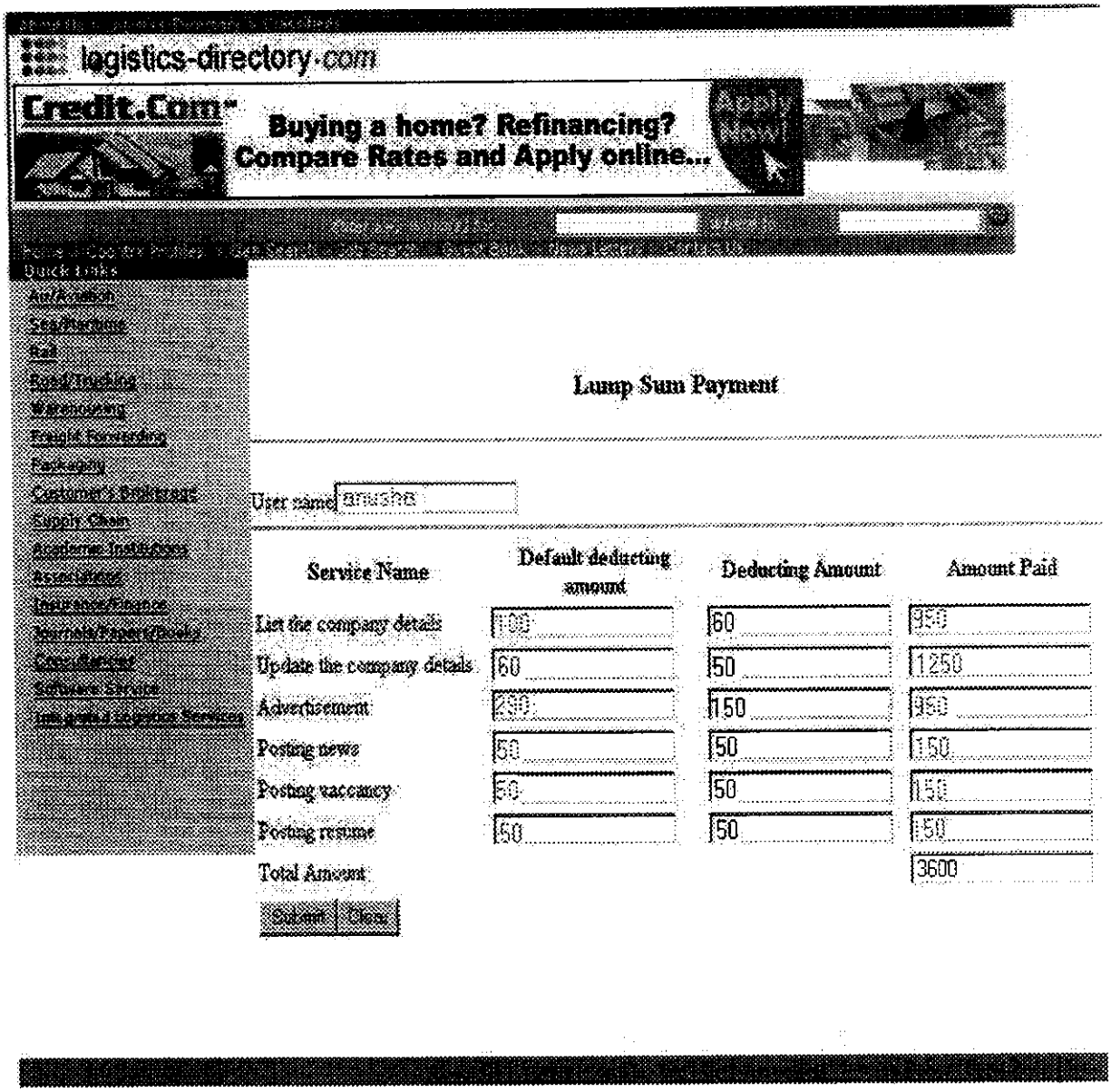
9.3.1 Advertisement file Uploading Screen



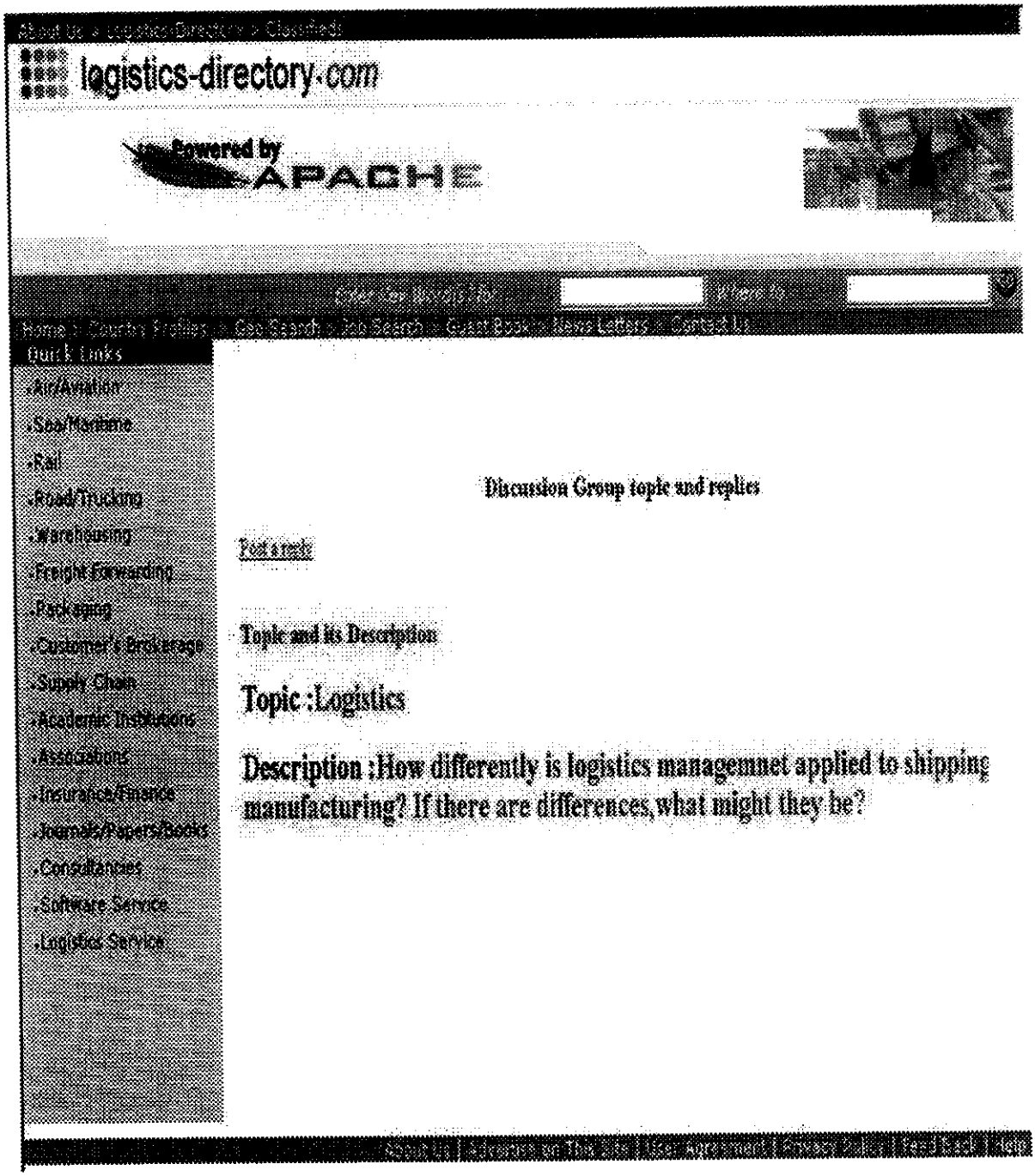
9.3.2 Advertisement Image Validation by Administrator



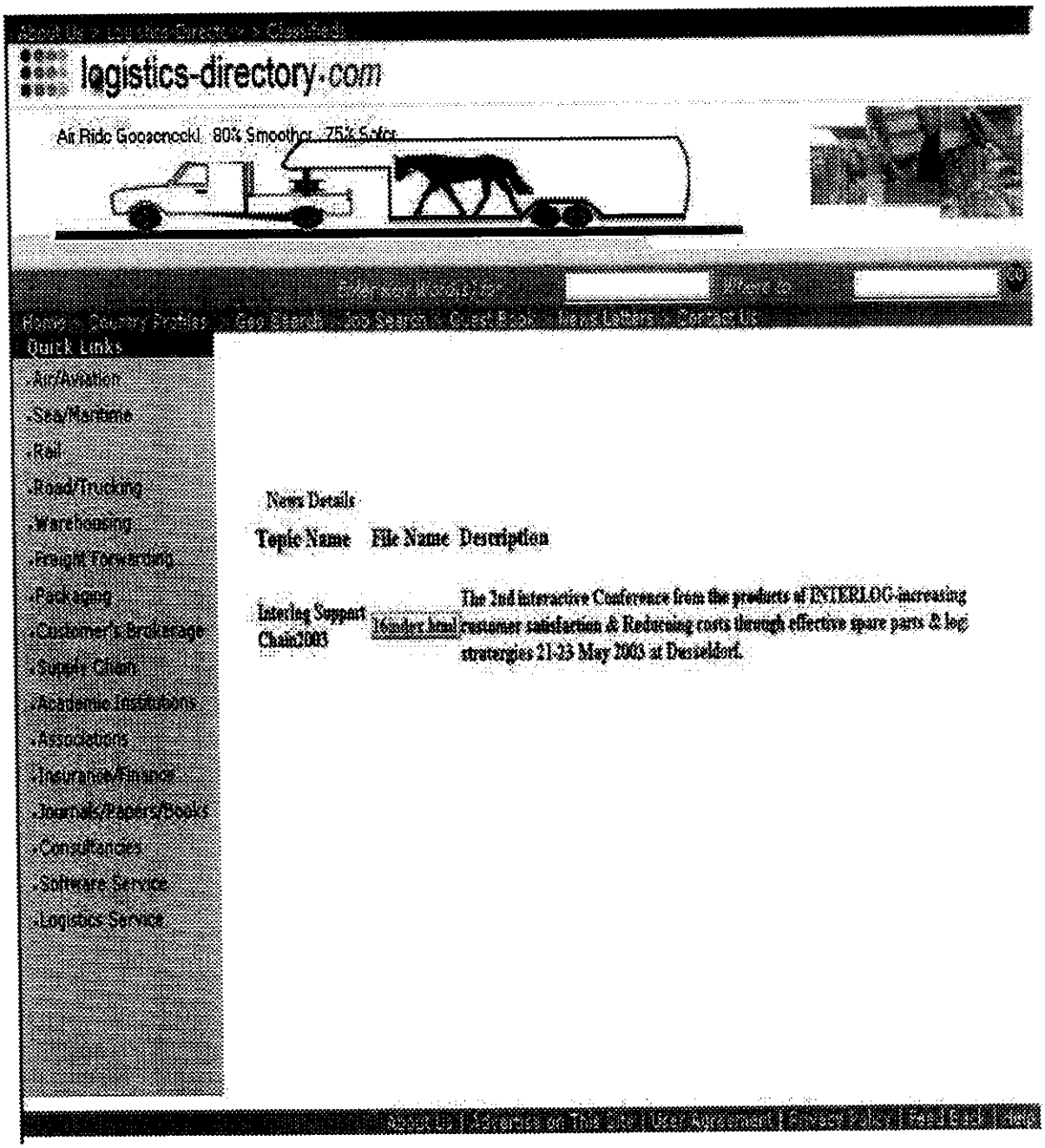
9.3.3 User Specific Lumpsum Payment configuration by Administrator



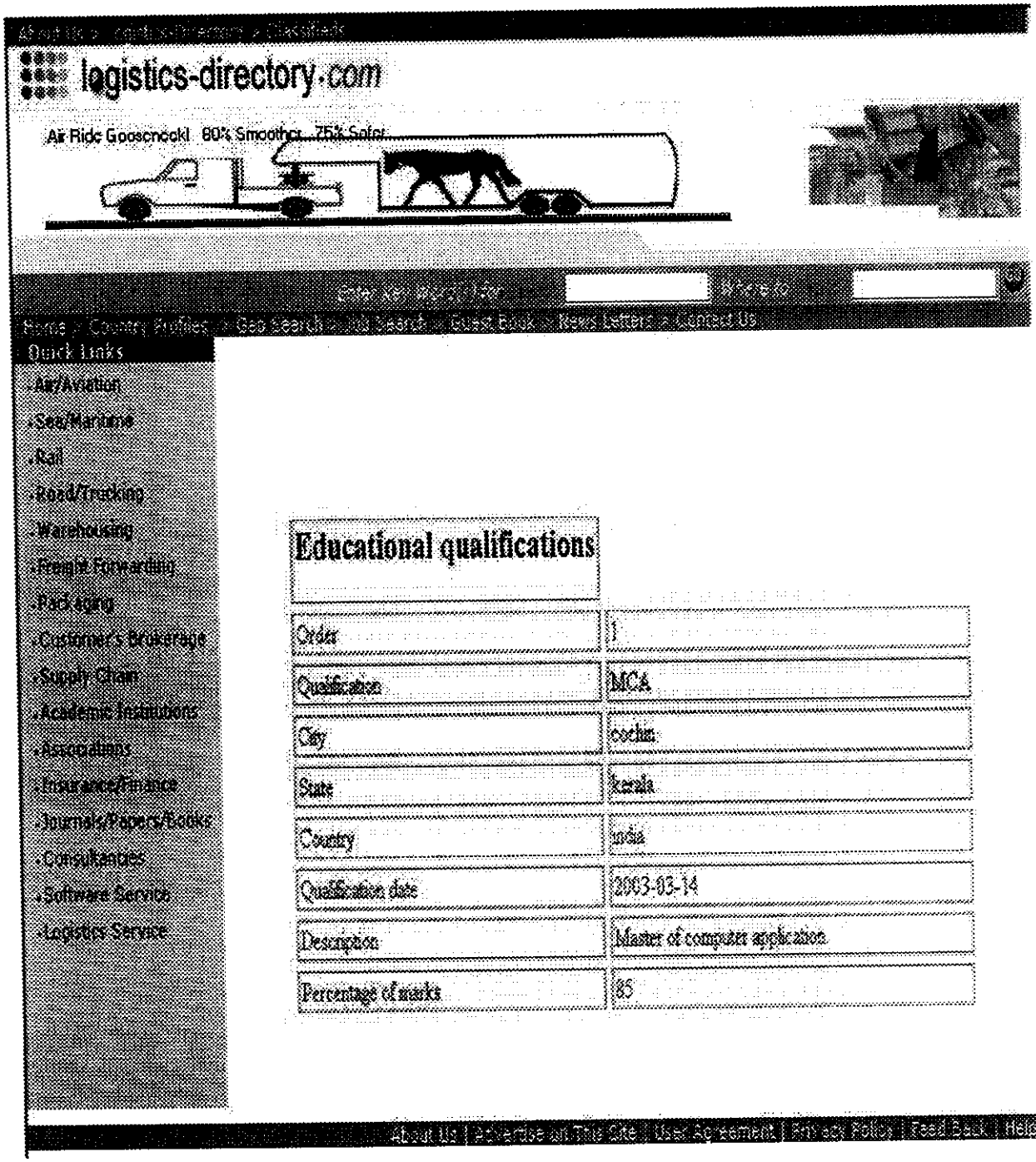
9.3.4 Discussion Group Reply for a Topic



9.3.5 Viewing News Posted by the Members



9.3.6 Viewing Resume



9.3.7 Geo Searching