HUMAN RESOURCE INFORMATION AND TRACKING SYSTEM

PROJECT WORK DONE AT

ABAN INFORMATICS PRIVATE LIMITED,
CHENNAI.

P-781

PROJECT REPORT

SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

MASTER OF COMPUTER APPLICATIONS

OF BHARATHIAR UNIVERSITY, COIMBATORE

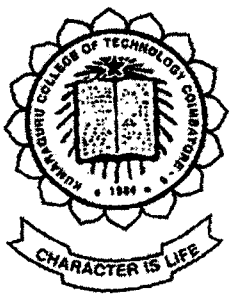
SUBMITTED BY

M. SENTHIL KUMARAN
Reg. No. : 9938M0641

GUIDED BY

EXTERNAL GUIDE
MR. MARIYA ANTONY B.E, M.B.A

INTERNAL GUIDE
MS. V.GEETHA M.C.A



Department of Computer Science & Engineering

KUMARAGURU COLLEGE OF TECHNOLOGY
Coimbatore – 641 006

MAY 2002

Department of Computer Science & Engineering

Kumaraguru College Of Technology

(Affiliated to Bharathiar University)

Coimbatore – 641 006

CERTIFICATE

This is to certify that the project work entitled

HUMAN RESOURCE INFORMATION AND TRACKING SYSTEM

Done by

M. SENTHIL KUMARAN

Reg.No: 9938MO641

Submitted in partial fulfillment of the requirements for the award of the degree of Master of Computer Applications of Bharathiar University.

30/4/02

Professor and Head

30/4/02

Internal Guide

Submitted for the university examination held on 10-5-2002

10/5/02

Internal Examiner

External Examiner

Aban Informatics Private Limited.

riya Crest"
(Old # 96), Pantheon Road,
re, Chennai - 600 008.

e : 91-44-8222400
: 91-44-8229412
l : abaninformatics@abanindia.com

April 5, 2002

CERTIFICATE

This is to certify that Mr.M.Senthil Kumaran, M.C.A.., Kumaraguru College Of Technology, Coimbatore has done a project entitled 'HUMAN RESOURCE INFORMATION AND TRACKING SYSTEM' in our organization during the period from 23/12/2001 to 05/04/2002 under my supervision and guidance.

During the above period his performance, conduct and character were found to be GOOD.

I wish all success in his career.

For **Aban Informatics Private Ltd.**

Maria Antony Irudhayaraj

Aban Informatics Private Limited.

priya Crest"
(Old # 96), Pantheon Road,
ore, Chennai - 600 008.

ne : 91-44-8222400
: 91-44-8229412
ail : abaninformatics@abanindia.com

April 5, 2002

DECLERATION

TO WHOM SOEVER IT MAY CONCERN

This is to certify that Mr.M.Senthil Kumaran, M.C.A., Kumaraguru college of technology, Coimbatore has completed his final year project entitled 'HUMAN RESOURCE INFORMATION AND TRACKING SYSTEM' in our organization and has no authority to reveal the product or its source code to any other individual or organization except ABAN GROUP OF COMPANIES.

For Aban Informatics Private Ltd.

Maria Antony Irudhayaraj

M.Senthil Kumaran

DECLARATION

I here by declare that the project entitled 'HUMAN RESOUCE INFORMATION AND TRACKING SYSTEM', submitted to Bharathiar University as the project work of Master of Computer Application Degree, is a record of original work done by me under the supervision and guidance of **Mr. Mariya Antony**, Chief Operations Officer, Aban Informatics, Chennai and **Mrs.V.Geetha M.C.A.**, Senior Lecturer, Department of Computer Science, Kumaraguru College of Technology and this project work has not found the basis for the award of any Degree/Diploma/Associate ship/Fellowship or similar title to any candidate of any University.

Place: COIMBATORE

Date: 30-4-2002

Signature of the Student

ACKNOWLEDGEMENT

I take this opportunity to express my gratitude to all, whose contribution in this project work can never be forgotten.

I am extremely grateful to **Dr.K.K.Padmanabhan**, Principal, Kumaraguru College of Technology for having given me a golden opportunity to serve the purpose of my education. I am indebted to Prof. **Dr. S.Thangasamy**, Head of Department of Computer Science and Engineering, for his valuable guidance and useful suggestion during the course of project.

I am deeply indebted to my project guide, **Mrs. Geetha.V** M.C.A., Senior lecturer of the Department of Computer Science And Engineering, Kumaraguru College of Technology, Coimbatore for her guidance and valuable support given to me throughout the tenure of the project.

With immense pleasure, I express my esteemed gratitude to **Mr.Mariya Antony**, Chief operations officer, Aban informatics for providing me the opportunity and guidance to do the project in reputed Organization.

M.Senthil Kumaran

SYNOPSIS

The project entitled 'Human Resource Information and Tracking System' (HITS) has been developed for Aban Informatics Pvt. Ltd., Chennai using Active Server Pages and Oracle.

The software application is intended to assist the Human resource manager in managing to man power and makes recommendations, which aids in the improvement of the performance and efficiency of the organization.

HITS, a user friendly interface allows the user to manage data efficiently. Above all it is aimed at providing cost cutting strategies. HITS maintains the details of the job applicants, employees and their projects and renders timely support to the user. HITS guides the user in recruitment of staff, maintenance of the attendance for the staff, pay roll processing and project tracking.

The operational details of HITS are discussed below.

HITS have been divided into four modules, namely recruitment, attendance, payroll processing and project tracking.

Recruitment

This module aids the user in collecting the candidate's information through web hosting. The collected information is sorted and filtered according to the needs of the organization, which would eventually help in the selection and recruitment.

Attendance

This module helps in the maintaining employee monthly attendance. The use of access cards help in entering daily attendance, which is summarized at the end of each month.

Pay roll processing

The salary for each employee is calculated. The total amount payable is calculated. The attendance collected is used here to calculate the salary.

Project Tracking

The employee and their associated projects, tasks are manipulated here and are used in deriving MIS information like the slippage, best performer, etc.

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1. INTRODUCTION

HITS, an on-line application is aimed to manage the human resource efficiently and gives accurate information to the user when needed.

The system is developed with ASP as front-end and Oracle as back-end.

Hits aids in the following:

a. Recruitment

b. Employee attendance maintenance

c. Employee payroll processing

d. Employee project tracking

1.1 PROJECT OVERVIEW

The Human Resource Information and Tracking System (HITS) involves automation of various activities being carried out and services offered by the HR department. Human resource is an asset of an organization. Proper utilization of these resources is brings down the operational costs.

The HITS is one such system that is aimed at producing accurate and instantaneous information to the user, which could be used to estimate the functioning efficiency of the organization.

The various modules involved in the system are:

1. Recruitment module:

Aban Informatics has aimed to deploy an on-line recruitment service. Here, the candidates can register with the organization by posting their resumes. These resumes are then sorted based on the needs of the organization and the selection is made.

A check is made to find if the candidate is a new or an existing user. If he is a new user, the candidate will have to sit for a 15 minutes on-line exam. Only those candidates who clear the exam will be allowed to register and post their resume to the Aban resume bank. Once the resume is posted to the Aban resume bank, candidates asked to create a unique id and password. These resumes prevent cost occurred during fresh bidding.

Registered users can use their id and password to view their profile and to update the profile.

Once the candidate successfully posts his/her resume, a email will be send to the candidates mail-id automatically. This will confirm that the resume has been registered.

2. Attendance module:

In this section, HITS stores the attendance details of the employees. The attendance details include days of leave, month, and leave code availed by the employee.

The use of access cards helps to record the daily attendance. Access cards helps to enter the daily attendance. Access cards are magnetic identification card that is unique to each employee. The access card can identify the employee name and id. At the end of each month, batch entries are made summarizing the days and type of leave for each employee. Aban currently has 3 leave codes, namely, medical leave, casual leave and annual leave. The annual leave is granted only for those who have been working in Aban for more than a year. The days of leave for each leave-id are entered earlier and remains constant. If at the end of the year an employee does not use up the medical leave and casual leave completely, then the days are carried over to the next year. HITS has provision for adding extra leave codes for future extensibility.

3. Pay roll module:

This module takes care of processing the salary for all the employees of Aban Informatics. Based on the attendance each individual's salary is calculated and the total amount payable to all the employee is also calculated.

The salary for each employee is calculated based on the attendance. The HR will have to enter the employee-id and date. The system will produce a report on the salary of the employee which will state the basic pay, the allowances, the deductions, number of leave days along with the leave code and the net pay. Leave code specifies the type of leave taken by the employee. Report of salary detail of all the employees are also produced at a click. Graphs are used here to show the division of the basic pay among the employees.

4. Project Tracking:

This module keeps track of each employee and his associated project, and its related tasks employee and their associated projects, tasks are manipulated here and are used in deriving MIS reports like the slippage, best performer, etc.

The project name, project manager id, description of the project, start date and end date is entered for each project. A project is sub divided into numerous tasks.

Each employee is associated with one or more task(s).

Every week the employee will have to send enquiry about the tasks given. Programmer will have to specify the task-id, percentage of completion and expected completion date. Comparing this with the master table a graph is produced depicting the slippage ie., number of days elapsed since the original completion date.

Using these data, HITS can conclude information useful for the management, such as the actual completion date for a project and the project slippage, the best performer of the project which is identified based on the time a programmer takes to complete the task and the efficiency of the code which is deduced after the unit testing.

1.2 ORGANIZATION PROFILE

The Organization:

Aban group of companies is a stock-listed and diversified organization. Their operations vary from oil-rigs to tea plantations.

Aban group of companies includes:

1. Aban Constructions
2. Aban Breweries
3. Aban Informatics Pvt Ltd.
4. Aban lloyd chilles offshores

Aban Informatics Pvt. Ltd. is a subsidiary of ABAN group of companies. The Organization has its head quarters in Switzerland. Their clients are some of the big companies like

IBM

Nokia

DoCoMo

Aban Informatics Pvt. Ltd. has a leading edge technology in the web oriented applications. They are mainly involved in web based projects, which includes e-com solutions, remote database administration, networking, etc.

The development unit has an advanced local Area Network with equipment from top brands like IBM, Intel, and HP etc. High-speed data transmission facilities are available to cater the needs of overseas clients.

Services provided by the organization

- Application Development
- Internet Solutions
- Web site Design
- Web content Development & Integration
- Web application Development
- Portal Development

2. SYSTEM STUDY & ANALYSIS

The system study focuses on the existing system and its limitations. A thorough study is done to understand the existing system's threshold. These limitations are noted down.

The system analysis is used to analyse the knowledge about the existing system and the identification of the problems, alternative system solutions are studied and recommendations are made. Various studies are done to get the information like,

- How the data are processed within the organization.
- How the data is spread over the organization.
- How the user communicates.
- What are the files currently in use and how the data flows between these files.
- What are the procedures in use for the data retrieval and transit.

2.1 Existing System

The existing system is inadequate for present requirements as the company expands its operations. The system supports batch processing, which leads to errors during the entry stage. Enforcing integrity constraints for validation purposes are complicated. The system is not on-line and hence the system can be operated only by a single person. The current system works on FoxPro and does not have a rich Graphical User Interface (GUI), user friendly.

Limitations of the existing system

The batch processing leads to errors during the entry stage which is now minimized. The existing system did not have enquiry facilities and hence were reported to the HR-Manager in writing which was fed into the system by the HR in bulk. Enforcing integrity constraints for validation purposes are complicated. The system did nit have extensive input validation this lead to critical errors.

The system is not on-line and this is a major threshold. Keeping the above limitations in mind we have developed the new system with ASP and Oracle.

2.2 Proposed System

HITS, an on-line computerized system saves time and provides up-to-date information. Precise and accurate information is the most vital resource required by the managers of the modern companies. Various on-line enquires and reports helps is eliminating time wastage. The improvisation of the system was planned and implemented on the following points:

1. Maintenance of the status of the employee at any date, according to the department wise, project wise, etc.
2. The on-line recruitment screens the candidates before they could post their resume. The screening test questions have to be altered once in two weeks.
3. Automated Pay roll processing helps reduce time involved and the man power needed.

4. Monthly reports help HR manager to monitor current strength and prevent delays of the project.

5. The database access is secured. The password authentication prevents unauthorized persons from altering the database.

2.3 Requirements on new System

The drawbacks of the existing system that was a major bottleneck for the organization has been overcome in the new system. Such a new system will require

1. The user to be in the middle or upper level of the management i.e., project manager, project leader, chief operations officer, chief technical officer, etc.
2. The system should never go off-line.
3. The screening test conducted on-line for the candidates has to be prepared by the company and revised every month.
4. The system requires periodic back-up of all the data to prevent atrocities.

2.4 User Characteristics

The system requires three types of users:

1. Candidates:

The candidate is required to know the basics of web browsing. The candidates are those who have interest in joining the organization.

2. Employees:

The employees of the organization are those who login through the system and send job status reports to the project manager.

3. HITS administrator:

The administrator should be in the middle or upper level of the organization, like the project manger, project leader, ... His main task is to generate reports based on the employee's task status, salary reports ,enter attendance details.

3. Programming Environment

The programming environment includes both the hardware and the software. The required hardware and software components are:

3.1 Hardware Configuration

The HITS is developed using the computer infinity model, whose specification is as follows:

- CPU Type : Pentium II
- CPU Clock : 600 MHz
- Base Memory : 64 MB RAM
- Cache Memory : 256 k
- HDD Capacity : 10 GB
- Floppy Drive : 1.44 MB

3.2 Software Requirements

- OPERATING SYSTEM :Windows NT
- Internet Explorer 5
- Personal Web Server or IIS
- Oracle 7

SOFTWARE OVERVIEW

The system is highly adaptable to the web and local intranet, therefore the system is coded with Active Server Pages-a Microsoft product.

The server side scripting is done in VBScript and the client side validation is done in JavaScript.

Oracle is chosen as the back-end as it is highly secure.

Why choose ASP?

Using ASP, you can:

1. Generate dynamic web pages. An ASP can display different content to different user.
2. Process the contents of the HTML forms.
3. Create database-driven Web pages.
4. Track user. With ASP you can limit the access of certain Web pages to certain individuals.
5. Integrate custom components into the Server. You can extend your ASP scripts with custom server-side components created with Microsoft script components, Microsoft VB, or Microsoft VC++.

Graphic component

ShotGraph has been used for creating graphs. Using ShotGraph we can:

1. Dynamically create images of numerals for a hit counter on your web page.
2. Create bar chart and other graphs in response to user queries.
3. Scale, rotate, and mirror images in response to user actions.

Why choose Oracle?

1. It is the widely used database and runs on virtually any kind of computer.
2. Oracle is an object-relational database. An object relational database supports all the features of a relational database while also supporting object-oriented concepts and features.
3. Oracle is secure and hence obstructs foreign intervention.
4. Oracle is ODBC complaint.
5. Report generation is easy and fast.

4. System Design & Development

The system design is the final phase that indicates the proposed system and its processes.

4.1 Input Design

In the input design phase of the HITS, the database tables, input screen design and output record design, etc. are designed to match the user needs and the system functionality.

1. The database are designed using all the necessary fields in a compact manner. The redundancy and duplication of fields are avoided.
2. All the input screens in this system are user friendly and are designed in an understandable format. The size of all screens is standardized.
3. Menus are designed in this system as brief and self-explanatory ones. The menus are simple and even a novice can use the system.
4. Reports generated here give the minute information, which are useful in decision making.

The design of the system states the solution to the requirements. The design will determine the success of the system and this phase indicates the final system. The input design is the link that ties information system into its users. Input design consists of developing specification and procedures for data preparation, steps necessary to put transaction data into a form that is usable for computer processing.

Main objectives that are to be met in the design are:

- Controlling the amounts of input
- Avoid inordinate delay
- Controlling errors

User-friendly screen formats can reduce the burden on end users, which are not highly proficient in computers. An important step in design stage is the input screen on which the data are captured. The next step is the design of document layout which organizes the information and establishes sequence.

Customized messages are given when error occurs and therefore the users do not err when error occurs. Enforcing integrity constraints and data validation procedures are done in such a way that the end user is free from daily chores.

In HITS, the employee's home page will prompt for employee-id and password. If match found, then a welcome page is displayed and a on-line attendance marker enters the attendance for the id. Links are provided for employee registration, to change password, to send task-watch.

In the task-watch enquiry, the employee fills in the

- Task-id
- The description
- Role in the task
- Actual and estimated completion time and
- Percentage of completion.

If the employee is new, then he has to register by giving the following information.

- Employee-id
- Password
- Verify password

The HITS allows the employee to register only once. To change password HITS prompts the user to furnish

- Employee-id
- Old password
- New password
- Verify new password

After the login is complete the HITS checks if the user is a privileged user such as project leader, project manager, Chief Technical Officer, Chief Operations Officer. If the user is one of the above the user is redirected to the Employee master page. The employee master page lets the user to manipulate

- Employee details.
- Attendance details.
- Generate salary report.
- Project details.

The employee detail allows the user to

- Add
- Modify
- Delete

a employee profile.

To add a employee profile, the user enters

- Employee name
- Designation
- Department
- Date of birth
- Date of join
- Basic pay
- Father's name
- Sex
- Marital status
- Address
- Phone no.
- E-mail

HITS will display the employee-id for that employee.

To modify or delete an employee, the user is prompted with the employee-id. If the id exists the details are displayed. The user can manipulate with the controls provided.

Project detail

Once the user selects this link, the user is asked for

- Project detail
- Task detail

- Role detail
- Developer detail

On selecting any of the above links, the user can

- Add
- Modify
- Delete

the entries.

Project detail allows the user to add

- Project name
- Description
- Start date
- End date
- Project manager id

HITS will generate the project id and display it to the user.

Task detail allows the user to add

- Task name
- Project-id
- Actual start and end date

HITS will generate the task-id and display to the user,

Role detail allows the user to enter

- Role name
- Description

HITS will generate the role-id and display to the user.

Developer detail allows the user to enter

- Employee-id
- Task-id
- Role-id
- Hours

4.2 Output Design

The system developed will be successful only if it generates the outputs in the required format. The HITS has several screens for the purpose of providing the necessary information to the user. The user can use this facility in order to obtain the necessary information. Output design will show all the required information which is ready after the processing.

Major components in output design are:

- Enquiry screens
- Reports

Since HITS is an on-line system, enquires are made regarding the time-sheet, project details.

Reports are of standard as well as ad-hoc type.

Some of the reports are:

- Employee detail, which gives the list of employees and their details.
- Attendance report, which give the report of a employee attendance-the month, leave-id, no. of days absent.
- Salary report, which gives the report of salary of an employee for a specified month after calculating the leave days.
- Salary report graph, the salary leverage between the employees is displayed here.
- Job status report, the graph shows the delay between the actual and the estimated date of completion of a job.

The HITS is designed to provide a user friendly interface, therefore the output of the HITS is understandable even by a novice.

The reports generated by the system in simple and user specific.

Error messages make entry very interactive. The user is alerted with specific error messages during the data entry.

Graphs are used to display the task details, salary details, attendance details and job slippage. These gives the user easy representation of data therefore the inference is easy to make.

On executing HITS, it prompts for user-id and password. If the above matches the user is redirected to the main menu. Only if the user is a authorized user he/she is redirected to the main menu, else the user gets a welcome page and it has links for sending time-sheets, project details, etc.

Some of the sample reports and enquiry forms are shown in Appendix B.

4.3 Database Design

Data base designs are crucial in managing the data received through the forms. The management of data involves both the definition of structures for storage of information and provision of mechanism for the manipulation of information. In addition, the database must have a unique and appreciable security features, anti-crash mechanisms. A good database must furnish the following:

- Ease of use
- Data independence
- Accuracy and integrity
- Recovery from failure
- Performance

Data redundancy can be controlled by extensive normalization of the tables.

The HITS consists of tables that are normalized to maximum extend. The normalization is the process of simplifying the relationship between data elements in a record. Through normalization a collection of data in a record structure is replaced by successive record structures that are simpler and managed effectively.

Normalization has been carried out for 4 reasons:

- To structure the data so that any persistent relationship between entities can be represented.
- To permit simple retrieval of data in response to query and reports required.
- To simplify data maintenance procedures such as insertion, deletion and updation.
- To reduce the need to restructure or reorganize data when new application requirements arise.

The database tables used in the system in described in Appendix A.

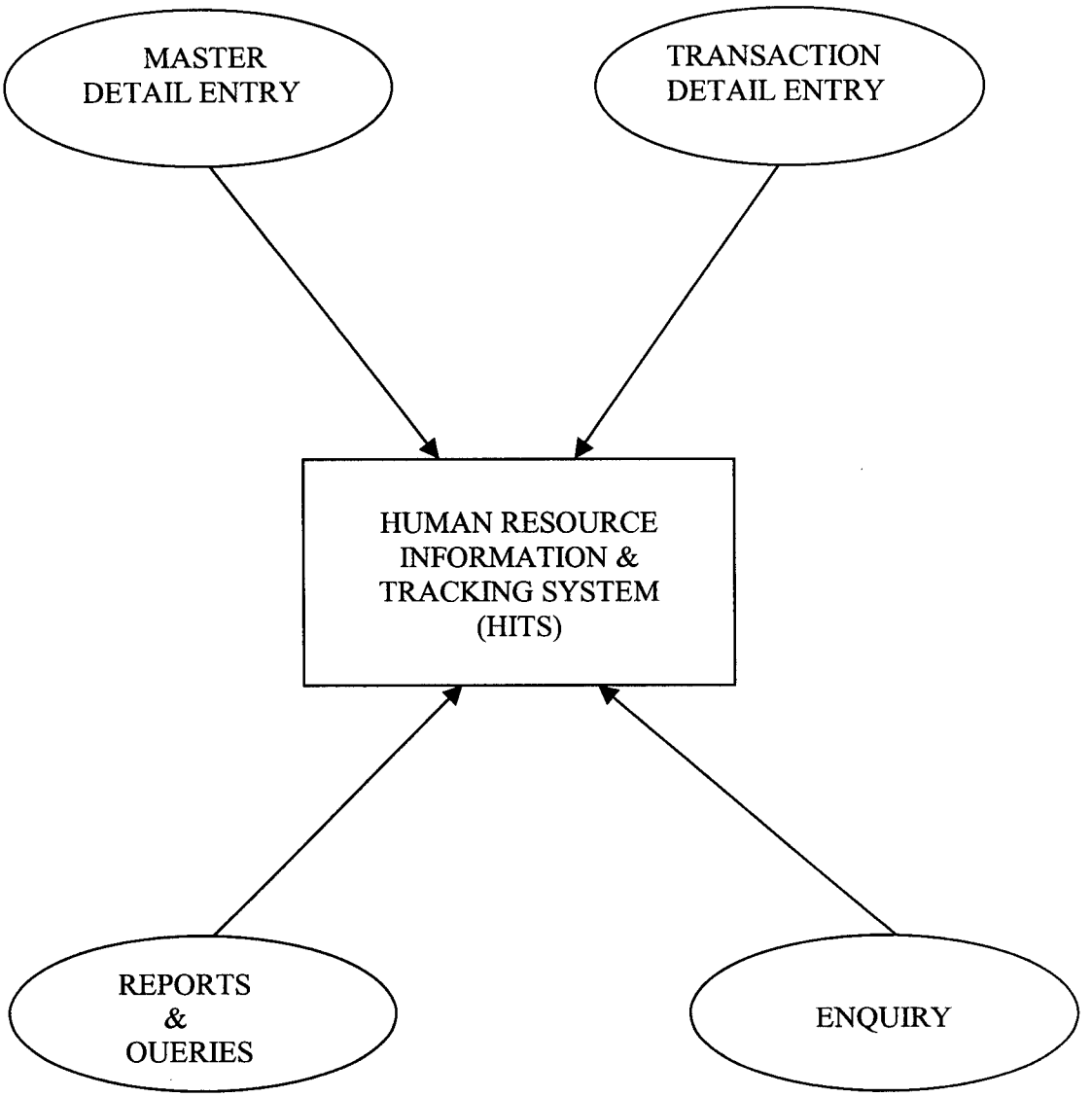
4.4 Process Design

The process design is defined as a ordered set of events that accomplishes some tasks required for a system. The events are actions, operations, or series of changes taking place in a definitive manner.

Process design consists of three levels giving policies, procedures and standards. The architectural frame work provides a definition for basic elements, how they relate and how they are decomposed into greater detail. The basic element of process design is unit cell.

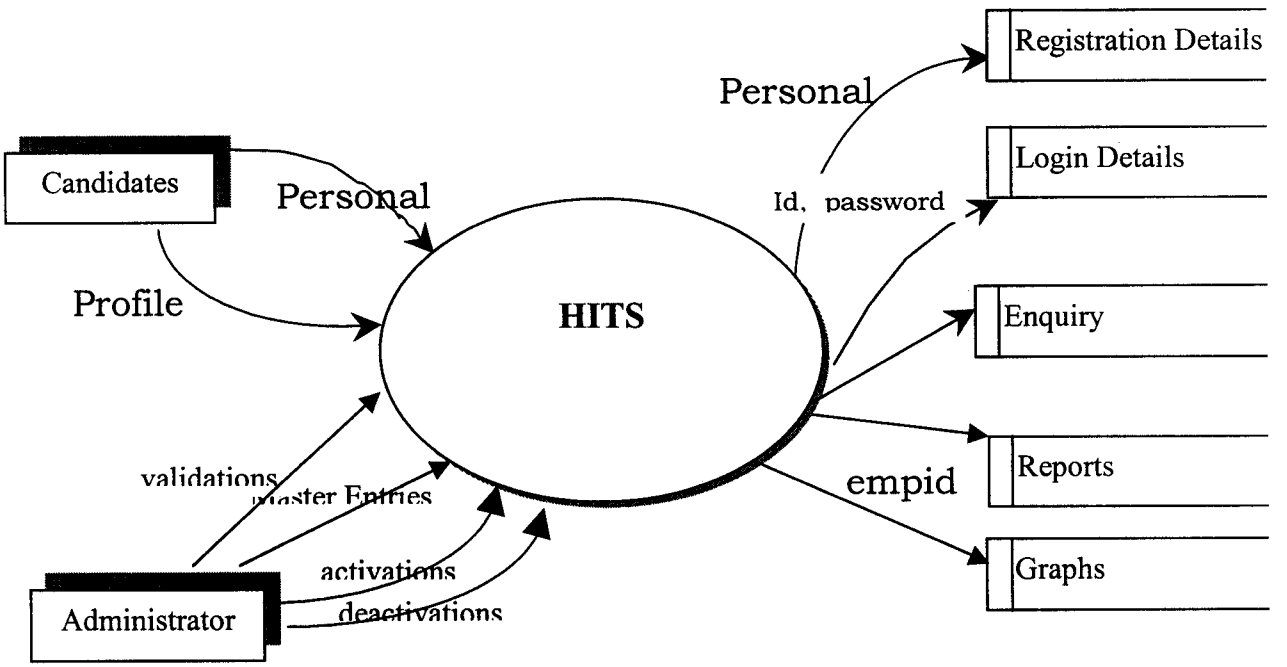
A DFD consists of numerous unit cells which is defined to the accomplish a specific task and is uniquely identified. Each cell has required entry condition with inputs, task standards, procedures, methods, responsibilities and measures. Exit condition define the result produced, their level of validation, and any post-task condition.

Overview of the System

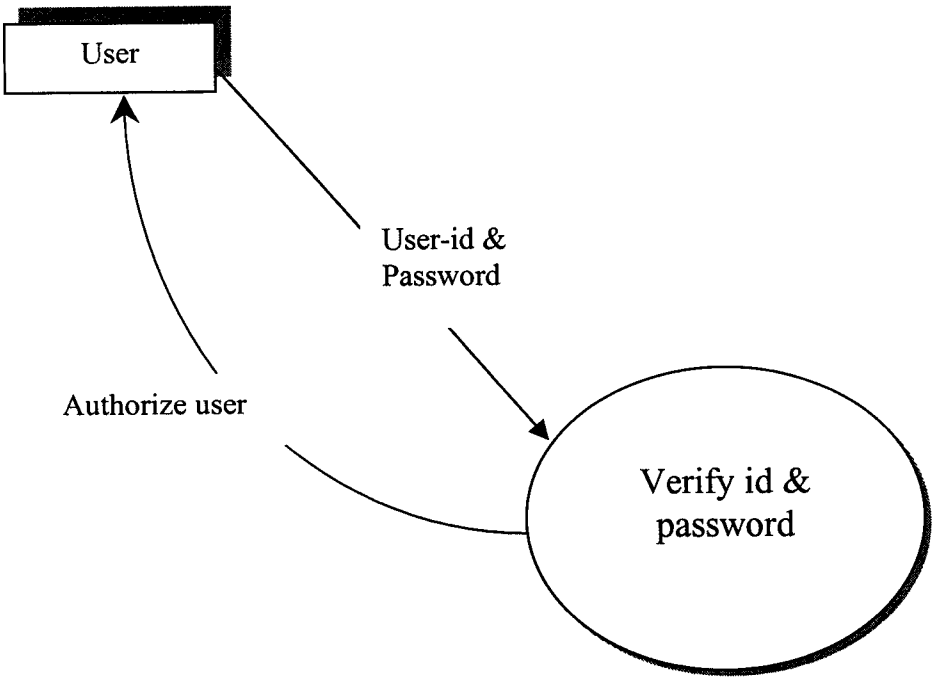


DATA FLOW DIAGRAMS

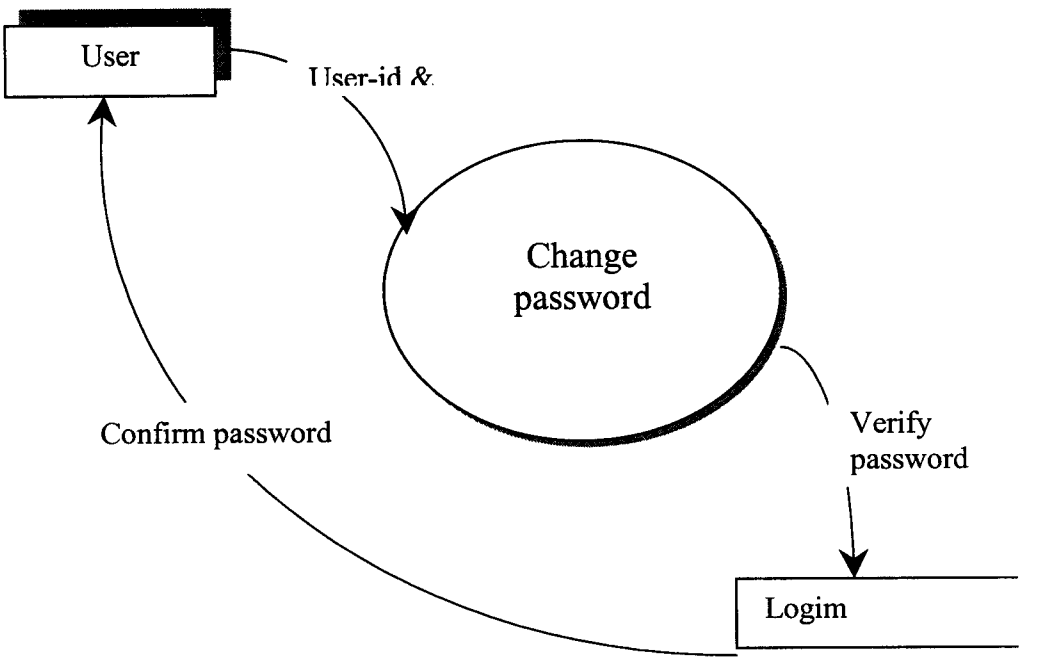
CONTEXT LEVEL DFD



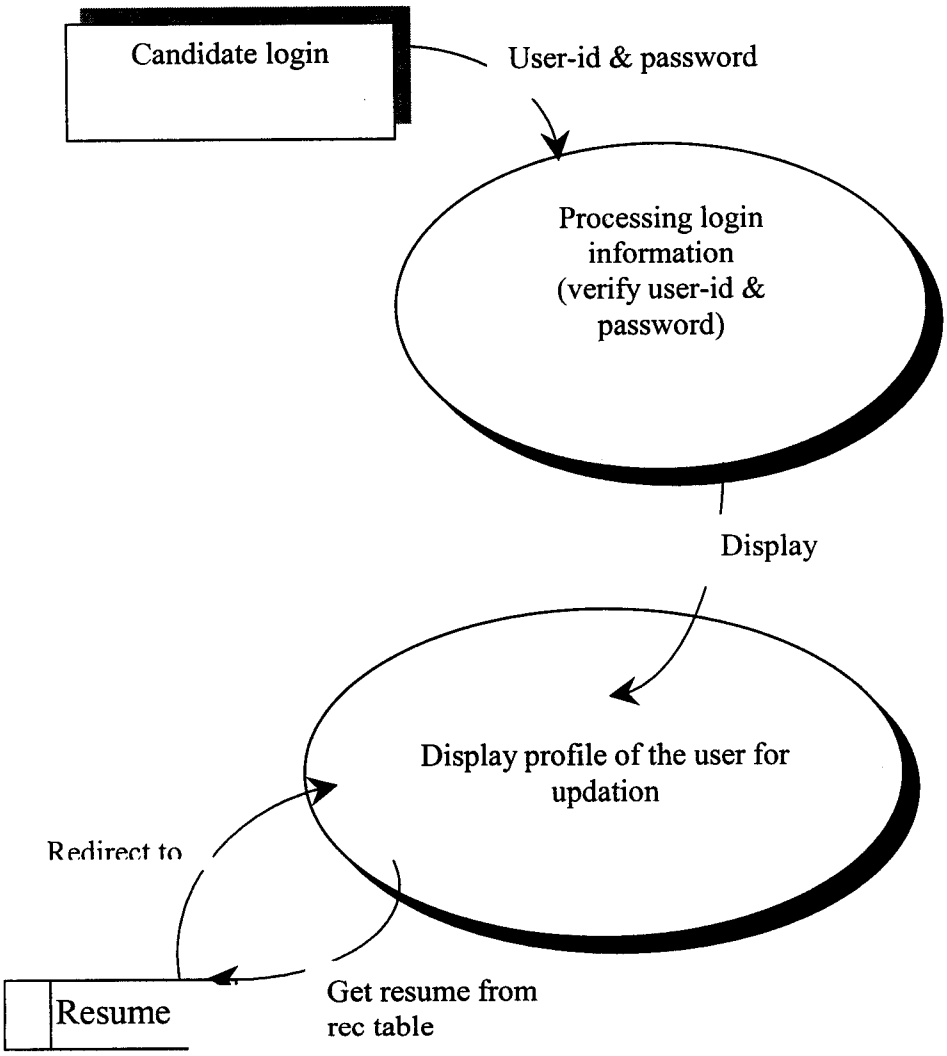
Login processing



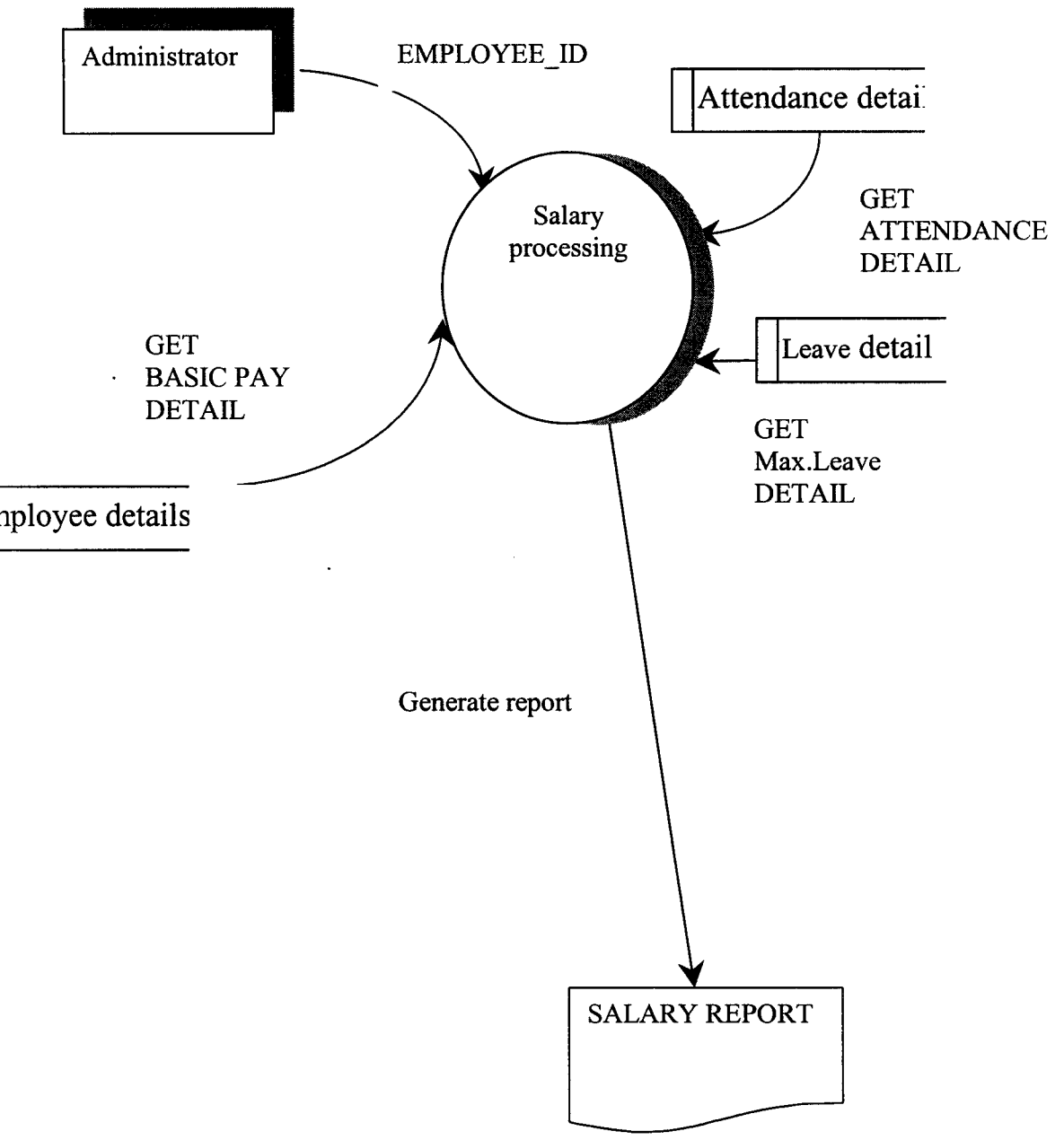
Change password



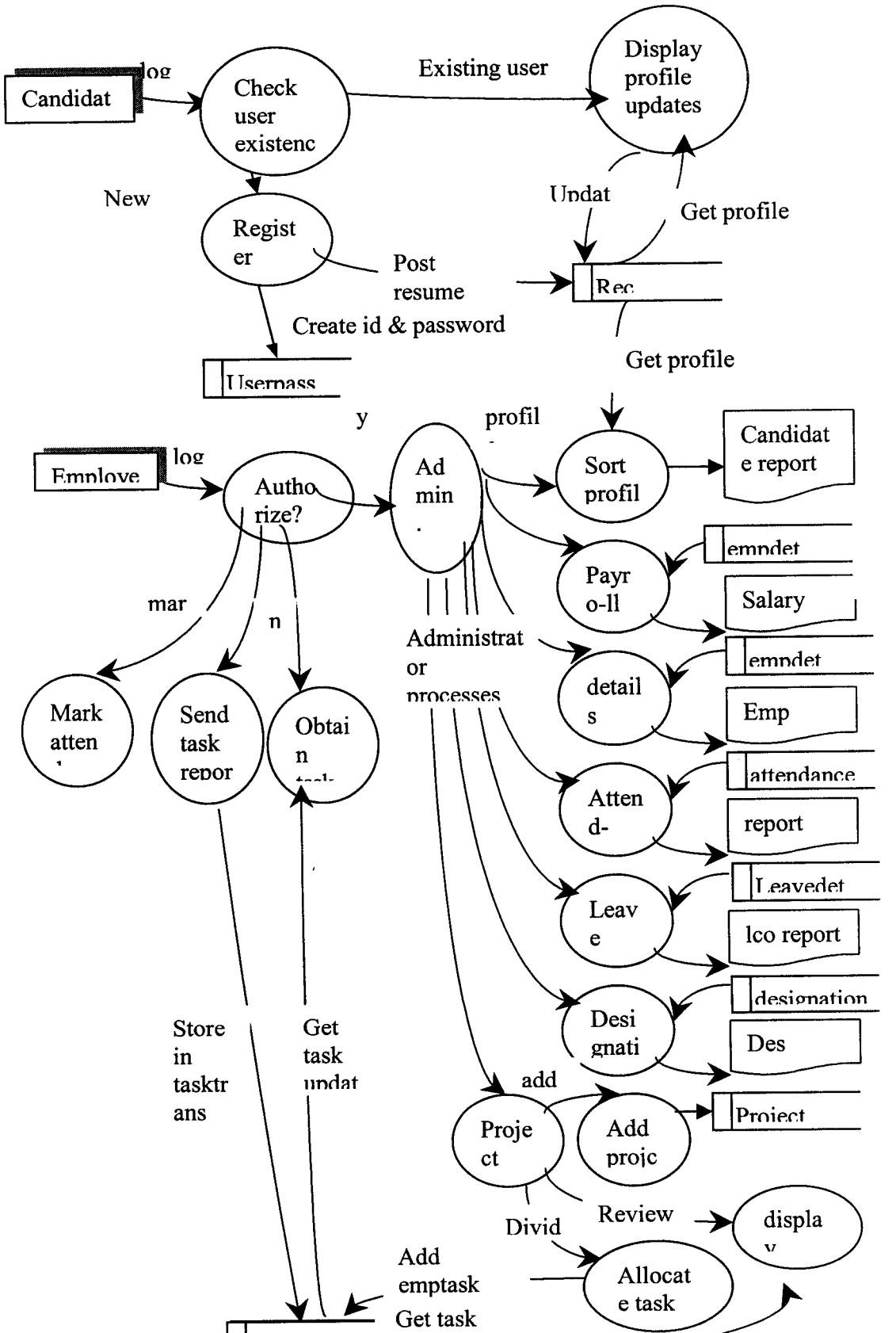
Candidate display detail



SALARY REPORT GENERATION



Overall DFD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Post resume
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Obtai n
Administrat or processes
Store in tasktr ans
Get task updat

5. System Implementation & Testing

Implementation is the final phase. It involves user training, system testing and successful running of the developed system. The user tests the developed system and changes are made according to the needs. The testing phase involves the testing of developed system using various kinds of data.

An elaborate test-data is prepared and the system is tested using it. While testing, the errors are noted and corrections are made. The users are also trained to get the maximum out of the system.

5.1 System Implementation

The user of this system will have to make sure the system satisfies their requirements. The user needs to be trained to get the maximum benefit out of the system. HITS requires the employee to be trained to work in an intranet, as the earlier system was a stand alone system.

The following factors are considered before implementation. Checking if all the components which make up the system been included, if the appropriate version of each required component been included, are the data objects included, etc... An installation program is created and the entire kit is delivered to the client.

User Training

The kit delivered consists of a complete guide on the new system developed. A thorough training on the new system is given to a representative from each of the user area and an overall demo given to the entire team. The queries from the audience were answered and hints given on various issues. Special training was given to the admin staff that is to play the role of super user. The configuration details and trouble shooting methodologies were explained and his performance absorbed. The user manual was completely explained and doubts cleared for the same. Installing and uninstalling the package and taking a backup of the data were demonstrated to the super user. Various possible exceptions and the possible causes for it from the user's end were explained. The various user environments and the right of access specified to each user was clearly explained and demonstration given to the team on different user environments. Instructions on successful operation of the system and trouble shooting methodologies were thus discussed.

Operational Documentation

Properly produced and maintained system documentation is a tremendous aid to maintenance engineers. The system documentation includes all of the documents describing the implementation of the system from the requirements specification to the final acceptance test plan.

A complete set of Operational Documentation was prepared for the client, which included the features of the system, the access rights allocated for various users and trouble shooting details. The special features of the system were highlighted. A step-by-step procedure was included in the documentation for data entry, report generation and saving reports in text, html or rich text format. The documentation is prepared keeping in mind users who have little or no knowledge of computers.

The operational documentation includes a document describing the overall architecture, a maintenance guide, a user manual for operations like data entry, report generations, trouble shooting and a list of error codes and their causes and solutions. The purpose of input controls and the validations for the same are explained diagrammatically. A clear picture of the system and its functionalities are thus provided.

5.2 System Testing

System testing is at the stage of implementation, which is aimed at ensuring that the system works accurately and efficiently before live operations commences. A series of test is performed before user acceptance:

- **Unit Testing**

This testing focuses verification efforts on the smallest unit of the software design module of HITS. This is known as "Module Testing". These testing are carried out during the coding stage itself. The user of this system is made to operate the system and find faults. These faults are then rectified.

Some of the errors found were:

1. Validation of E-mail id: mail-id should have one '@' character and one'.' Character.
2. date: validating that the user date is not greater than the current date.

- **Integration Testing**

Integration testing is a systematic technique for constructing the program while at the same time conducting tests to uncover errors in the interface.

Here, we make sure that the precise data is accessible by the dependent modules and no extra data are accessible.

Some of the errors that were uncovered were:

1. Authorizing web pages: Authorized persons alone must be able to see certain pages, else the user must be redirected to the login page. This is done by using the session variables provided with ASP.
2. Accessing id: the user id though not entered in all pages, has to be accessed to produce interactive screens. This problem was overcome by using the session variables.

- **Validation Testing**

At the culmination of the integration testing, software is completely assembled as a package, interfacing errors have been uncovered and corrected and a final series of software tests-validation testing begins. Validation tests succeed when the software works in accordance to the user needs.

This test was done by purposely entering erroneous data and check if the system was able to differentiate them.

Some of the tests that were done are:

1. entering numbers in the name column.
2. entering future date, invalid month, date.
3. check if the web pages are protected from un authorized users.

- **Black-box Testing**

It relies on the specification of the system or component, which being tested to derive test cases. The system is 'black-box' whose behavior can only be determined by studying its inputs and the related outputs.

This is also called as functional testing because mathematical functional can be specified using only inputs and outputs.

Following black-box methods were applied to both the modules to test arrays:

- Usage of different arrays of different sizes. This decreased the chances that the program with defect would accidentally produce a correct output because of some characteristic of the inputs.

- First, middle and last elements were accessed and any problems due to the boundary effects were delivered.

SYSTEM SECURITY

System security is important when it comes to storing sensitive information. Moreover, enquiry of data from nodes will require extra protection, as all users should not be able to view all pages. For the purpose of security each authorized users can be provided with user-id and password, which could be encrypted and stored in the database. Data backup provides insurance against loss of data due to machine malfunction or due to network errors.

THREATS TO SYSTEM SECURITY:

The potential threats are:

- Errors and omissions
- Disgruntled and dishonest employees
- Fire, natural disaster, external attacks.

SYSTEM SECURITY MEASURES

After the system security risks have been evaluated, the next step is to select security measures.

The measures are:

- Identification

This is accomplished through password. This help to identify if the user is an authorized person.

6. Conclusion

The Human Resource Information and Tracking Solution (HITS) have been developed for the present requirements. On-line computerization of activities that is being carried out in HR Department of ABAN INFORMATICS has been necessitated by increasing volumes and complex nature of the information that is to be processed.

On-line information gives the manager flexibility to act decisively and in time. The developed system has to a succeeded in rectifying the present problems. Further enhancement can be done without altering the existing modules and disturbing the tranquility of the system.

The newly developed system consumes less processing time and hence increases the throughput considerably.

The goals that have been achieved by the developed system are:

- It simplifies the operation.
- It reduces the processing time and increase productivity.
- Transactions are processed immediately and stored for future reference.
- User friendliness in increased through interactive screens.
- Error messages helps in easy deduction of input mistakes.
- Provides a good deal of security.
- Software is extensible.

The system is designed in such an extendable fashion to incorporate the future changes into the system easily. The various user-friendly features are introduced in this project. There are several future ideas to develop this web application, still in mind. The system was developed according to the requirement produced by the organization and verified for validity.

All the dynamic links to other pages are tested with the actual system. And the application can be run in any browser, but is mainly designed for the Internet explorer.

7. Scope for extensibility

The system has been developed to incorporate a rich flexibility as requested by the user. Information is an expanding universe, therefore we need powerful systems to handle them. HITS is one such system that pertains to the extensibility entity. New developments can be attempted to increase its strength to adapt to the future needs.

The HITS can be extended to incorporate code-metric analysis, which will enhance the job-watch feature. The attendance can be made fully automatic by providing the employees with access cards, this can bring down the time needed for making manual entries.

The system can be made transparent to the other branches of the organization by uploading the system to the web. This can increase coordination between the branches.

8. BIBLIOGRRAPHY

- Lee, System Analysis and Design, Prentice hall, 1996
- Stephen Walter, Active Server Pages 2.0 Unleashed, Techmedia Sams publishing, 1999
- Kevin Looney & George Koch, Oracle 8i: The Complete Reference, Oracle press-Tata McGraw-Hill Edition, 2000
- James Jaworski, Mastering JavaScript and Jscript, BPB publication, 1997
- Silberschatz, Korth, Sudarshan, Database System Concepts, McGraw-Hill international edition, 1997

Web Sites

- www.aspdeveloper.net
- www.4guysfromrolla.com
- www.asp101.com
- www.programmersrespurce.com
- www.shotgraph.com

A. DATA DICTIONARY

1. Candidate login

Table name: userpass

Field Name	Type	Width	Specification	Description
Id	Varchar2	20	Primary key Not null	User id
Password	Varchar2	15	Not null	Password

2. Candidate personal information

Table name: userperso

Field Name	Type	Width	Specification	Description
Id	Varchar2	20	Primary key Not null	User id
Name	Varchar2	25	Not null	Name
Dat	Number	2	Not null	Date
Month	Varchar2	3	Not null	Month
Year	Number	4	Not null	Year
mail	Varchar2	25	Not null	E-mail id
Addr	Varchar2	50	Null	Address

3. Candidate educational record

Table name: useredu

Field Name	Type	Width	Specification	Description
Id	Varchar2	20	Primary key Not null	User id
Degree1	Varchar2	30	Null	UG degree
Degree2	Varchar2	30	Null	PG degree
Institute1	Varchar2	30	Null	UG college
Institute2	Varchar2	30	Null	PG college
Marks1	Number	4,2	Null	UG percent
Marks2	Number	4,2	Null	PG percent
Yoc1	Number	4	Null	Year of completion1
Yoc2	Number	4	Null	Year of completion2
Adqual1	Varchar2	15	null	Additional Qualification1
Adqual2	Varchar2	15	null	Additional Qualification2

4. Candidate experience record

Table name: userexp

Field Name	Type	Width	Specification	Description
Id	Varchar2	20	Primary key Not null	User-id
Noc	Varchar2	30	Null	Name of the company
Desig	Varchar2	20	Null	Designation
Yow	Number	2	Null	Years of service
Texp	Number	2	Null	Total experience

5. Candidate project record

Table name: userproj

Field Name	Type	Width	Specification	Description
Id	Varchar2	20	Primary key Not null	User-id
Projdet1	Varchar2	30	Null	Project detail1
Projdet2	Varchar2	30	Null	Project detail2
Projdet3	Varchar2	30	Null	Project detail3

6. Employee login

Table name: pass

Field Name	Type	Width	Specification	Description
Empid	Number	3	Primary key Not null	Employee id
Password	Varchar2	15	Not null	Password

7. Employee details

Table name: empdet

Field Name	Type	Width	Specification	Description
Empid	Number	3	Primary key Auto	Employee id
Name	Varchar2	30	Not null	Name
Desig	Varchar2	25	Not null	Designation
Dept	Varchar2	20	Not null	Department
Bp	Number	10,2	Not null	Basic pay
Doj	Date		Not null	Date of join
Allow	Number	10,2	Not null	Allowance
Deduct	Number	10,2	Not null	Deduction

8. Employee personal details

Table name: empperso

Field Name	Type	Width	Specification	Description
Empid	Number	3	Primary key	Employee id
Fathname	Varchar2	30	Not null	Father's name
Sex	Number	1	Not null	Sex
Marsta	Number	1	Not null	Marital status
Addr	Varchar2	50	Not null	Address
Phone	Varchar2	7	Not null	Phone no.
Mail	Varchar2	25	Not null	E-mail id

9. Employee leave-id details

Table name: liddet

Field Name	Type	Width	Specification	Description
Lid	Number	3	Primary key Auto	Leave id
Ldet	Varchar2	25	Not null	Leave description
Maxl	Number	2	Not null	Max days

10. Employee on-line attendance details

Table name: atten

Field Name	Type	Width	Specification	Description
Empid	Number	3	Primary key	Employee id
Dat	Date		Not null	Date
Present	Varchar2	1	Not null	Present
Time	Varchar2	12	Not null	Time

11. Employee attendance details

Table name: attendance

Field Name	Type	Width	Specification	Description
Empid	Number	3	Primary key	Employee id
Dat	Date		Not null	Date
Lid	Number	3	Primary key	Leave id
Days	Number	2	Not null	Days absent

12. Designation details

Table name: designation

Field Name	Type	Width	Specification	Description
Desigcode	Number	3	Primary key Auto	Designation id
Designame	Varchar2	35	Not null	Designation name

13. Days carry details

Table name: carry

Field Name	Type	Width	Specification	Description
Empid	Number	3	Primary key	Employee id
Lid	Number	3	Primary key	Leave id
Cdays	Number	2	Null	Carried days

14. Project details

Table name: projdet

Field Name	Type	Width	Specification	Description
Prjid	Number	3	Primary key Auto	Project id
Desc	Varchar2	90	Null	Description
Startdat	Date		Null	Start date
Enddat	Date		Null	End date
Pm-id	Number	3	Null	Project manager id
Prjname	Varchar2	50	Null	Project name

15. Projecttrans details

Table name: projtrans

Field Name	Type	Width	Specification	Description
Prjid	Number	3	Primary key Auto	Project id
Percomp	Number	4,2	Null	Percentage complete
Status	Varchar2	50	Null	Project status

16. Task details

Table name: taskdet

Field Name	Type	Width	Specification	Description
Taskid	Number	3	Primary key Auto	Task id
Prjid	Number	3	Null	Project id
Tname	Varchar2	50	Null	Task name
Hrscom	Number	4,2	Null	Hours complete
Esthrs	Number	4,2	Null	Estimated hours
Estenddat	Date		Null	Estimated end date

17. Tasktrans details

Table name: tasktrans

Field Name	Type	Width	Specification	Description
Taskid	Number	3	Primary key Auto	Task id
Actstartdat	Date		Null	Actual start date
Actenddat	Date		Null	Actual end date
Hrscom	Number	4,2	Null	Hours complete
Eststartdat	Date		Null	Estimate start date
Estenddat	Date		Null	Estimated end date
Status	Varchar2	50	Null	Task status

18. Task- role details

Table name: taskrole

Field Name	Type	Width	Specification	Description
Roleid	Number	3	Primary key	Role id
Desc	Varchar2	50	Null	Role description
Rname	Varchar2	30	Null	Role name

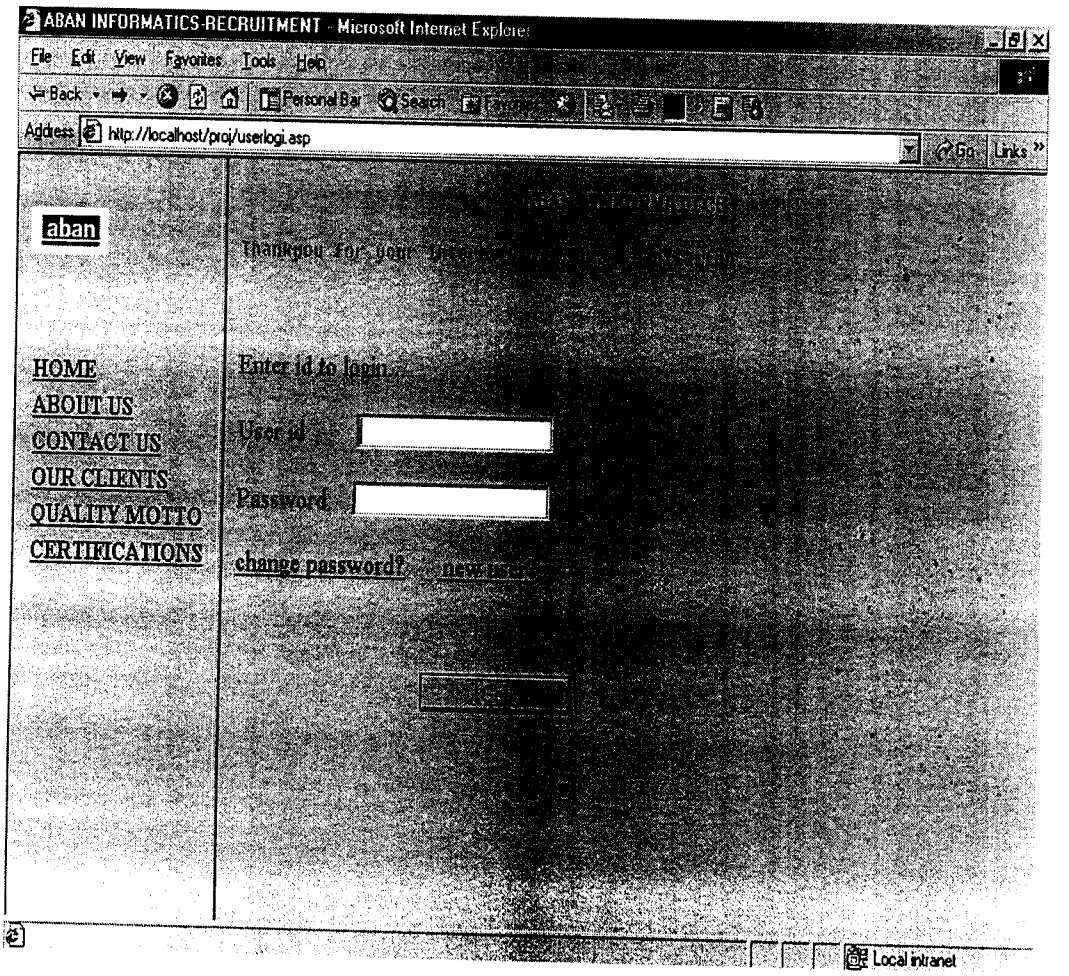
19. Taskdev details

Table name: taskdev

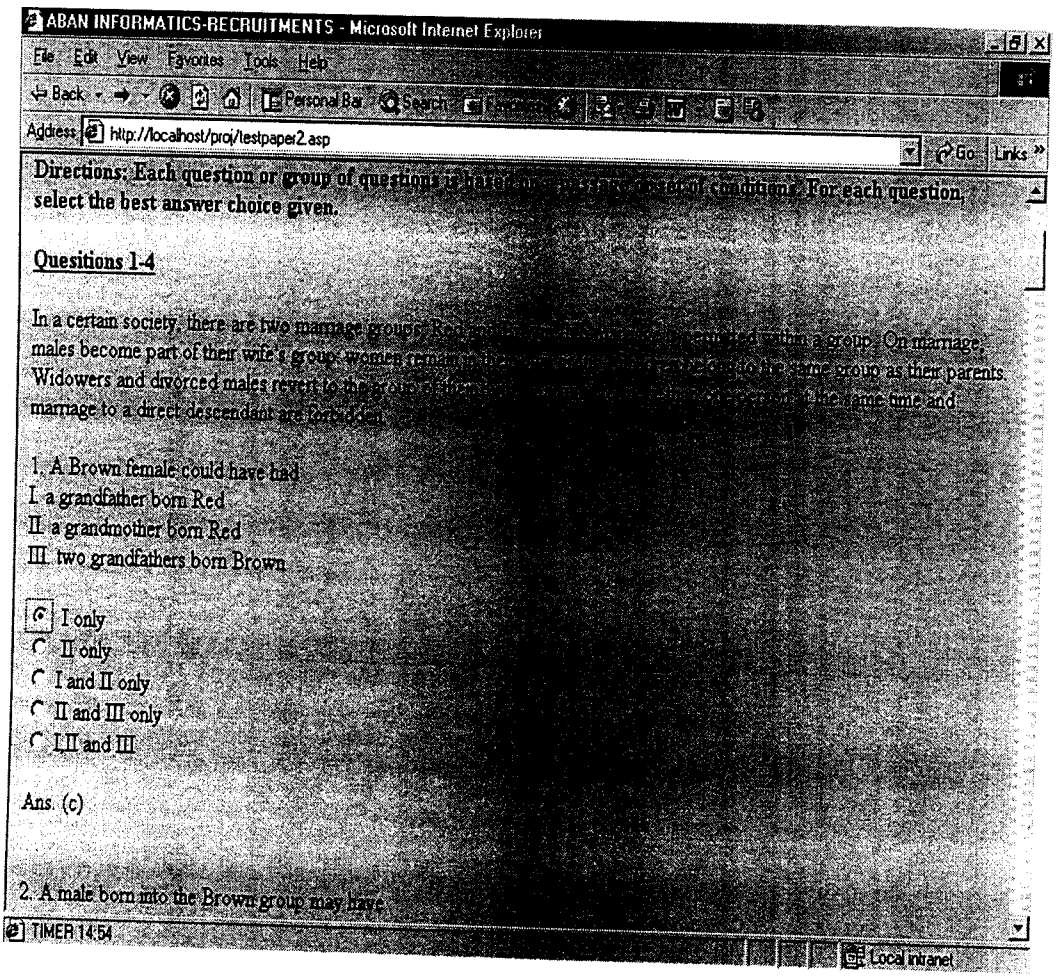
Field Name	Type	Width	Specification	Description
Empid	Number	3	Primary key	Employee id
Taskid	Number	3	Primary key	Task id
Roleid	Number	3	Null	Role id
Hrs	Number	4,2	Null	Hours allocated

B. SCREENS

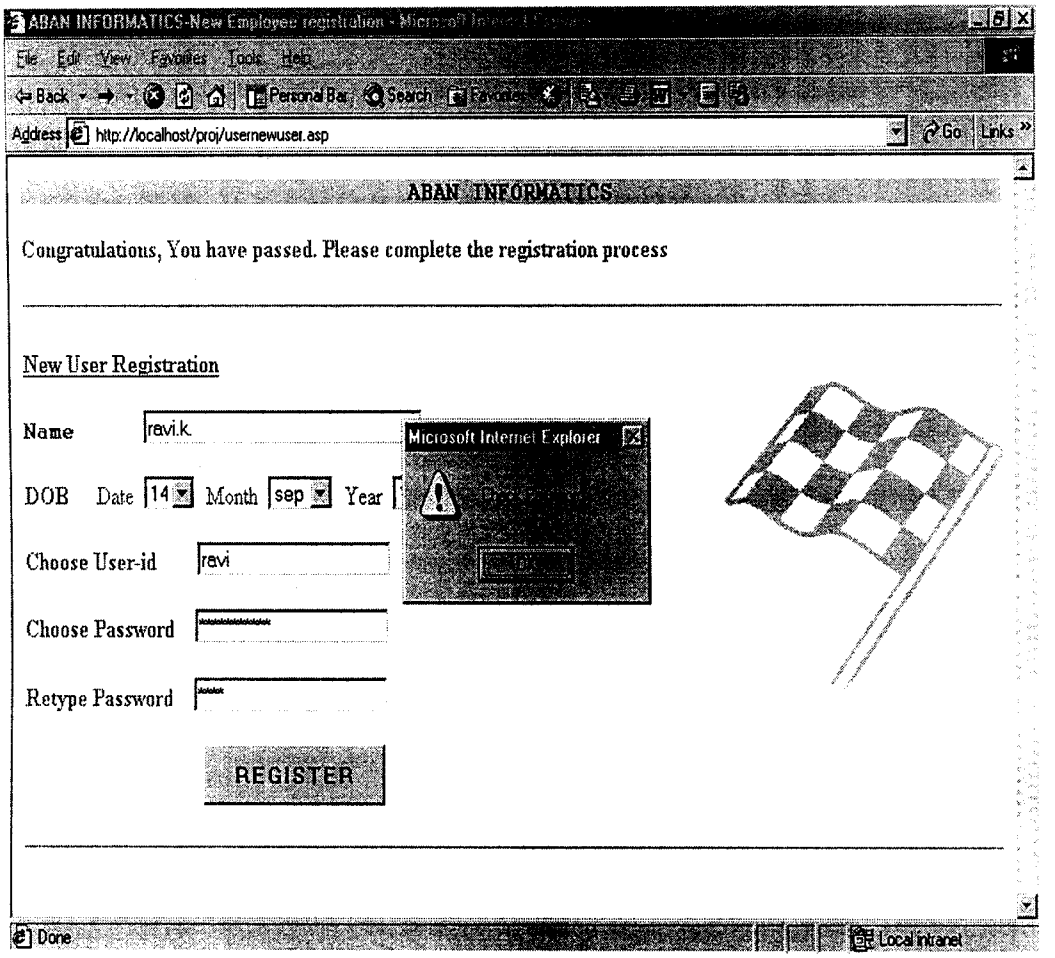
Candidate's login page



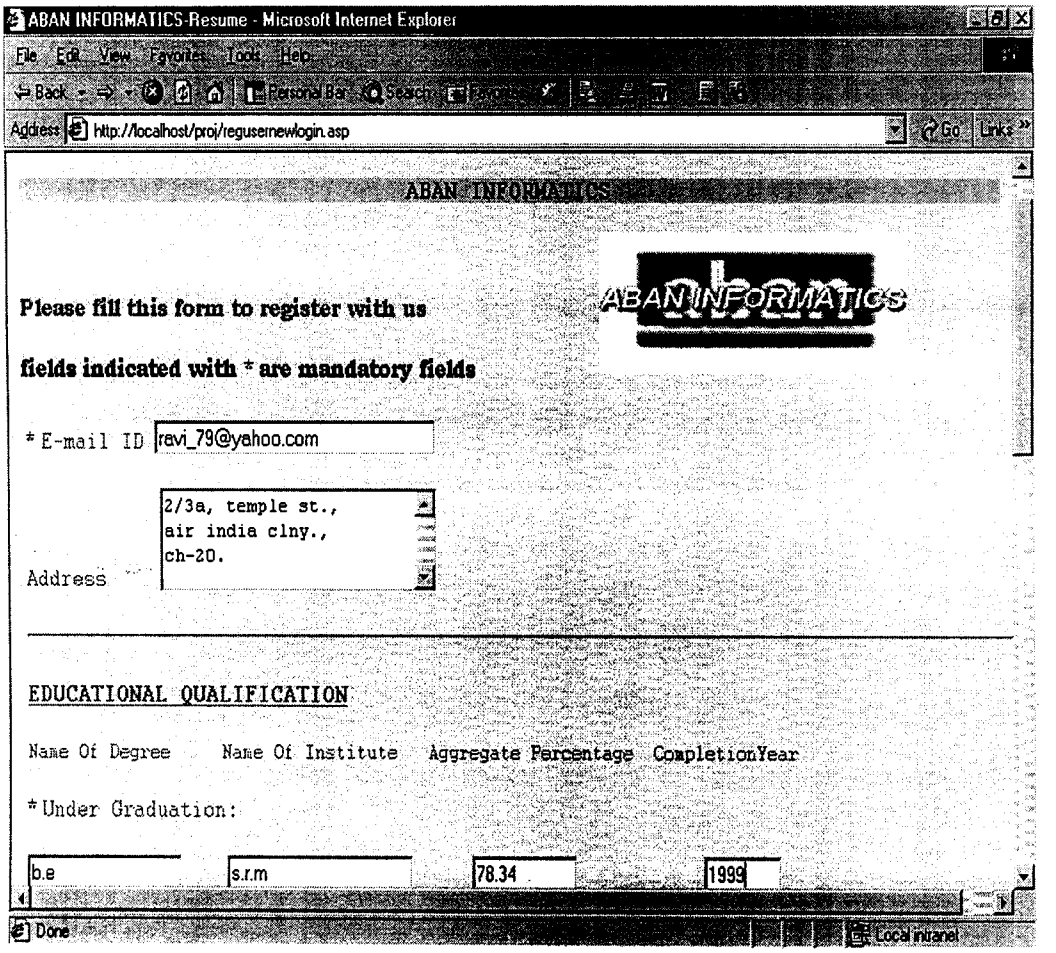
New user page-Screening test



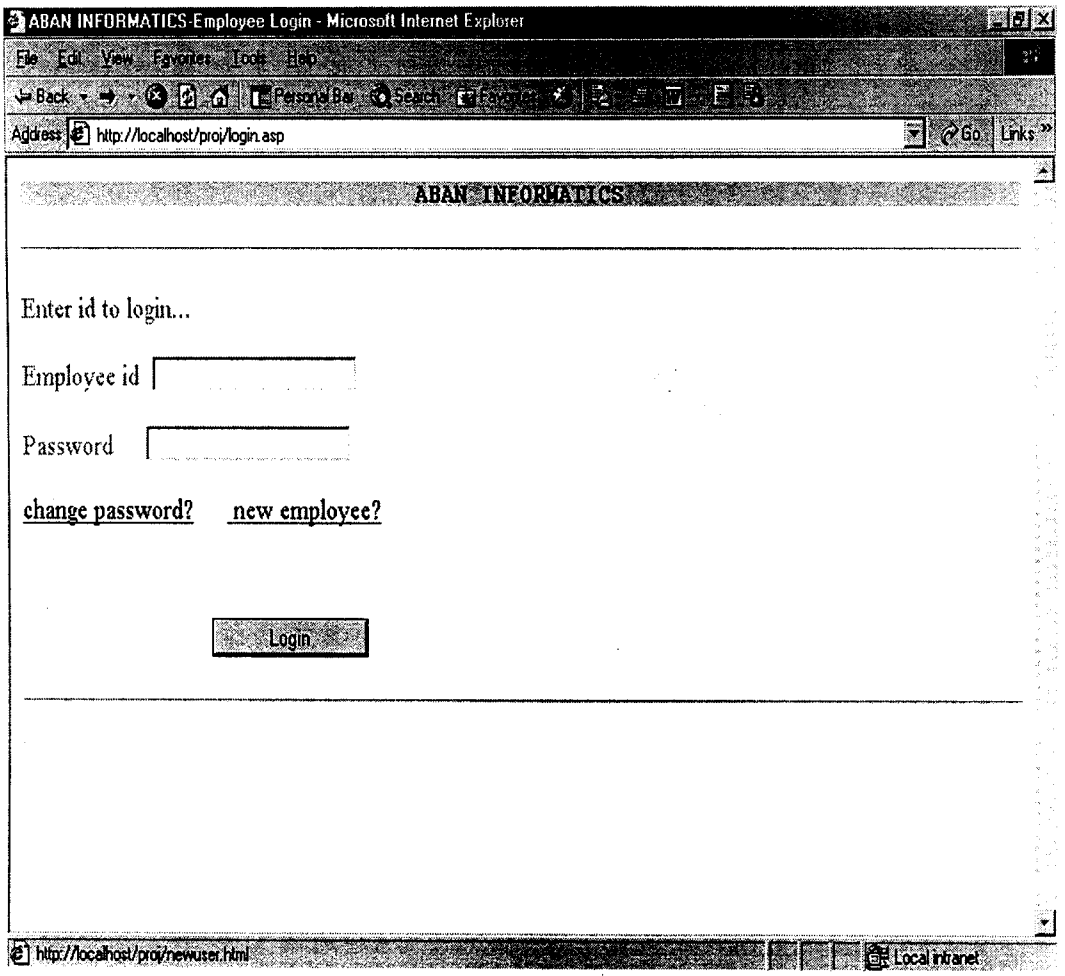
New user page-Registration



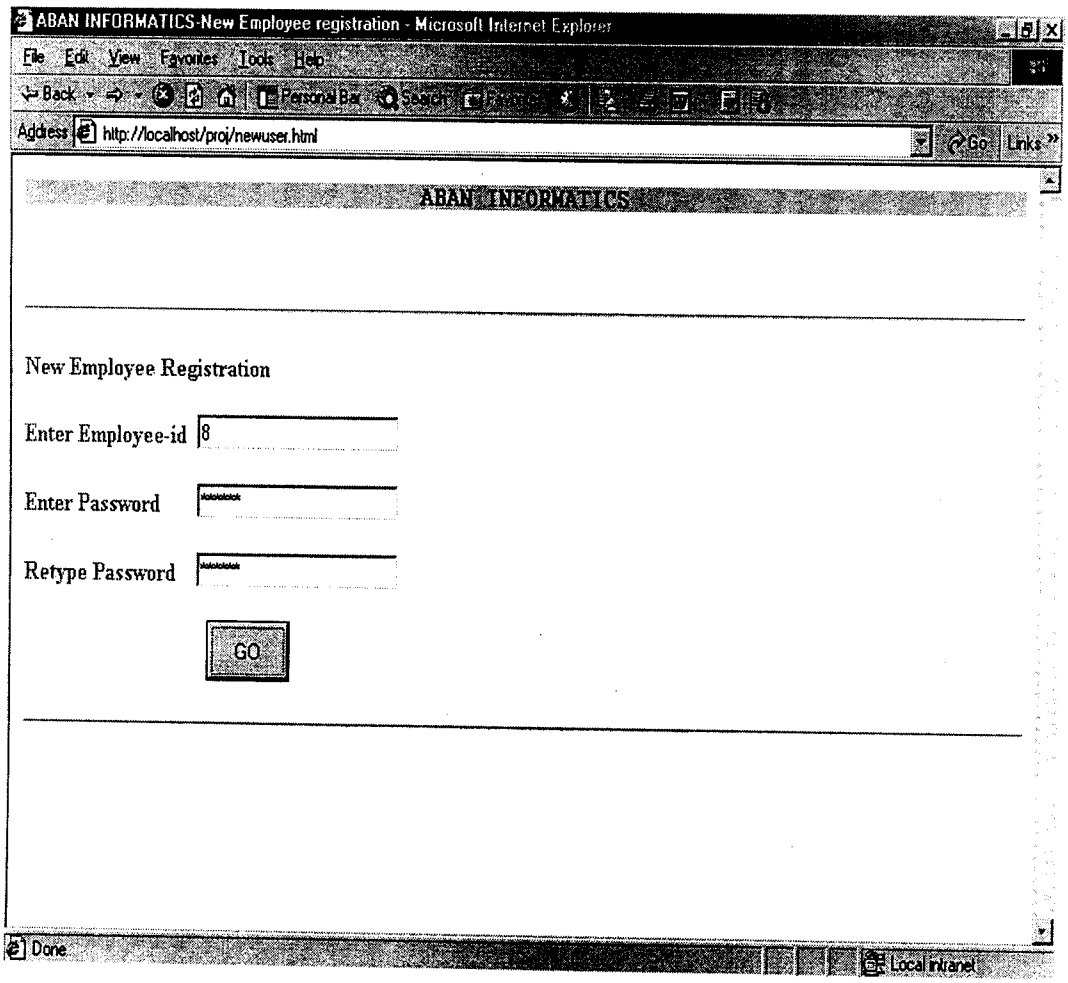
New user page-Resume Uploading



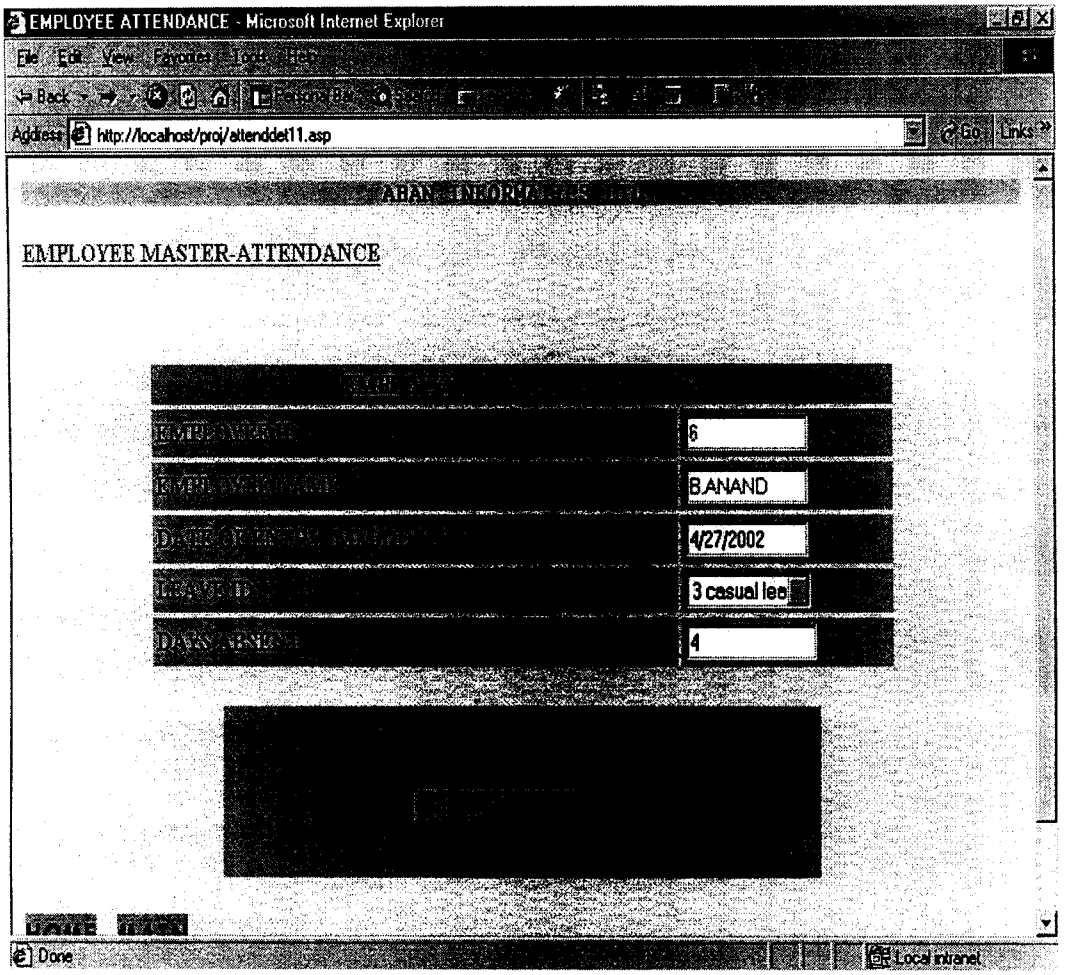
Employee Login page



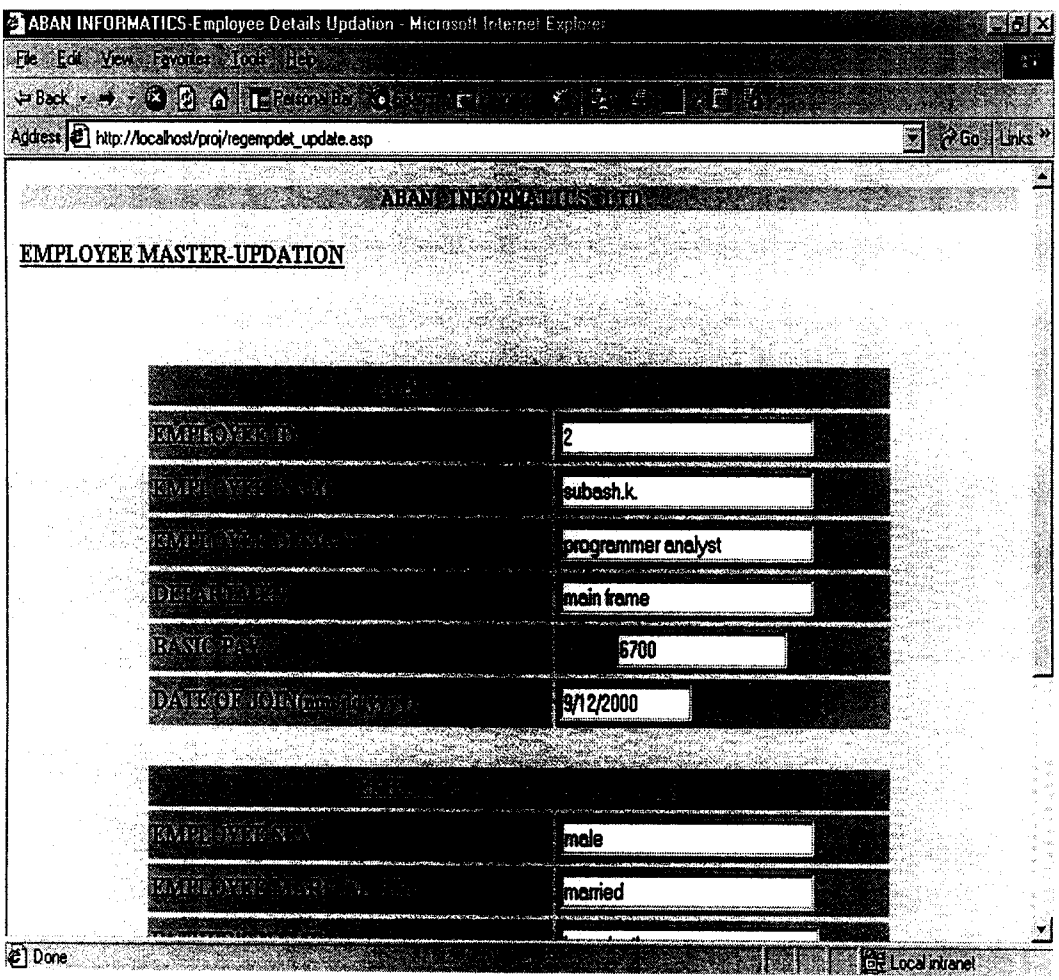
New user page-Registration



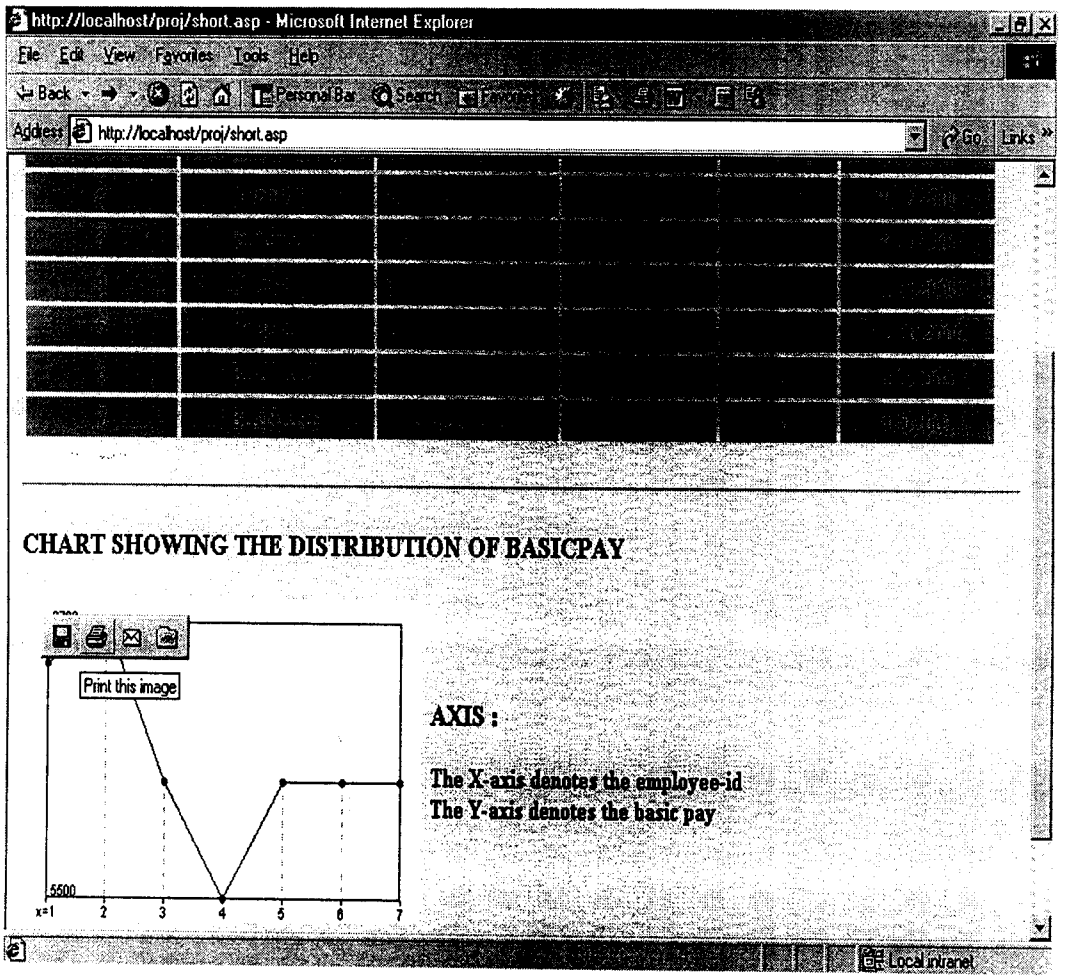
Employee attendance entry



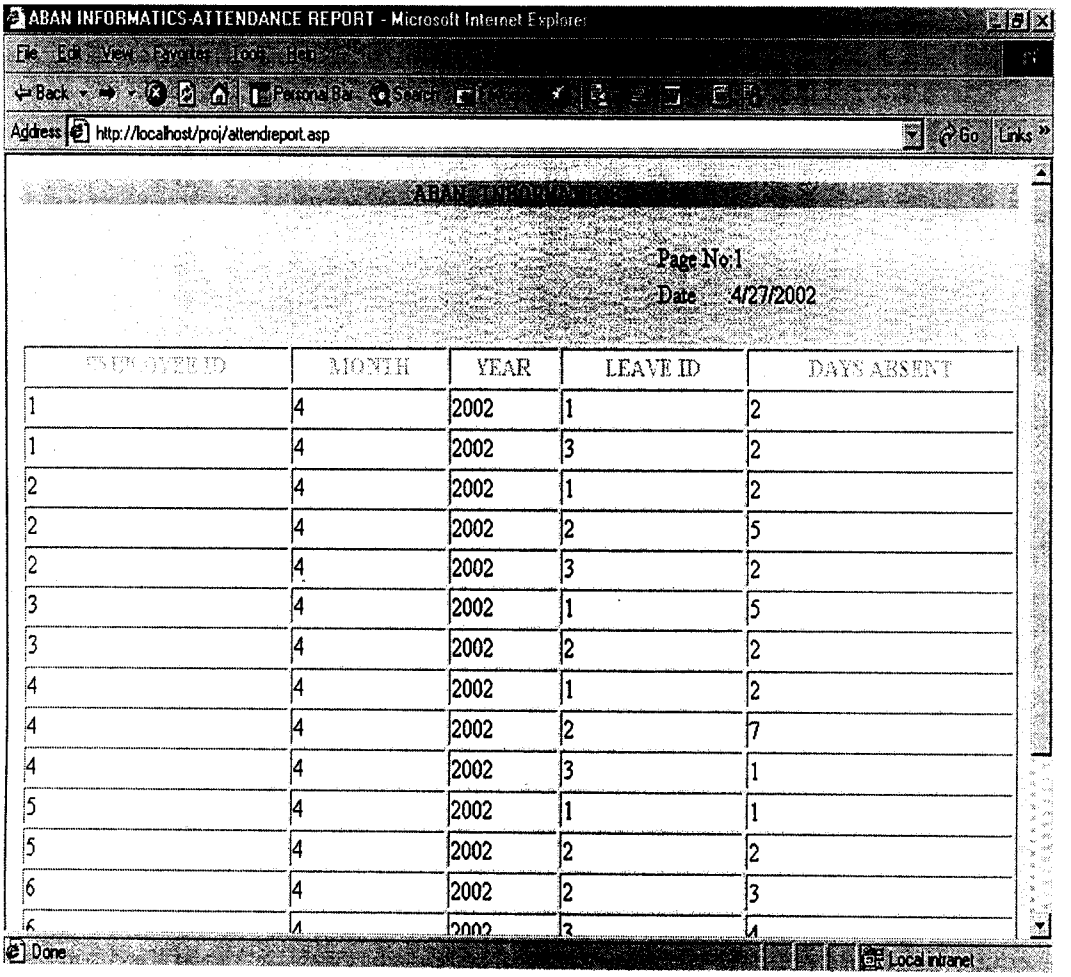
Employee detail updation



Salary Report



Employee salary report



Slippage report