

# Computerization of registration system of employment exchange using system development life cycle

POOJA GANDOTRA

Received : 23.11.2013; Accepted : 29.03.2014

## ABSTRACT

Computerization of Registration System of Employment Exchange” is a web-based application of software that will help in managing different functions of the Employment Exchange, such as New Registration, Modification, Renewal and generation of various kinds of reports. An attempt has been made to computerize the employment exchange so that common man can access certain information. Organization has an extra overhead to maintain its own data and keep the records that remain confined to the organization only and after sometime gets lost. The major discrepancy with the system is that it is difficult to produce reports corresponding to the present data and sometimes the information cannot be delivered in time. Different feasibility studies such as economic feasibility, technical feasibility, operational feasibility, behavioural feasibility, motivational feasibility and schedule feasibility were carried out for the proposed system. Then the various Modules of the Software were identified. The information related to a candidate was obtained with the entry of data in the form filled during the “New Registration” of a candidate. In case of any change in the qualification, address etc., the updation was done by changing the specific information in the “Modification form”. The details of a candidate were available by clicking on the Registration number in any of the reports. There was a search operation to view information of previously registered candidates. Generation of reports was one of the main components of this software .The user was able to get a number of reports on demand which can be used by the user for different purposes.

**KEY WORDS :** National informatics centre, Computerization, Employment, Registration

**How to cite this paper :** Gandotra, Pooja (2014). Computerization of registration system of employment exchange using system development life cycle. *Internat. J. Com. & Bus. Manage*, 7(1) : 202-209.

National Informatics Centre (NIC) was set up in 1977 by the Government of India to play a promotional role in creating an appropriate computer based system and introducing Informatics Culture in Government departments. National Information Centre, J and K State Unit was set up in June 1988 which has been entrusted with the task of computerization of various Departments.

During 1980s, NIC has emerged as a premier organization in country to provide informatics services to the Government of different levels of its hierarchy such as Central Government, State Governments and District Administrations. In the initial stage of its evolution, NIC was provided UNDP assistance to set up its facilities. NIC, right

from its beginning has believed that informatics solutions have to evolve around integrated computer communication approach. In the line with this approach, NIC has set up an intra-city network within the Central Government in Delhi way back in 1980 itself around CDC cyber 170/30 systems.

On the communication side, NIC has been a major catalyst in the indigenous manufacture of the Micro Earth Station for satellite based Data Communication Network. On the application development side, NIC has realized in the early stages of its evolution that graphics has to play a major role in developing user interface for IT solutions. A major design and graphics group was set up by NIC during mid Mid-80s to develop Graphics based solutions for IT users in the country.

National Informatics Centre (NIC), is a premier Information Technology organization in India which is committed to providing state-of-the-art, solutions for the

## AUTHOR FOR CORRESPONDENCE

POOJA GANDOTRA, University of Jammu, JAMMU (J &K) INDIA  
Email: gandotrapooja@gmail.com

IT needs of the Government of India at all levels. NIC carries the distinction of being the largest IT organization in the country and has set up a satellite based nation wide computer communication network, called NICNET, with over 1400 nodes connecting the National Capital, the State Capitals and the District Headquarters to one another. The IT services of NIC range from Consultancy, Software Design and Development, Office Automation and Networking Services to training, video conferencing, CAD, EDI, Multimedia and Internet Services including Web Site Development and Hosting. NIC has a nationwide presence, with its offices spread all across the country, from Leh to Andaman and Nicobar Islands.

Ever since its inception in 1977, NIC has been taking firm steps while moving towards its aim of being the pinnacle of IT in India. And the biggest leap in this direction was taken in 1988, when NIC's satellite based computer communication network, NICNET went into operation. NICNET is one of the largest VSAT based networks of its kind in the country. NICNET has over 1400 VSATs installed currently and is poised to grow to several thousands of VSATs in the next couple of years. There is no single VSAT that can meet the requirements of all sections of users. Hence, NICNET has been upgraded to support a variety of VSATs namely, CDMA, TDMA, FTDMA, SCPC, DAMA and receive only VSATs. The network uses state-of-the-art technology in C-Band as well as KU\_Bandranges.

Project "Computerization of Registration System of Employment Exchange" is a web-based application software that will help in managing different functions of the employment exchange, such as new registration, modification, renewal and generation of various kinds of reports. An attempt has been made to computerize the employment exchange so that common man can access certain information. Organization has an extra overhead to maintain its own data and keep the records that remain confined to the organization only and after sometime gets lost. The major discrepancy with the system is that it is difficult to produce reports corresponding to the present data and sometimes the information cannot be delivered in time.

## METHODOLOGY

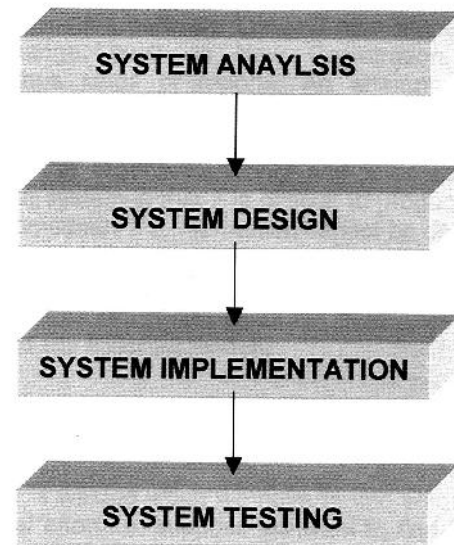
### System development life cycle:

System development revolves around a life cycle that begins with the recognition at user needs. In order to develop good software, it has to go through different phases. There are various phases of the System Life Cycle of this project. There are different models, which depict these phases. We decided to use waterfall model, the oldest and the most widely used paradigm for software engineering. The various relevant stages of the system life cycle of this application

tools are depicted in the following flow diagram:

### System analysis:

System analysis is the process of diagnosing situations, done with a defiant aim, with the boundaries of the system kept in mind to produce a report based on the findings. Analysis is fact- finding techniques where problem definition, objective, system requirement specifications, feasibility analysis and cost benefit analysis are carried out. The requirement of both the system and the software are documented and reviewed with the user.



### System design:

System design is actually a multistep process that focuses on four distinct attributes of a programme data structures, software architecture, interface representations, and procedural (algorithmic) detail. System design is concerned with identifying the software components (functions, data streams, and data stores), specifying relationships among components, specifying software structure, maintaining a record of design decisions and providing a blueprint for the implementation phase.

### System implementation:

The implementation is the final stage of the development. Implementation is the process of having system personnel check out and put new equipment into use, train users, install the new application and construct any file of data needed to use it.

### System testing:

System testing is a vital part of software development life cycle. During the development of software, applications

are written without the knowledge track of entire data. It is only during testing that we come to know about application's limitation and bugs. New systems must be thoroughly tested before being accepted. System testing implies testing programmes/modules and their interaction.

## **ANALYSIS AND DISCUSSION**

The proposed system is to develop an application that will keep all the data at a centralized place so that any authorized person for its use can retrieve it and data modifications and entries can be performed. The advantage is the use of the computing power of computers to generate the reports and thus provide the necessary information irrespective of the locations. The different applications, which are to be taken into account are:

- Candidate's Registration.
- Renewal of registration.
- Modification of candidate's details.
- Generation of reports.
- Information regarding different schemes.
- Career counselling.
- Information regarding the employment exchanges.
- Renewal criteria.

The various advantages of the proposed system are:

- Computerization of the live register
- Simple and easy to use (even a person with less computer knowledge can make use of it with ease )
- Various kinds of reports can be viewed in no time.
- Centralized database for providing updated information to the concerned people.
- Information can be kept for a longer time for the future needs.
- Considerable amount of time can be saved.
- Any information posted can be modified if required.
- A common man can also access certain data.
- More user friendly and interactive.
- Gives the information about Department of Employment, Schemes, Career Counseling etc.
- Provides a check on the working of the staff members.

The system analysis was conducted with the following things in mind:

- Identify the user needs.
- Perform economic and technical analysis.
- Evaluate the system concept for feasibility.
- Allocate functions to hardware, software, people, database and other system elements.
- Establish cost and schedule constraints.
- Create a system definition that forms the foundation for all the subsequent engineering work.

The following feasibility studies were carried out for the proposed system:

### **Economic feasibility:**

An evaluation of development cost weighed against the income of benefit derived from the developed system. Here the development cost is evaluated by weighing it against the ultimate benefits derived from the new system. The proposed system is economically feasible if the benefits obtained in the long run compensate rather than overdo the cost incurred in designing and implementing. In this case, the benefits outweigh the cost that makes the system economically feasible.

### **Technical feasibility:**

It is study of function performance and constraints that may affect the ability to achieve the acceptable system. The system is technically feasible, if it can be designed and implemented within the limitations of available resources like funds, hardware, software etc. The considerations that are normally associated with technical feasibility include development risk, resources availability and technology. Management provides latest hardware and software facilities for successful completion of the project.

The proposed system is technically feasible as the existing staff can be trained to operate the computerized system and costs involved are reasonable considering the benefits and the future aspects. The software developed is reliable and provides user with ease of success.

### **Operational feasibility:**

Proposed system is beneficial only if it can be turned into information system that meets the organization's operating requirements. The development of the new system was started because of the requirements put forward by the management of the concerned department. So, it is sure that the system developed is operationally feasible.

The availability of the required hardware, system software and technical manpower makes the system operationally feasible.

### **Behavioural feasibility:**

An evaluation of the behaviour of the end users, which may effect the development of the system. The users show minimal resistance to change, but they are satisfied with functionality provided in the proposed system.

### **Motivational feasibility:**

Evaluation of organization motivation to support the development and implementation of project". Organizational motivation was always there throughout the project.

### **Schedule feasibility:**

"Evaluates the time taken in the development of the project". The system had schedule feasibility.

**Design modules:**

The software has been designed in a modular manner. There is a separate module for the every function of the employment exchange. These are then integrated to build an easy to use system.

The various modules of the software were identified as:

**Editing of information:**

- Data entry
- Updation
- Deletion.

**Information of previously registered candidates:**

- View information of the previously registered candidates.

**Information relating to schemes, career counselling ‘n’ employment exchange:**

- View information related to schemes, career counselling ‘n’ employment exchange.

**Search:**

- Helps to search the details of a candidate based on certain criteria.

**Generation of the reports:**

- Live register report
- Day-wise registration report
- Date-wise registration report
- Month-wise registration report
- Registration expiry report
- Registration expiry report datewise
- Renewal report.

The information related to a candidate will be obtained with the entry of data in the form filled during the new registration of a candidate. In case of any change in the qualification, address etc., the updation is done by changing the specific information in the Modification form. The Registration of a candidate can be cancelled by deleting it from the live register. The details of a candidate can be viewed by clicking on the Registration number in any of the reports.

Information of previously registered candidates can be obtained with the help of a “search operation”. Information relating to different kinds of schemes, career counseling ‘n’ about employment exchange can also be obtained. Generation of reports is one of the main components of this software .The user can get a number of reports on demand which can be used by the user for different purposes.

**Data dictionary:**

Data dictionary can be defined as a repository that

contains description of all data objects consumed or produced by the software. The most important feature of data dictionary is documentation. It is a valuable reference for any organization. It improves analyst/user communication by establishing consistent definitions of various elements, terms and procedures.

A data dictionary is an important step in building a database. Following is a brief description of the tables used in the project.

The following conventions were used while designing the various screens:

- All data related to one task are on a single screen. The user need not to remember data from one screen to the next.
- All items that are logically related are together and arranged in importance from the top to bottom.
- Possible list values are provided to display all valid option to user.
- Error and validation messages are provided wherever required.

**Testing procedure:**

Extensive testing procedures were followed, which included the following:

**Unit testing:**

At the very lowest level is unit testing, where the programmer who writes the code, tests the code as per the specification of the project. It tests the internal structure of the modules integrated in the application. All the checks and other constraints are tested and approved for further testing of application. All the modules are tested individually.

Unit testing focuses on verification effort of the smallest unit of software design “the module”. Using the detail design model as a guide, important control paths are used to uncover errors within the boundary of the module. The relative complexity of tests and the errors within the boundary of the module. The relative complexity of tests and the errors therein is limited by the constrained scope established for unit testing. The unit test is always white-box oriented and the step can be conducted in parallel for multiple modules.

After a form has been created, the developer of the form fills out a unit test specification (UTS) document. This document contains all possible test conditions and their expected results. The module leader to ensure that no test condition has been neglected in the UTS then reviews this document.

The features to be tested during unit testing are as follows:

- Each form must meet the functionality as specified in the System Requirement Specification (SRS).

**Table 1: Requirements**

<b>Database:</b>	<b>Access 2002</b>	
<b>Table name:</b>	<b>Candidate</b>	
<b>Description:</b>	<b>Personal Information of the candidate (jobseeker)</b>	
<b>Field name</b>	<b>Data type</b>	<b>Description</b>
Regno	Text	Registration number of the candidates
Regdate	Date	Registration date of the candidate
Regtype	Text	Registration type of the candidate
Name	Text	Name of the candidate
Fname	Text	Father's name of the candidate
Add 1	Text	Permanent address of the candidate
Pal	Text	Post office concerning permanent address
Block 1	Text	Block concerning permanent address
Tehsil 1	Text	Tehsil concerning permanent address
Dist 1	Text	District concerning permanent address
Pin 1	Text	Pin code concerning permanent address
Add 2	Text	Communication address of the candidate
Po2	Text	Post office concerning communication address
Tehsil2	Text	Tehsil concerning communication address
Dist2	Text	District concerning communication address
Pin2	Text	Pin code concerning communication address
Dob	Text	Date of birth of the candidate
Religion	Text	Religion of the candidate
Nocode	Text	NCO code of the candidate
Roccup	Text	Recommended occupation of the candidate
Aoccup	Text	Alternative occupation of the candidate
Mstatus	Text	Marital status of the candidate
Category	Text	Category of the candidate
Ssubject	Text	Specifies whether candidate is a state subject
Examl	Text	Examination passed
Subjectl	Text	Subjects
Div 1	Text	Division
Year 1	Text	Year of passing
Per 1	Text	Percentage
Univ 1	Text	University
Rennarks 1	Text	Remarks
Prevorg	Text	Previous organisation
Prevperiod	Text	Time period in the organization
Prevpost	Text	Post held in the organization
Prevsalary	Text	Salary
Prevreason	Text	Reason for leaving
Presorg	Text	Present organisation
Prespost	Text	Present post
Presscale	Text	Pay scale

*Table 1: Contd.....*

Table 1: Contd.....

Presdate	Text	Date since working
Presself	Text	Self-employed
Presreason	Text	Reason for registration
Lang1	Text	Languages known
Read1	Text	Can read that language
Speak1	Text	Can speak that language
Write1	Text	Can write that language
Height	Text	Height of the candidate
Weight	Text	Weight of the candidate
Disab	Text	Disability if any, of the candidate
Moi	Text	Mark of identification of the candidate
Instate	Text	Job preference of the candidate to work in the state
Outstate	Text	Job preference of the candidate to work outside the state
Govt.	Text	Job preference of the candidate to work in the government sector
Public	Text	Job preference of the candidate to work in the Public sector
Armed	Text	Job preference of the candidate to work in the army
Self	Text	Job preference of the candidate to be self-employed
Private	Text	Job preference of the candidate to work in the private sector
Enforce	Text	Name of the force if the candidate is an ex- servicemen
Exrank	Text	Rank held
Exno	Text	Regiment serial number
Exenrol	Date/Time	Date of enrolment of the candidate
Exdis	Date/Time	Date of discharge of the candidate
Exchar	Text	Character of the candidate
Exreason	Text	Reason for discharge of the candidate
Remarks	Text	Remarks of the candidate

**Table name:** Pass

**Description:** Password ckeck

Field name	Data type	Description
Username	Text	Login name of the user accessing the software
Password	Text	Password allotted

**Table name:** Service

**Description:** Service code provided to the user

Field name	Data type	Description
Username	Text	Name to the user accessing the software
Service_code	Text	The code allocated

**Table name:** Allocation

**Description:** Service allocated to the user

Field name	Data type	Description
Service_code	Text	The code allocated
Description	Text	Description of the code
url	Text	The link provided for the specific code

**Table name:** Renewall

**Description:** Renewal details of the candidates

Field name	Data type	Description
Regno	Text	Registration number of the candidates
Regdate	Datte	Registration date of the candidates

In general, testing of a screen should include the following:

- Proper and logical navigation.
- Database field lengths consistent with the corresponding table columns.
- Proper format masks applied to fields.
- Correct computation (if applicable) as per the functionality.
- Boundary of non-database objects (fields, buttons etc.).
- Correctness of database updates (if applicable).
- Query results(as per the input specified by the user or any other criterion).

User interface (e.g. alignment of GUI objects, appearance, title off screen, title off screen GUI object properties).

#### **Module testing:**

The testing of individual modules as completed during the design phase itself. Each module was tested at the time of coding as well as whenever there was any modification required. The emphasis was not only on the functionality of the software but also on the quality of the written code. Software coding standards for good quality of software were adhered to.

#### **Integration testing:**

Once the different modules were thoroughly tested, they were combined *i.e.* integrated to make the system work as a whole and its performance was evaluated. Tests were performed for proper functionality of the system and results were evaluated for different data conditions.

Integration testing is the testing of the interfaces among system modules. In other words, it ensures that the data moving between the modules are handled as intended.

#### **System testing:**

In the next level, the system is tested with all the components of the application. System testing is the testing of the system against its initial objectives. It is done either in a simulated environment or in a live environment.

The project leader or system analyst tests all the components to see that they interact correctly when combined as one product. A series of testing are performed for newly developed systems before the system is ready for the users acceptance testing.

#### **User acceptance testing (UAT):**

After the system is completely ready for the installation, the most important test has to be performed *i.e.* user acceptance testing because the system has to satisfy the users requirement and only when the user is fully satisfied and approves the system, the system can be installed.

The system is tested for the user acceptance by constantly keeping in touch with prospective system users at the time of development and changes were made wherever required.

- Input and output design.
- Menu used in application is descriptive enough to work with.
- Output reports are sufficient for the requirements.

There are five levels of user acceptance testing:

#### *Verification testing:*

It runs the system in a simulated environment using simulated data. This simulated test is sometimes called "Alpha testing". The simulated test is primarily looking for errors and omission regarding end user and design specification that were specified in the earlier phases but not fulfilled during construction.

#### *Validation testing:*

It runs the system in a live environment using the real data. This kind of user acceptance testing is called the "Beta testing". Validation succeeds when the software functions in a manner that can be reasonably expected by the customer. Software validation has been achieved through series of black box testing that demonstrates the requirements. Deviations and errors have been corrected at this step. During this validation, we test a number of items, including:

- Systems performance.
- Peak workload processing performance.
- Human engineering test.
- Methods and procedures test.
- Backup and recovery testing.

#### **Audit testing:**

It certifies that the system is free of errors and is ready to be placed into operation not all organization requiring an audit. But many firms have an independent audit or quality assurance staff that must certify a system acceptability and documentation before that system is placed into final operation. There are independent companies that perform systems and software certification for end user's organizations.

#### **Stress testing:**

Applying stress to a programme means that a large amount of data are fed for processing in short period of time. In other words, consumption of computer resources is drastically raised in that time frame with the intention to ensure that the system will still perform effectively if the same condition occurs in the future.

For each data entry screen, I prepared test data with the extreme values and tested under all relevant test conditions. After my own satisfaction, I invited the concerned user to

test the relevant data entry screen against real data. This process helps in rectifying/modifying the modules, again and again.

**Output testing:**

The output generated by the system under consideration is in the format required by the users. And the information in the reports is accurate and reliable. The output reports are in the appropriate formats with meaningful headings and the footers.

**Concluding remarks:**

Today, the web technology has become very advanced and so the convenient means of information. The significance of the project lies in the utilization of the web technology along with the power of computers to help the Employment Department(s) as well as the common man to get certain information irrespective of his location.

The project handles the new registrations, modifications, renewals, generation of reports and the deletion of the records those have not been renewed. The project can help the user to have access information related to different schemes that he/she can prevail. The user just has to click on the scheme to get information about it.

It would provide a lot of transparency in the entire system and would help to build up trust of the user in the system. At the same time it would make the entire operation of the Employment Department very convenient and fast.

**Future scope of work:**

Every software system has room for expansion. Likewise the “Computerization of registration system of employment exchange” software too would be modified and new improved features will be incorporated into it. The “Computerization of registration system of employment exchange” would be modified to include the following features:

- Report containing the list of candidates according to the requirements.
- Alarms can be generated for the candidates whose registrations are due for renewal.

The “Computerization of registration system of employment exchange” software can be linked with the J

and K site to broaden its horizon. The proposed system provides a wide range of functionality. On the basis of analysis and observation, the following conclusions can be drawn:

- The system has several integrated modules. The various modules retrieve this information with the help of user preferences.
- The system stores the information in the specified database.

**Limitations of the system:**

*Conversion:*

The system will provide options of porting the database in Access 97 to SQL Server or Oracle Database. It will follow the same naming conventions.

*Database refinement:*

The system database can be reduced to make the system more effective, if required.

**REFERENCES**

Awad, S. (1997). System analysis and design, Galgotia Publications Pvt. Ltd., NEW DELHI, INDIA.

Danesh, Arman (1998). Java Script Interactive Course, *Techmedia*, NEW DELHI, INDIA.

Hettihewa, Sanjaya (1999). Teach yourself ASP 2.0 in 21 Days, *Techmedia*, NEW DELHI, INDIA.

Shiran, Yahuda and Shiran, T. (1998). Advanced JavaScript Programming, *Techmedia*, NEW DELHI, INDIA.

Simon (1999). VB Script Interactive Course, *Techmedia*, NEW DELHI, INDIA.

Walther, Stephen (1999). Ative server pages 2.0 Unleashed, *Techmedia*, NEW DELHI, INDIA.

**WEBLIOGRAPHY**

[www.jk.nic.in](http://www.jk.nic.in).

[www.google.com](http://www.google.com).

[www.asp101.com](http://www.asp101.com).

[www.smartdraw.com](http://www.smartdraw.com).

[www.codeguru.com](http://www.codeguru.com).

