Developing a Model Library Automation Multilingual Software
(LAMP – Library Automation Multilingual Package)

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Abstract

Few Library automation software packages are available in the market. But the cost of the software package, bar code reader, bar code labels and in all the total cost is not affordable to most of the public libraries particularly from rural areas. Most of these software packages allow the data entry of the bibliographic details of the document in English only and allow to take output reports in English language only. Few packages allow the data entry in Devnagari script, but these modules are costly and needs to be purchased separately. The authors, therefore, tried to develop a model library automation multilingual package, which will be helpful to save on costs incurred, allow to enter details in local language, and source code will be made available to make modifications (if required) in it.

Keywords: Automation, Multilingual, Library, Data Flow Diagram

1.   Introduction

Few Library automation software packages are available in the market. But the cost of the software package, bar code reader, bar code labels and in all the total cost is not affordable to most of the libraries here. Second point, these software packages allow the data entry of the bibliographic details of the document in English only and allow to take output reports in English language only. Few packages allow the data entry in Devnagari script, but these modules are costly and needs to be purchased separately. And moreover what the library management suggests the solution is that to do the transliteration and use the available modules (like 'Apurvai', 'Poorvarang' etc.) But the problem is that one operator spell it like 'Apurvai', and the other at later time may speel it like 'Apoorvai' or third time, the third operator next time may spell it like 'Aapurvai' or 'Aapoorvai'. So many variations of the same title ! Best way to have a package which will allow Devnagari script and type in the title as it appears on the title page of the book. In fact the libraries here have more than 60% books in local language (Marathi) or Hindi/ Gujarati and remaining in English.

2.   Scope of Subject Study

Library Automation Multilingual Package (LAMP) was developed with special reference to Library at Nature Cure Ashram Library, Uruli Kanchan. This multilingual library automation software package will cater to the needs of the NCA library. The languages handled are Marathi, Hindi, English and Gujrati. Focus is on accommodating the existing data which is already keyed-in. The reports which are included on priority basis are the register

catalogues (for Marathi, Hindi, English and Gujrati titles). Daily Issue / Return transactions, Current Issue / Return status report. As it is open source software, along with NCA Library, other libraries having collection in Indian languages like Marathi, Hindi or Gujarati can avail it.

3.   Limitations of Subject Study

The Study is limited to only four languages (Marathi, Hindi, English and Gujrati). Suppose a library is having collection of books in Marathi, English and Kannada languages (particularly libraries in Solapur district), the system will help that library to handle only Marathi, English titles and not Kannada titles. Of course with some modifications, a tailor-made version can be provided. The report provided are limited to register calogues (for Marathi, Hindi, English and Gujrati titles), Daily Issue / Return transactions, Current Issue / Return status report. If some other reports are needed, a tailor-made version can be provided.

4.   Need of Subject Study

This model multilingual software package will be cheaper than the available software packages and it is multilingual. So that user can key in the data of English books (of any subject) using English language and the data of Marathi, Hindi books (title, author(s), publisher), using Devnagari script. Gujarati books (of any subject) using Devnagari script or Gujarati font. And reports also will be given in respective scripts. At present English, Hindi, Gujrati and Marathi titles can be processed.

English – by default

Marathi – Devnagari script

Hindi – Devnagari script

Gujrati – Devnagari script or Gujrati font

In future as per individual library's requirement, with some modifications, other languages can be accommodated – tailor-made software versions.

5.   Objectives

1. To carry out the retrospective data conversion with its constraints (bibliographic details of titles in Marathi, Hindi, English and Gujarati).

2. To computerize the existing manual system, with few changes in the processes.

3. To provide multilingual facility for bibliographic details entry of a book. (For the candidate system, Marathi, Hindi, English and Gujarati only)

4. To provide output report facility / on-screen reports facility with multilingual bibliographic details printed / displayed as it is. The reports will be

a. Up-to-date register catalogues for all four language title viz., Marathi, Hindi,English, Gujarati.

b. Current Issue / Return status report

c. Daily Transactions report

d. Up-to-date List of Borrowers

6.   Research Methodology

Present manual system at Nature Cure Ashram Library is to be studied, analyzed, feasibility study of the proposed system to be carried out and keeping in mind the requirements and constraints, the automation package will be designed and developed.

Systems analysis, design, coding, testing, implementation, feedback, maintenance i.e., **SDLC**

(System Development Life Cycle) will be carried out. So it is descriptive and quasi experimental method.

7. Hypothesis

The LAMP (Library Automation Multilingual Package) will help to automatesome manual procedures being carried out at NCA Library and provide accurate and up-to-date reports

8. Data Collection

8.1 Identification of Needs

The books in the library are mostly from four languages viz., English, Marathi, Hindi and Gujarati. The users are the patients, doctors, villagers. The patients need printed lists of the books (i.e., register catalogue). In the manual system, the library has maintained four different lists for four languages each. The library staff member types in the titles in a word document. The keys used are language and then in that class numbers. Whenever there are new arrivals, accession work is done and the new titles are written manually in the respective language list under the respective class number and after some time interval typed in and taken new printed lists. Using the Library Information Management System, the accessioning work will be done and the updated lists can be seen on the screen and can printed whenever needed. So updation overhead is reduced and latest lists are available all the time. One more requirement is that the titles should be in the respective script. The third requirement is to find the total collection investment.

8.2 Preliminary Investigation

The existing data (in MS-Word file format) is required to convert. The constraints / restrictions /

conditions are applied as per the data records available and future additions. Primary key decision (for books master file) and maintaining the fonts used in the existing data were crucial and important. That way it saved typing work up to some extent and keeping in mind the familiarity of the librarian with the Marathi keyboard, the fonts were selected. It helped to speed up the data entry work of new titles. Then, Diwali Anka needed to treat separately than periodicals. These are used as books for a year.

8.3 Feasibility Study

Feasibility study is a test of a system proposal according to its workability impact on the organization, ability to meet user needs, and effective use of resources. it focuses on three major questions:

i. what are the user's demonstrable needs and how does a candidate system meet them?

ii. what resources are available for given candidate system? Is the problem worth solving?

iii. what are the likely impact of the candidate system on the organization? How well does it fit within the organization's master MIS plan?

Technical feasibility, behavioural, economic feasibility was tested.

8.4 Software Requirement Specification (SRS)

Following software and fonts are required:

v MS-Access

v VB6

v Akruti010.ttf

v Gujafont.ttf

For the proposed system, following modules will be automated

i.   Book entry with language used.

ii. Diwali anka entry

iii. Members details with book issue entry

iv. Number of reports will be designed in which most important includes, while discharging the from the Ashram Indoor, administer comes to know that patient has not returned the library books. This was not possible in manual system.

v. OPAC – through this members can search the book/ diwali anka online

Searches can be using language + author code, title, author.

vi. Concept of physical index is no more exists in automated system..

8.5 Software Engineering Paradigm Applied Software Process Models

To solve actual problems in a **software project** setting, a software engineer or a team of engineers must incorporate a **development strategy** that includes methods, tools and procedures. This strategy is referred to as a process model or a **software engineering paradigm.** Here **Waterfall** model is applied.
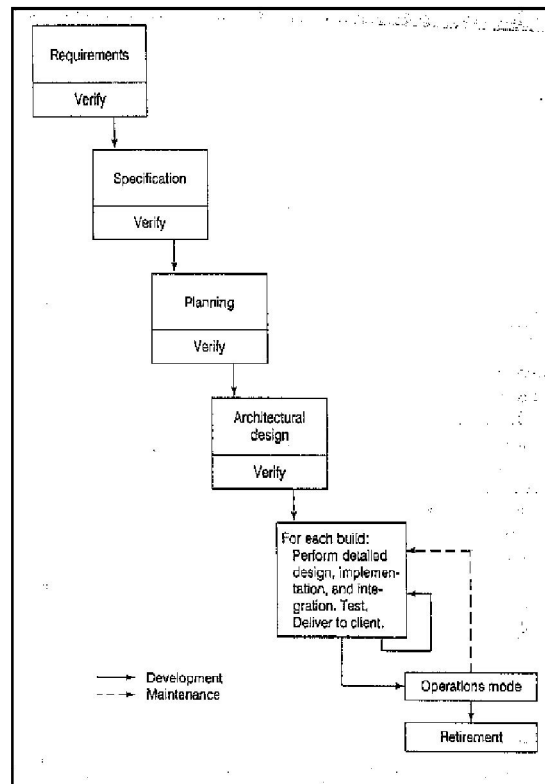

Figure 1: The Waterfall Model

(<http://www.buzzle.com/editorials/1-5-2005-63768.asp> 2009)

8.6 System Analysis and Design

DFD (Data Flow Diagrams – Context level, 1st level and 2nd level) were drawn. ER diagrams (Entity Relationship diagram) was drawn. Program structure was designed. Data Dictionary was built up. Data integrity constraints were decided.

Database designed. Now coming to front end, User Interface was designed.

Retrospective data conversion was carried out for NCA library, as some bibliographic data were already keyed-in document format.

Actual coding was done next. Care was taken of comments and description, standardization of the coding / code efficiency, error handling, parameters calling / passing, validation checks. After that testing was done for sample cases.

As the database was ready and the partial coding was ready, partial implementation was done. Of course, the parallel manual system was running. Side-by-side, testing was done by the library staff with live data. What ever corrections needed, it was done by the programmer and again new version tested and implemented. Thus trial and error system started. i.e., implementation and maintenance overlapped.

9.   Conclusions, Suggestions and Future Scope

"Developing a Model Open-Source Library Automation Multilingual Software with special reference to Nature Cure Ashram Library" is the title of the research project.

1) The system designed is Multilingual library automation software as it caters to various languages in Marathi, Hindi, English & Gujarati titles. Special reference of NCA library is taken, but with little modifications in the source code, it can be generalized for other libraries too. E.g., a library in the Solapur District may have collection from Kannada language, a library in Nanded District Dharmabad Taluka may have collection from Telugu language. So with provision for Kannada, Telugu fonts handling in the source code, the system will serve these libraries too.

Two questions were raised while designing this system.

a) There are ready-made multilingual library automation software available in the market, then why new system?

The fact is that the multilingual modules need to be purchased along with the basic modules of these systems. The basic modules are itself very costly, and purchasing the multilingual module becomes a overhead, which is not possible for a public library particularly in the rural area. These libraries have multilingual collection in bulk, they may be in the need of a multilingual automation package, but just because of the un-affordable cost they may not be able to purchase the ready-made systems which are already in the market.

The LAMP – Library Automation Multilingual Package system which is developed for NCA Library, as stated above can be generalized and the source code will be made available free.

b) A package like Shree Lipi can be linked with the existing library automation systems, to make it multilingual. Then why the new system?

Let's start with a counter example. Shree Lipi is from Modular Systems Pvt. Ltd. & SLIM is given by Algorithms Pvt. Ltd. Though it sounds good to connect these two systems, technically & economically it won't be feasible. Cost of these two systems needs to be added, plus the requirements of these two systems will be different and mainly the codes may or may not be compatible. So development cost & maintenance costs will increase.

So better to design a system from scratch which is done in the present system

2) Reports: The reports required by the NCA Library can be generated through this system. E.g, Borrowers list, Daily I-R-transactions with dues calculation if any, Current Issue status, language wise catalogue registers.

3) Open-source part is not done. When the synopsis was written, it was thought that it could be done, so included in the title. After sanction to the synopsis, while going through the 'open-source software' related literature (OSI-Open Source Initiative etc.) and by looking at the constraints, the idea of open-source software was dropped.

4) What about the fonts?: The NCA Library data (few fields like title, author) were already typed in MS-Word using APS-Prakash font for Devnagari script (Marathi data – M1.doc, Hindi data – H1.doc). Gujrati titles were also typed using Devnagari script (transliteration like juni mudi) in the file G1.doc file. For English titles, Times New Roman font was used and E1.doc file was created. Now the NCA Library's requirement was that, this data should be converted and used in the system as it is. So retrospective conversion was done and the APS-Prakash font was used. The APS-font files were already purchased by the library long before. This saved the key-strokes, what ever problems were with the existing data (like duplicate records etc) came to the notice and the library staff could rectify it and once developed the system was immediately implemented (otherwise one has to wait for data entry work and the use it).

While generalizing the system, instead of APS fonts, free font files like kruti-dev, mangal.ttf or any free Unicode compatible font file can be used, or if a library is already having data in a particular font, the same can be converted to incorporate in the system.

5) Bar coding module can be added. As this was the priority specified by NCA Library its kept for near future development.

6) Multilingual OPAC search facility with on-screen keyboard facility. (in-process)

7) Serial control can be kept in case of periodicals.

8) Accounting module / generation purchase order can be added.

9) Web OPAC with renewal facility through e-mail will be a type of extension for new researcher.

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