LibreHatti

A Synopsis for six month training project

Master of Computer Applications

Batch(2013-2016)

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1 Introduction to Organisation

I had my Six Months Insdustrial Training at **Testing And Consultancy Cell, GNDEC Ludhiana** under the guidance of Dr. H.S.Rai (Dean Testing Consultancy Cell).Testing and Consultancy Cell was established in the year 1979 with a basic aim to produce quality service for technical problems at reasonable and affordable rates as a service to society in general and Engineering fraternity in particular.

Consultancy Services are being rendered by various Departments of the College to the industry, Sate Government Departments and Entrepreneurs and are extended in the form of expert advice in design, testing of materials equipment, technical surveys, technical audit, calibration of instruments, preparation of technical feasibility reports etc. Consultancy projects of over Rs. 1.36 crores are completed by the Consultancy Cell during financial year 2011-12.

2 Introduction to LibreHatti

Automation is the use of machines, control systems and information technologies to optimize pro- ductivity of goods and delivery of services.
Automation is all about using the computer to:

- Make your work less tedious.
- Trim hours of your workload.
- Reduce repetitive keyboard strokes or mouse-clicks.
- Make data entry easier with fewer tabs or mouse movements.

The use of computer systems to execute a variety of office operations, such as word processing, accounting, and e-mail refers to what we call automation.Automation helps in optimizing or au- tomating existing office procedures.

LibreHatti is intended to provide elements which make it possible to simplify, improve, and automate the activities involved in management and running of a company or a group of people. It provides solutions to help clients improve internal processes, save money and deliver results.That is 'ingenuity to work'.

2.1 Users of System

1. Administrator : Administrator can add or update (activate/inactivate) the details, and also can see information of all employees. New categories and products can be added or the existing can also be updated.
2. Employee : As employees are directly related to clients, so they are able to add or update the details of clients using this section. Administrator can see all the clients. Employees can manage their clients only, and particular client can see his or her detail.
3. Client : Clients are the end users that benefit from the this software. A client can get information of all services available, and thus can apply for same. They can also view the status of the number of the previous jobs done by them in the organisation.

2.2 Functional Requirements

Specific Requirements: This phase covers the whole requirements for the system. After understanding the system we need the input data to the system then we examine the output and determine whether the output from the system is according to our requirements or not. This phase also describe the software and non-functional requirements of the system.

2.2.1 Input Requirements

1. Client Details
2. Order Details
3. Extra Charges Details
4. Categories and products Details
5. Organisation Department Details
6. Rate List
7. Staff Details

2.2.2 Output Requirements

1. Interface for administrator to configure the system.
2. Listing of all the services offered.
3. Interface for clients and employees.
4. Automatic generation of Reports, Bills, Receipts, and Vouchers for clients.
5. Calculation of order amount.

2.2.3 Software Requirements

1. rogramming language: Python 2.7+
2. Framework: Django 1.7
3. Web Languages: Html, Java Script, CSS
4. Database: MySQL Database Server 5.1
5. Text editor: vi, vim, gedit
6. Operating System:Ubuntu 14.04 LTS
7. Server: Apache2

2.2.4 Hardware Requirements(Deploymentserver)

- Operating system: Ubuntu 14.04 LTS.
- Processor: Intel Pentinum Processor 4, 2.4GHZ or equivalent.
- RAM: 1GB.
- HDD:80 GB.

2.2.5 Hardware Requirements(End User's PC)

- Operating system: Ubuntu 14.04 LTS.
- Processor: Intel Pentinum Processor , 233 MHZ or equivalent.
- RAM: 1GB.
- HDD:100 MB of free HDD space for internet cache.

2.3 Non-Functional Requirements

1. Usability: Simple user interfaces that a layman can understand.
2. Speed: Speed of the system should be responDsive i.e. Response to a particular action should be available in short period of time. For e.g., Updating the project tasks take few seconds for the changes if the entry is not starred.

3 System Design

System design is the process or art of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. One could see it as the application of systems theory to product development.System design include External design, In Logical design and Physical design.

3.1 Design Notations

Data Flow Diagrams:

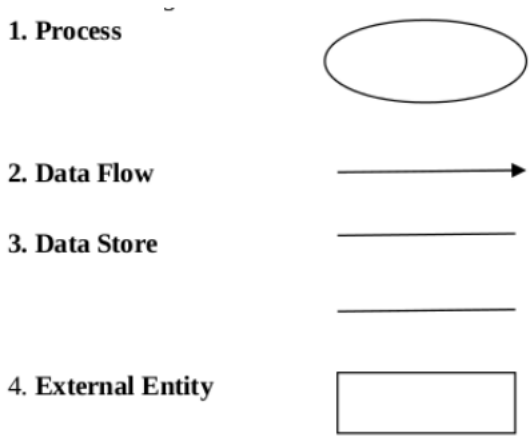

Figure 1: Data Flow Diagram

Flow Chart:

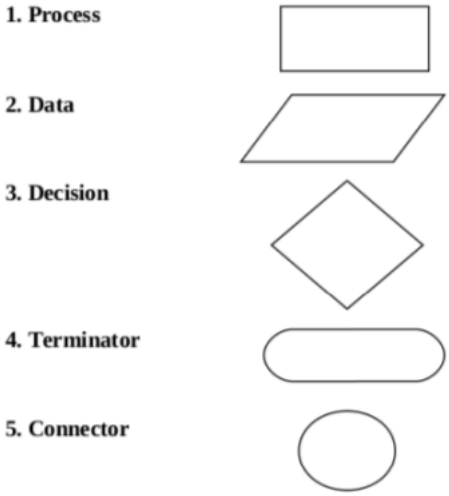

Figure 2: Flow Chart

3.2 Data Flow Diagrams

3.2.1 level 0

3.2.2 level 1

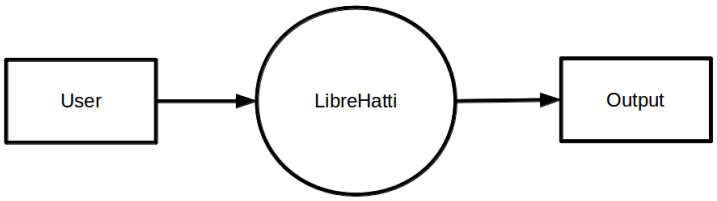

Figure 3: level0

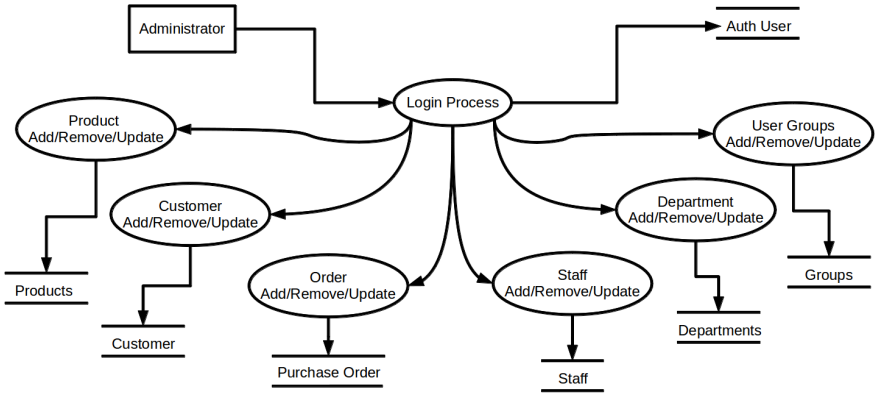

Figure 4: level 1

3.3 Database Design

The Database of LibreHatti contains various tables according to requirements.

4 Methologies used

4.1 EAV

Entity-attribute-value model (EAV) is a data model to describe entities where the number of attributes (properties, parameters) that can be used to describe them is potentially vast, but the number that will actually apply to a given entity is relatively modest. EAV is also known as object-attribute-value model, vertical database model and open schema.

Data is recorded as three columns:

- The entity: the item being described.
- The attribute or parameter: a foreign key into a table of attribute definitions. At the very least, the attribute definitions table would

contain the following columns: an attribute ID, attribute name, description, data type, and columns assisting input validation, e.g., maximum string length and regular expression, set of permissible values, etc.

- The value of the attribute.

In LibreHatti, there may be a number of products with a number of attributes. If we follow the old normalised approach of storing these attributes for all the products, it will lead to a huge database and an inefficient way to access values from the database. Using EAV only the required attributes for products are stored and makes the system efficient though denormalised.

4.2 MVC

Model-view-controller (MVC) is a software architectural pattern for implementing user interfaces. It divides a given software application into three interconnected parts, so as to separate internal representations of information from the ways that information is presented to or accepted from the user.

The components are as follows:

(a) The central component of MVC, the model, captures the behavior of the application in terms of its problem domain, independent of the user interface. The model directly manages the data, logic and rules of the application.

(b) A view can be any output representation of information, such as a chart or a diagram; multiple views of the same information are possible, such as a bar chart for management and a tabular view for accountants.

(c) The third part, the controller, accepts input and converts it to commands for the model or view.

4.3 MPTT

Modified Preorder Tree Traversal is a technique for storing hierarchical data in a database. The aim is to make retrieval operations very efficient.

4.4 Python

Python is a server side language Which can be used with Django.

4.5 Django

Django is a framework which is used for creating web applications. Its framework devide all work in different different modules such as template files are separate, url files are separately placed.

5 Biblography

- Dr. H.S Rai
- Internet
- Great Developers
- Mentor