UNIVERSITY OF CALCUTTA

B.Sc. SEMESTER - VI (HONOURS)
EXAMINATION - 2022
(Under CBCS)

CC-13

SOFTWARE PROJECT Report

SUBJECT CODE: CMSA

d2i solutions

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Date : 18/02/2022

TO WHOM IT MAY CONCERN

Last ten years we are performing various computer related jobs (Software development, Data processing, Geo Tagging etc.) for many Private and Government organizations.

In the process, we were closely associated with the Department of Fisheries. One of the noteworthy job executed by us for them was the Survey of all the Fish Hatcheries of West Bengal, collect necessary data by interviewing every Hatchery Owners, entering those data in a predefined format and generating various reports as per department's requirement.

During the time of Survey we came to know from the Hatchery Owner that the manual system of Hatchery Accreditation was causing tremendous problems to them. They are not receiving the Certificate in time and the renewal process is pretty time consuming. Manual fill-up of forms are very tedious and they have to visit personally every now and then to know the status of their application.

Getting all the feedback from the Hatchery Owners, we discussed the issue with the people in charge of the Department. They also agreed and alleged that the insufficient manpower, huge workload and monotonous manual work are responsible for the delay.

Finally they came to a conclusion that converting that manual system to online system will solve the problem from officials' point of view as well as from hatchery owners' side too. And they decided to start the formalities.

Meanwhile the COVID outbreak happens. And the process was forced to stop. As we have direct interactions with the Hatchery Owners and the Department Officials, we understand that this project is a must and has great potential. Due to present scenario, it might get postponed, but as the situation improves, this project might get the approval and should be prepared and installed for the assistance of department officials and Hatchery Owners.

Hence, keeping all the above mentioned aspects in mind, we decided to appoint this group of students comprising of Rakesh Das, Saleha Manzari, Anupama Halder, Dhrubashis Basak and Swapnaneel Sengupta to start working on the project as their college assignment and anticipate that in near future it would be very beneficial for the users.

Arunangshu Basak

(Arunangshu Basak)
Partner, ***d2i solutions***

Hatchery Accreditation System

The project titled "Hatchery Accreditation System", submitted by

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Under the guidance of Prof. Amitava Biswas, Lecturer, Vivekananda College, Thakurpukur. This project thesis is submitted in partial fulfilment of the requirement for the B.Sc. (Hons.) in Computer Science under University of Calcutta.

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CERTIFICATE FROM THE SUPERVISOR

This is to certify that the group project entitled "HATCHERY ACCREDITION SYSTEM" is a record of work carried out by GROUP-B of B.Sc. Computer Science Honours(6th Semester) under my guidance and supervision in the academic session 2020-2021 as per the guidelines issues by University of Calcutta for the award of Degree of Bachelor of Science (Honours) in Computer Science in the faculty of Department of Computer Science of Vivekananda College, University of Calcutta, Kolkata, India.

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ACKNOWLEDGEMENT

We would like to express our special thanks of gratitude to our respected teacher Prof. Amitava Biswas, for his able guidance and support in completing our project on the topic "HATCHERY ACCREDITION SYSTEM", which also helped us in doing a lot of research and we come to know about so many new things.
We would also like to extend our gratitude to our respected H.O.D. Mam Prof. Jhuma Mazumdar who gave us the golden opportunity to do this wonderful project and also to our other departmental teachers Prof. Mohuya Pal and Prof. Bodhisattwa Das.
Without their support and suggestions, this project would not have been completed. The study has indeed helped us to explore more knowledgeable avenues related to our topic and we are sure it will help us in our future.
THANKS AGAIN TO ALL WHO HELPED US.

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Contents

ABSTRACT

Fish Hatcheries are a setup used to cultivate and breed a large number of fish in an enclosed environment by Fish Farmers (Hatchery Owner) to sell fish seed for fish culture, grown-up fish for food, or aquarium fish for ornamental purposes.

Accreditation is the process of Registration of the Hatchery by The Government of India, Department of Fisheries. It should be renewed yearly against a Registration Fees.

It is very much essential that fish farmers in the State receive or produce quality fish seeds from hatcheries. In order to ensure that the hatcheries produce quality fish seeds as well as healthy grown-up fish, the process of accreditation of hatcheries is required.

Fishery Officials are liable to issue the Accreditation certificate within a stipulated time limit. Manual processing of application and generation of Accreditation certificates is very time consuming, monotonous and even erroneous. Therefore, developing on-line software for processing and generation of Hatchery Accreditation certificates will be very much useful, errorless and involve less manpower.

INTRODUCTION TO THE PROJECT

Objective of the Project

Domestication and advancements is induced breeding technology have enabled captive propagation of several fish species in India. However, a sustainable aquaculture production system for these species requires good quality fish seed to ensure economic viability of the operations.

In tune with the recent thrust on diversification of the aquaculture practices, carp, prawn, catfishes and ornamental fish farming are gaining importance. More and more species are likely to be brought in the aquaculture practices.

Presently, hatchery produced seed is meeting most of the requirements of the aquaculture sector. To ensure quality of seed and sustainability in its production process, it is essential that the hatcheries use brood-stock, breeding and husbandry practices as per scientific norms. Similarly, it needs to be ensured that the seed farms use spawn obtained from reliable hatcheries that follow the norms of quality and sustainability. There is an immediate need for regulations for seed certification and accreditation of seed production centers on the lines of provisions existing in the farming sector.

Quality seeds are not only important from the point of view of fish production but also from the viewpoint of international trade. Labeling and certification are important parameters in international trade today. International organizations like FAO also emphasize the need for development of a seed certification and accreditation system.

Considering all the above mentioned aspects in mind, we have decided to build an Online Hatchery Accreditation System, which will be helpful for Hatchery Owners, Fishery Officials and above all, the common fish consumers.

Benefits of Accreditation

- Tie up with the seed growers, fish growers and fish market is enabled to flourish their business.

- Quality will be assured through monitoring with suggestion by experts.
- Up-grading the technological skills through training.
- Priority will be given to the accredited hatcheries under different schemes of State and Central Govt.

Benefits of the System

- Convenience: In this COVID situation the Hatchery Owner can initiate the Registration Process from the comfort of his home, without stepping outside.
- Faster and Accurate Verification: Online Verifications are much faster and accurate than offline documents checking.
- E-Certificate: Printing the Certificate manually and the tedious process of handing over the Certificate to the Hatchery Owners are totally eliminated.
- Online Status Update: Status Checking will be very helpful to the Hatchery Owner as they do not need to visit their respective branch offices to get updates about their accreditation.
- Instant Messaging: This will help the Hatchery Owners for some prompt suggestion, assistance or complain to and from the Government officials.

Benefits of Proposed On-line System over the Existing Manual System

- **Convenience and speed**

The most obvious benefits associated with a comprehensive online system are convenience and speed, compared to the paper registration method. An online registration system eliminates the need of filling paper forms manually and sending them to a registration office.When using online registration systems, the fishermen can simply register at their convenience and submit their information immediately.

- **Immediate confirmation**

The conventional paper form method takes a substantial amount of time and the Hatchery Owners will have to wait to get the Certificate.

When it comes to online registration systems, the Fishermen will be able to receive the confirmation SMS immediately after fulfilling the requirements (including the payment).

- **Online registration systems are secure**

Online registration systems are highly secured. Form submission is done through a well-secured platform. The database the Officials gather will also be stored on a highly secured server leaving no room for third-parties. The form submission and the payment details will be done through an encrypted method. In contrary to this, the information available on paper forms is vulnerable to many parties.

- **Real-time update about the statistics**

When it comes to the conventional paper form method, the organizers hardly can have a clear estimate about the number of participants, until the last moment. After all, keeping a manual update about the number of forms they receive daily can be a difficult task. When it comes to an online registration system, the database automatically updates allowing the organizers to have a real-time update about the numbers. This is a great advantage for the organizers to plan the steps ahead.

- **Online registrations are Eco-friendly**

The entire world is heading towards a paperless society. Such approach is essential if we are concerned about environment. Since no papers are used for online registration systems, we can consider it as an Eco-friendly approach.

Components of the system and its brief description:

Well-structured designs improve the maintainability of a system. A structured system is one that is developed from the top down and functional, that is, broken down into manageable components. In this project we modularized the system to the following components:

1) Registration or Sign-up - Three types of users can Sign-up (for the first time) to this Web Based Application through this module,

namely - Guest, Hatchery Owners and Fishery Officials. Two factor authentications are inbuilt into the system in the form of dynamic OTP as well as conventional static password for a strong security of the System. For first time registration the user must enter his mobile no. for OTP generation and authentication.

2) Login or Sign-in - The user have to type only user name and password to login. In case the user forgets the password, the option for resetting password is also there after proper validation.

3) Hatchery Owner's Application for Accreditation - Hatchery Owner can submit his Application data through this module. He can view, modify or delete the data before a certain period of time, i.e. before the starting of the verification process by the Fishery Officials.

4) Real-time Status Checking by Hatchery Owner - After Submitting the Application, the Hatchery Owner can check the Status of his Application through this module. The owner can view who, on what date and at what time verified his Application form. If the application form is rejected, the owner can also check the reason for disapproval with necessary details.

5) The Payment by Hatchery Owner - The Hatchery Owner will be able to pay the yearly Accreditation fees thru Payment Gateway

6) The Accreditation Certificate - In this module the Hatchery Owner can View, Print or Download (save as PDF) the Final Accreditation Certificate after all the verification procedures are through. The certificate will have a QR code for validation.

7) Authentication of Officials - Each top level officials will authenticate his subordinate officials for the proper functioning of the system. Until one officer is not authenticated by his superiors, he won't be able to use the system. Moreover, other District's officials can't authenticate different District's subordinates. But, the topmost person in the hierarchy, i.e. the State Head can authenticate any other Districts' officials if required.

8) Verification of Hatchery Owner's Application Form by the Officials - Different levels of Officers will verify the Hatchery Owner's Application according to their level of authority. But in case of exigency, the top level State head can override and approve the form, though the lower level officer didn't approve it.

9) The Bulk Emergency SMS module - The system will generate and send emergency messages to all the Hatchery Owners if required, like in case of natural calamities like tsunami, cyclone etc.

10) Renewal Module for Hatchery Owners - After receiving the notifications from the Fishery Officials, the Hatchery Owner's have to renew their application form with fresh sets of data for the current year.

11) Renewal Module for Officials - The Fishery Officials can check the Pending Renewal list as well as up-coming renewal list for the Hatchery Owners. Then they can send notifications to the Hatchery Owners in case they are reluctant to renew their Accreditation.

12) Inbuilt Online Messaging System - The Hatchery Owners can communicate with all level of Officials and vice versa. This System can also have the facility to send and receive various types of files, like images, audios, videos, PDFs etc.

13) MIS Reports - The System can generate various MIS Reports and the Officials can view, print or download them as per their requirements.

14) The Notice Board - The Officials will be able to submit important notices for Hatchery Owners or Guests which will be displayed through the Notice Board Module.

15) Admin Module - In this module administrator will be able to add or modify various category of fishes available and names of districts and their respective details. Also they will be able to publish notices on the notice board.

16) The Guest Module - Anyone can view the guidelines of this web application function through this Module. Moreover the Guest can view the Notice Board as well.

17) The Backup and Restore Module - All the necessary data can be backed up in another server or a storage medium regularly. It can be restored in case of server crash or any kind of data hacking.

BACKGROUND / REVIEW OF RELATED WORK

Proposed System & it's benefits:

The successful development of a computerized system depends upon an early understanding of its goals, functions, success criteria, and constraints. This information must be acquired before any major planning effort is initiated. Software may be developed to add features to an already existing system, to replace some or all components of existing system, or, finally, for an entirely new application.

The knowledge about the existing system is necessary in order to determine the feasibility of initiating the development, and to determine some of the goals which the addition or replacement system must satisfy. The development proposal should contain sufficient information for an economic analysis of the project. The development proposal consists of two major items: the proposal and a review of the proposal.

The proposal contains several estimates and predictions and a tentative functional design for the new system, whereas the review provides a reasoned argument about the adequacy of the proposal. In our existing system, it is quite easy to manage and data can be retrieved quickly and efficiently. As everything is automated to generate the desired results so the probability of generating error is very less. Here, immediately after entering the values, everything is done in a computerized way to display result. When the existing system is changed to proposed system many benefits will be getting. The benefits of the existing proposal are as follows:

• As it is an Integrated System (i.e. the process by which multiple individual subsystems or sub-components are combined into one all-encompassing larger system thereby allowing the subsystems to function together), which includes modules like Registration or sign up, Login or sign in, Hatchery Owner's Application for Accreditation for submitting application where they can view or modify necessarily and also many other features including real time status checking, it helps

in effective time management as online verifications are much faster and accurate than offline document checking.

• In this system, facilities are there to generate and send emergency messages to all hatchery owners if required to inform about natural calamities like cyclones, tsunami, etc.

• It helps users as it facilitates everything in this COVID-19 pandemic situation through online mode instead of stepping out of their homes.

• Users can fill up the login/registration form from their places and go through the process by entering necessary credentials. Should they forget their password, they can reset it using a link after proper validation.

• This system also provides security to all the personal information of the user which will be stored in the system's database. All data can be backed up in a storage medium or another server regularly in order to restore them in case of server crashes or hacks.

• If any problem arises, don't worry. Users can communicate with concerned officials of all levels using the inbuilt online messaging system which also supports sending files like pdfs, audios, videos, etc.

Functional and Operational Requirements:

The first step in the system development life cycle is the preliminary investigation to determine the feasibility of the system. Feasibility is defined as the practical extent to which a project can be performed successfully. To evaluate feasibility, a feasibility study is performed, which determines whether the solution considered to accomplish the requirements is practical and workable in the software. Information such as resource availability, cost estimation for software development, benefits of the software to the organization after it is developed and cost to be incurred on its maintenance are considered during the feasibility study. The objective of the feasibility study is to establish the reason for developing the software that is acceptable to users, adaptable to change and conformable to established standards. Various other objectives of feasibility study are listed below.

• To analyze whether the software will meet organization requirements.

• To determine whether the software can be implemented using the current technology and within the specified budget and schedule.

• To determine whether the software can be integrated with other existing software.

Types of Feasibility:

Various types of feasibility that are commonly include technical feasibility, operational feasibility, economic feasibility, legal feasibility and schedule feasibility.

➢ **Technical Feasibility:** Technical feasibility assesses the current resources (such as hardware and software) and technology, which are required to accomplish user requirements in the software development team within the allocated time and budget. For this, the software development team ascertains whether the current resources and technology can be upgraded or added in the software to accomplish specified user requirements. Technical feasibility also performs the following tasks.

- Analyses the technical skills and capabilities of the software development team members.
- Determines whether the relevant technology is stable and established.
- Ascertain that the technology chosen for software development has a large number of users so that they can be consulted when problem arise or improvement are required.

➢ **Operational Feasibility:** Operational feasibility assesses the extent to which the required software performs a series of steps to solve business problems user requirement. This feasibility is dependent on human resources (software development team) and involves visualizing whether the software will operate after it is developed and

be operative once it is installed. Operational feasibility also performs the following tasks.

- Determines whether the problems anticipated in user requirement are of high priority.
- Determines whether the solution suggested by the software development team is acceptable.
- Analyses whether user will adapt to new software.
- Determines whether the organization is satisfied by the alternative solution proposed by the software development team.

➢ **Economic Feasibility:** Economic feasibility determines whether the required software is capable of generating financial gains for an organization. It involves the cost incurred on the software development team, estimated cost of hardware and software, cost of hardware and software, cost of performing feasibility study, and so no. For this, it is essential to consider expenses made on purchases (such as hardware purchase) and activities required to carry out software development. In addition, it is necessary to consider the benefits that can be achieved by developing the software. Software is said to be economically feasible if it focuses on the issues listed below.

- Cost incurred in software development to produce long-term gains for an organization.
- Cost required to conduct full software investigation (such as requirement elicitation and requirement analysis)
- Cost of hardware, software, development term, and training.

➢ **Legal Feasibility:** In legal feasibility study project analyzed in legality point of view. This includes analyzing barriers of legal implementation of project, data protection acts or social media laws, project certificate, license, copyright etc. Overall it can be said that Legal Feasibility Study is study to know if proposed project conform legal and ethical requirements.

➢ **Schedule Feasibility :** In Schedule Feasibility study mainly timelines/deadlines is analyzed for proposed project which includes how many times teams will take to complete final project which has a great impact on the organization as purpose of the project may fail if it can't be completed on time.

Hardware Environment:

Hardware is typically directed by the software to execute any command or instruction. A combination of hardware and software forms a usable computing system, although other systems exist with only hardware. Computer hardware includes the physical parts of a computer, such as the case, Central Processing Unit (CPU), monitor, mouse, keyboard, computer data storage, graphics card, sound card, speakers and motherboard. Like any good communication channel, a user interface is a two-way street. User don't want to just see or hear whatever the computer puts in front of him, he also wants to tell what he'd like to do? However he expresses it, everything he tells the computer is input; what it conveys to him is output. The ways he can receive output and give input depend on interacting with computers: a discussion of input and output devices used to communicate with users, and controls used to set preferences and make choices.

Communication Interface:

The software is in development for a client/server-based setup with a Local Area Network (using the Ethernet interface, one to one connection & TCP/IP protocols) or on a stand-alone machine whereby client and server components reside on the same machine.

Software Environment:

Technology Used

Introduction to HTML (Hyper Text Markup Language):

HTML means Hypertext Markup Language. It's a special kind of text oriented programming language by which we can create web pages very easily. Here we needn't to interpret or compile the written program individually. It's a combination of some Tags & Attributes.

HTML was invented by Tim Berners-Lee while at CERN, the European Laboratory for Particle Physics in Geneva. HTML tags are the keywords that are used to construct the simple html document, web page or website. The main function of HTML Tag is to define the set of rules for browsers to display the content of web page in a certain way. The content could be anything Text, Image and even video. It tells your browser what to display on the Web Page and how to display it. One of the biggest advantages of HTML is that it is free of cost, and there is no need to purchase specific software.HTML supports almost all browsers around the globe. HTML is very easy to edit as there is no need to have a special interface or platform to edit it. It is written in simple Notepad and hence can be simply edited in any text editor like Notepad, Notepad++, etc. Provide common Logic between all the pages; instead of writing the same style logic in each HTML page, we use a CSS file for writing common logic. And include this CSS page in each html page with tag. Web controls produce segments of HTML and JavaScript which form part of the resulting page sent to the end-user's browser.

Introduction to CSS:

CSS stands for Cascading Style Sheets. The word cascading means that a style applied to a parent element will also apply to all children elements within the parent. CSS describes how HTML elements are to be displayed on screen, paper, or in other media CSS saves a lot of work. It can control the layout of multiple web pages all at once External style sheets are stored in CSS files. CSS is used to define styles for your web pages, including the design, layout and variations in display for different devices and screen sizes. There are different versions of CSS including the kind that is found in the actual HTML code itself, but that defeats the purpose of using CSS in the first place. For better performance and easier maintenance, a separate CSS file is preferred over embedded CSS. If font, text size, or changes in the appearance of any element are to be made later, simply accessing a separate CSS file is much easier than having to go through extensive lines of code in an HTML file. CSS helps us to control the text colour, font style, the spacing between paragraphs, sizing of columns, layout

designs, and many more. It is independent of HTML, and we can use it with any XML-based markup language. It is recommended to use CSS because the HTML attributes are being deprecated. So, for making HTML pages compatible with future browsers, it is good to start using CSS in HTML pages. The external style sheet can be written in any text editor. The file must not contain any HTML code, and must be saved with a .css extension. If you are using CSS, you do not need to write HTML tag attributes every time. Just write one CSS rule of a tag and apply it to all the occurrences of that tag. So less code means faster download times. CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes. Style sheets allow content to be optimized for more than one type of device. By using the same HTML document, different versions of a website can be presented for handheld devices such as PDAs and cell phones or for printing. Now HTML attributes are being deprecated and it is being recommended to use CSS. So it's a good idea to start using CSS in all the HTML pages to make them compatible to future browsers.

Introduction to PHP:

PHP is an acronym for Hypertext Preprocessor. PHP is a widely-used, open source scripting language, PHP scripts are executed on the server. PHP started out as a small open source project that evolved as more and more people found out how useful it was. Rasmus Lerdorf unleashed the first version of PHP way back in 1994. It can create, open, read, write, delete, and close files on the server and also can add, delete, modify data in database. PHP runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.) It is compatible with almost all servers used today (Apache, IIS, etc.) Five important characteristics make PHP's practical nature possible – Simplicity, Efficiency, Security, Flexibility, Familiarity. PHP is a server side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session tracking, even build entire e-commerce sites. It is integrated with a number of popular databases, including MySQL, PostgreSQL, Oracle, Sybase, Informix, and Microsoft SQL Server. PHP is pleasingly zippy in its execution, especially when compiled as an Apache module

on the Unix side. The MySQL server, once started, executes even very complex queries with huge result sets in record-setting time. Additionally, PHP can be used for many programming tasks outside of the web context, such as standalone graphical applications and robotic drone control. PHP code can also be directly executed from the command line. PHP is known as the fastest Programming language as compared to another. PHP applications can be easily loaded over the slow Internet and data speed. Other applications take a lot of time to connect the database and fetch the data after executing certain queries to the database. PHP does not face this problem and it loads the website very easily and fast. The fast speed of PHP provides the developer with an edge to develop the web applications in PHP programming language.

Introduction to JAVA SCRIPT:

JavaScript is a scripting language used to enable programmatic access to objects within other applications. It is primarily used in the form of client-side JavaScript for the development of dynamic websites. JavaScript is a dialect of the ECMAScript standard and is characterized as a dynamic, weakly typed, prototype-based language with first-class functions. JavaScript was influenced by many languages and was designed to look like Java, but be easier for non-programmers to work with. JavaScript, despite the name, is essentially unrelated to the Java programming language even though the two do have superficial similarities. Both languages use syntaxes influenced by that of C syntax, and JavaScript copies many Java names and naming conventions. The language's name is the result of a co-marketing deal between Netscape and Sun, in exchange for Netscape bundling Sun's Java runtime with their then-dominant browser. The key design principles within JavaScript are inherited from the Self and Scheme programming languages. "JavaScript" is a trademark of Sun Microsystems. It was used under license for technology invented and implemented by Netscape Communications and current entities such as the Mozilla Foundation.

Introduction to BOOTSTRAP:

Bootstrap is a free and open-source tool collection for creating responsive websites and web applications. It is the most popular HTML, CSS, and JavaScript framework for developing responsive, websites. It solves many problems which we had once, one of which is the cross-browser compatibility issue. Bootstrap includes the CSS (Cascading Style Sheets), and an optional JavaScript supported design template (plug-ins) that deals with typography, implementation of buttons, forms, and various other components user interface. This framework helps in faster web development and supports developers in creating responsive web pages faster. It produces less cross-browser bugs. It is a consistent framework supported by all the browsers plus CSS based compatibility fixes. It is a lightweight and hence widely used framework for creating responsive sites. Looks, structure, and styles can be customized as per requirement. This is a simple and effective grid system.

Introduction to JQUERY:

jQuery is an open source JavaScript library that simplifies the interactions between an HTML/CSS document, or more precisely the Document Object Model (DOM), and JavaScript. Elaborating the terms, jQuery simplifies HTML document traversing and manipulation, browser event handling, DOM animations, Ajax interactions, and cross-browser JavaScript development. With HTML and CSS, you can build visually appealing static web pages. With a bit of JavaScript, you can add dynamic behaviour to these static websites. jQuery is a JavaScript library that provides you with a lot of dynamic behaviour "out-of-the-box", allowing you to add some creative effects to otherwise dull layouts. The purpose of jQuery is to make it much easier to use JavaScript on our website. The purpose of jQuery is to make it much easier to use JavaScript on your website. jQuery takes a lot of common tasks that require many lines of JavaScript code to accomplish, and wraps them into methods that you can call with a single line of code.

Category:

Internet

Hardware & Software Requirements:

Software used:

Platform : Windows 10 Pro

Web Server : Apache HTTP Server

Presentation : HTML4.0, HTML 5.0

Client Side Validation : JavaScript

Server Side Validation : PHP

Database Connectivity : PHP

RDBMS : MySQL

Hardware used:

Processor : AMD A6-9500 RADEON R5, 8 COMPUTE CORES 2C +6G3.50GHz

RAM : 4.00 GB (3.88 GB usable)

HardDiskDrive : 1 TB

CD Drive : hp DVDRW DU8A6SH

Keyboard : LOGITECH K120 WIRED KEYBOARD

Mouse : QUANTAM QHM222 WIRED OPTICAL MOUSE

Monitor : DELL 21.5 inch SE2219HX

METHODOLOGY

Hardware & Software Specification

SOFTWARE REQUIREMENT SPECIFICATION

Introduction to SDLC:

A software development life cycle (SDLC) model (also called software life cycle model and software development process model) describes the different activities that need to be carried out for the software to evolve in its life cycle. A life cycle model is a descriptive and diagrammatic representation of the software life cycle including all the activities orderly required to make a software product through its lifecycle phases from its inception to retirement. An SDLC graphically depicts the different phases through which software evolves. It is usually accompanied by a textual description of the different activities that need to be carried out during each phase.

• The primary advantage of a life cycle model is that it encourages development of software in a systematic and disciplined manner. A software product is developed by a team requires to have a precise understanding among the team members as to--- 'when to do what'.

• A documented life cycle model also helps in identifying inconsistencies, redundancies and omissions in the development process.

• A documented SDLC enhances the understanding of the process among the developers and mandates the development organization to accurately define every activity in the life cycle.

• It also a mandatory requirement of the modern quality assurance technique.

SDLC Models:

Following are the most important and popular SDLC models followed in the industry:

1. Waterfall Model

2. Prototyping Model

3. Incremental Development Model

4. Evolutionary Model

5. Spiral Model

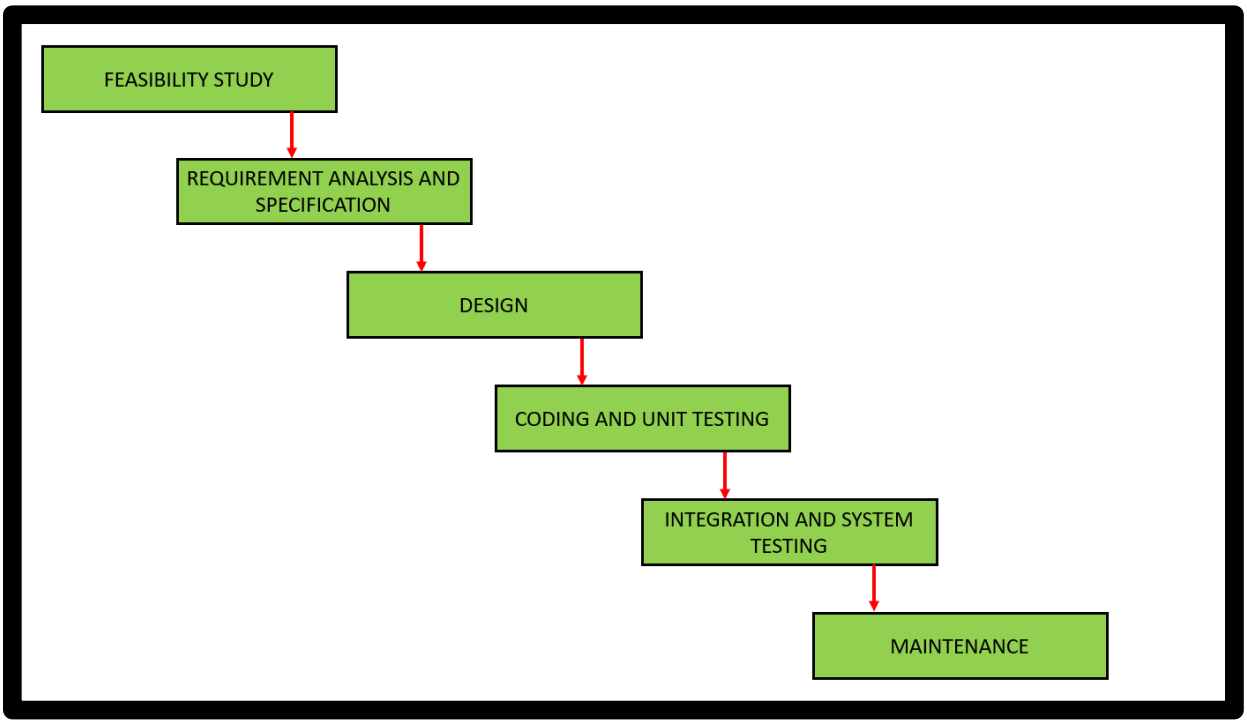
6. V-Model

7. Agile Development Model

8. Rapid Application Development (RAD)

Classical Waterfall Model:

We have used this model for our project



The classical waterfall model is the basic software development life cycle model. It is very simple but idealistic. It is very important because all the other software development life cycle models are based on the classical waterfall model.

The classical waterfall model divides the life cycle into a set of phases. This model considers that one phase can be started after the

completion of the previous phase. That is the output of one phase will be the input to the next phase. Thus the development process can be considered as a sequential flow in the waterfall. Here the phases do not overlap with each other.

Let us now learn about each of these phases in brief detail:

1. **Feasibility Study**: The main goal of this phase is to determine whether it would be financially and technically feasible to develop the software.

The feasibility study involves understanding the problem and then determining the various possible strategies to solve the problem. These different identified solutions are analyzed based on their benefits and drawbacks, The best solution is chosen and all the other phases are carried out as per this solution strategy.

2. **Requirements analysis and specification**: The aim of the requirement analysis and specification phase is to understand the exact requirements of the customer and document them properly. This phase consists of two different activities.

3. **Requirement gathering and analysis**: Firstly all the requirements regarding the software are gathered from the customer and then the gathered requirements are analyzed. The goal of the analysis part is to remove incompleteness (an incomplete requirement is one in which some parts of the actual requirements have been omitted) and inconsistencies (an inconsistent requirement is one in which some part of the requirement contradicts some other part).

4. **Requirement specification**: These analyzed requirements are documented in a software requirement specification (SRS) document. SRS document serves as a contract between the development team and customers. Any future dispute between the customers and the developers can be settled by examining the SRS document.

5. **Design**: The goal of this phase is to convert the requirements acquired in the SRS into a format that can be coded in a programming

language. It includes high-level and detailed design as well as the overall software architecture. A Software Design Document is used to document all of this effort (SDD)

6. **Coding and Unit testing**: In the coding phase software design is translated into source code using any suitable programming language. Thus each designed module is coded. The aim of the unit testing phase is to check whether each module is working properly or not.

7. **Integration and System testing**: Integration of different modules are undertaken soon after they have been coded and unit tested. Integration of various modules is carried out incrementally over a number of steps. During each integration step, previously planned modules are added to the partially integrated system and the resultant system is tested. Finally, after all the modules have been successfully integrated and tested, the full working system is obtained and system testing is carried out on this.

System testing consists of three different kinds of testing activities as described below :

- **Alpha testing**: Alpha testing is the system testingperformed by the development team.
- **Beta testing**: Beta testing is the system testing performed by a friendly set of customers.
- **Acceptance testing**: After the software has been delivered, the customer performed acceptance testing to determine whether to accept the delivered software or reject it.

6. **Maintenance**: Maintenance is the most important phase of a software life cycle. The effort spent on maintenance is 60% of the total effort spent to develop a full software. There are basically three types of maintenance :

- **Corrective Maintenance**: This type of maintenance is carried out to correct errors that were not discovered during the product development phase.

- **Perfective Maintenance**: This type of maintenance is carried out to enhance the functionalities of the system based on the customer's request.
- **Adaptive Maintenance**: Adaptive maintenance is usually required for porting the software to work in a new environment such as working on a new computer platform or with a new operating system.

Advantages of Classical Waterfall Model:

- This model is very simple and is easy to understand.
- Phases in this model are processed one at a time.
- Each stage in the model is clearly defined.
- This model has very clear and well-understood milestones.
- Process, actions and results are very well documented.
- Reinforces good habits: define-before- design, design-before-code.
- This model works well for smaller projects and projects where requirements are well understood.

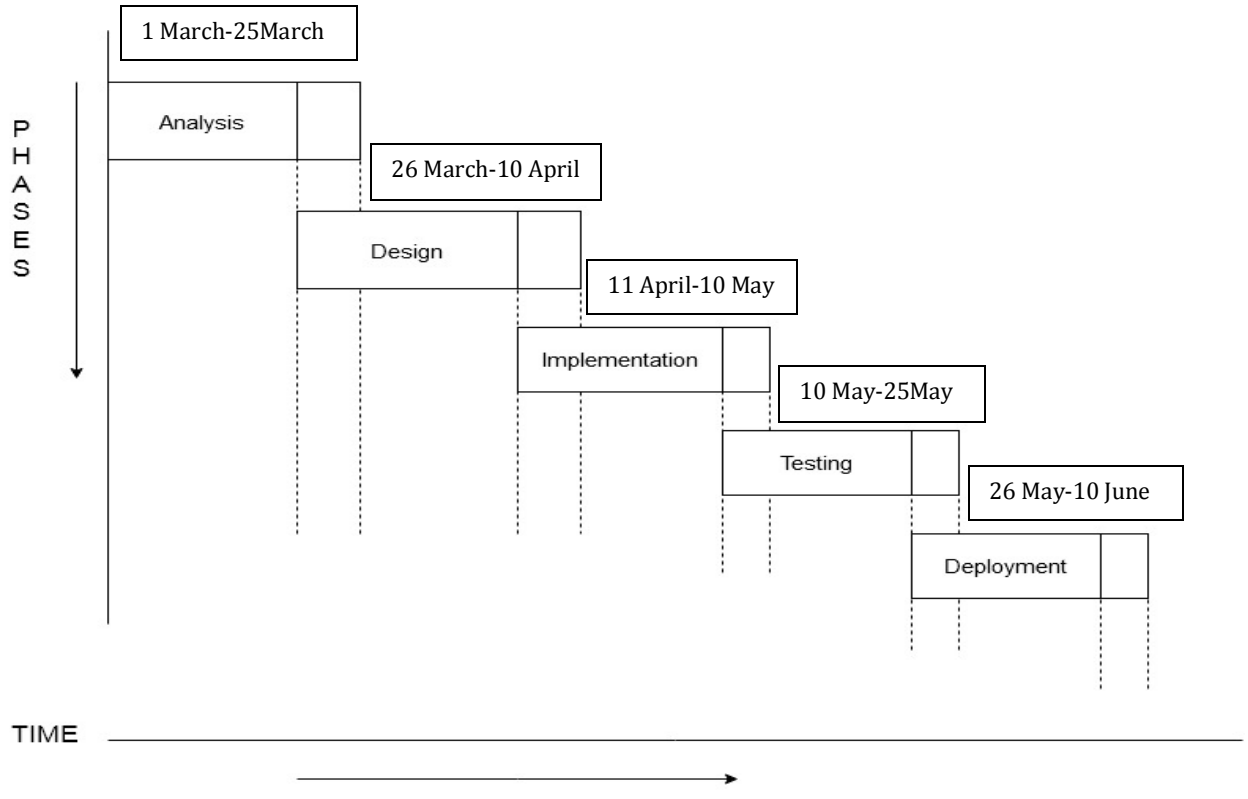
Drawbacks of Classical Waterfall Model:

- **No feedback path**: In the classical waterfall model evolution of software from one phase to another phase is like a waterfall. It assumes that no error is ever committed by developers during any phase. Therefore, it does not incorporate any mechanism for error correction.
- **Difficult to accommodate change requests**: This model assumes that all the customer requirements can be completely and correctly defined at the beginning of the project, but actually customers' requirements keep on changing with time. It is difficult to accommodate any change requests after the requirements specification phase is complete.
- **No overlapping of phases**: This model recommends that a new phase can start only after the completion of the previous phase. But in real projects, this can't be maintained. To increase efficiency and reduce cost, phases may overlap.

Development schedule:

Development schedule is one of the important parts of the planning, there is a different way of making development here we used Gantt chart for development schedule. The development schedule must be independent as possible. Ideally, the components should be stand-alone so that it does not need any other component to operate. This is only possible for every simple component and a more complex component is inevitably having some dependencies on another component. The schedule gives the time estimation of the project. In the project or development of software, there are different phases like study, design, implementation, and test. Our project also has different phases and each phase takes a different time for development. Our project starts on the 5th of May 2021 and ends on the. The total time taken by our project is. The project consists of different phases like Analysis, design, implementation, and testing.

Total project time:



Functionality:

This project has 3 major functional units—

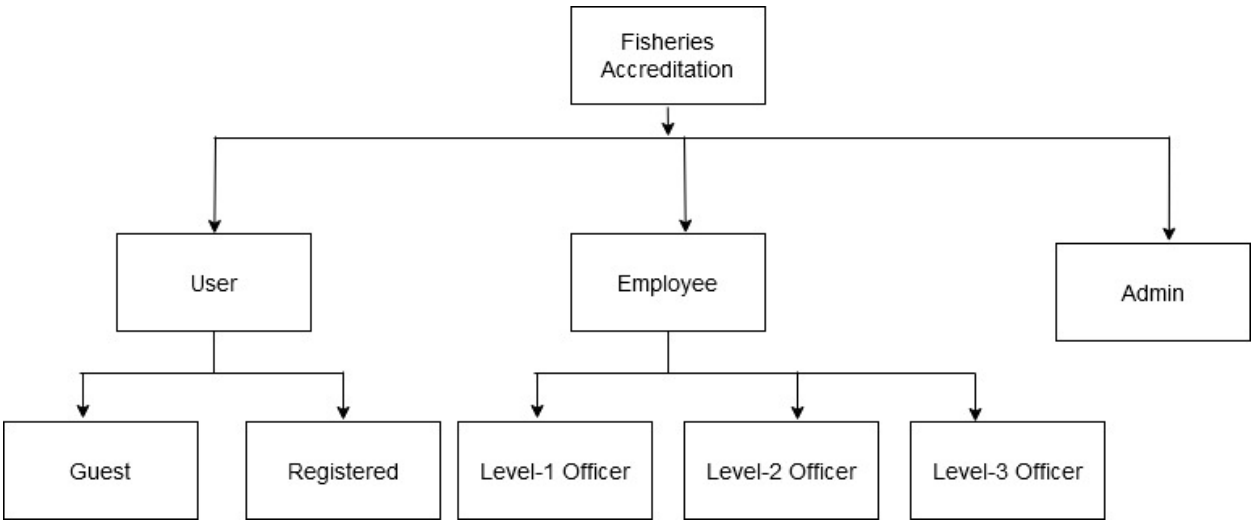
1) User interface/front end --- Using HTML 5.0, CSS, Bootstrap and JavaScript

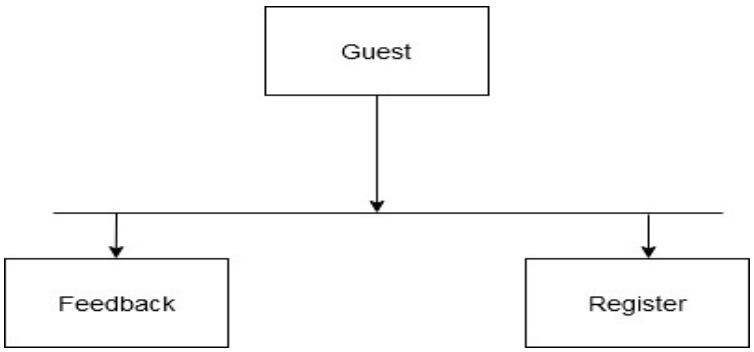
2) Backend database --- MySQL

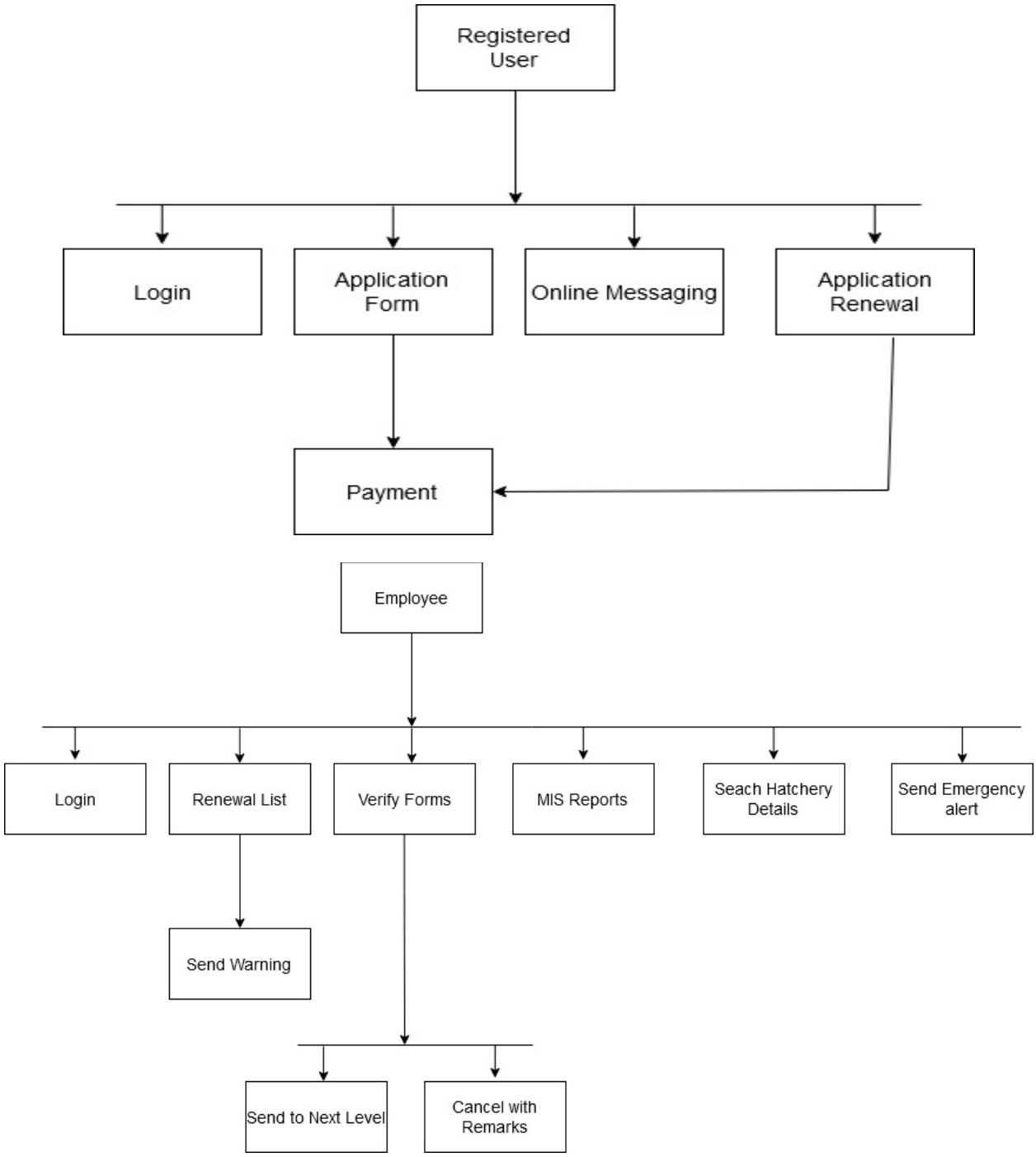
3) Server --- Apache

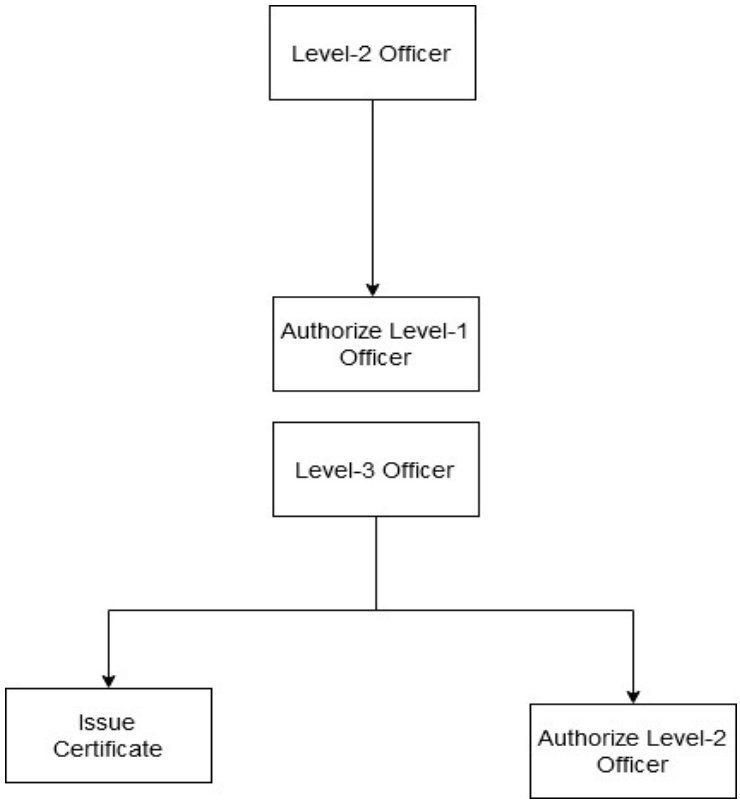
Functional Flowchart:

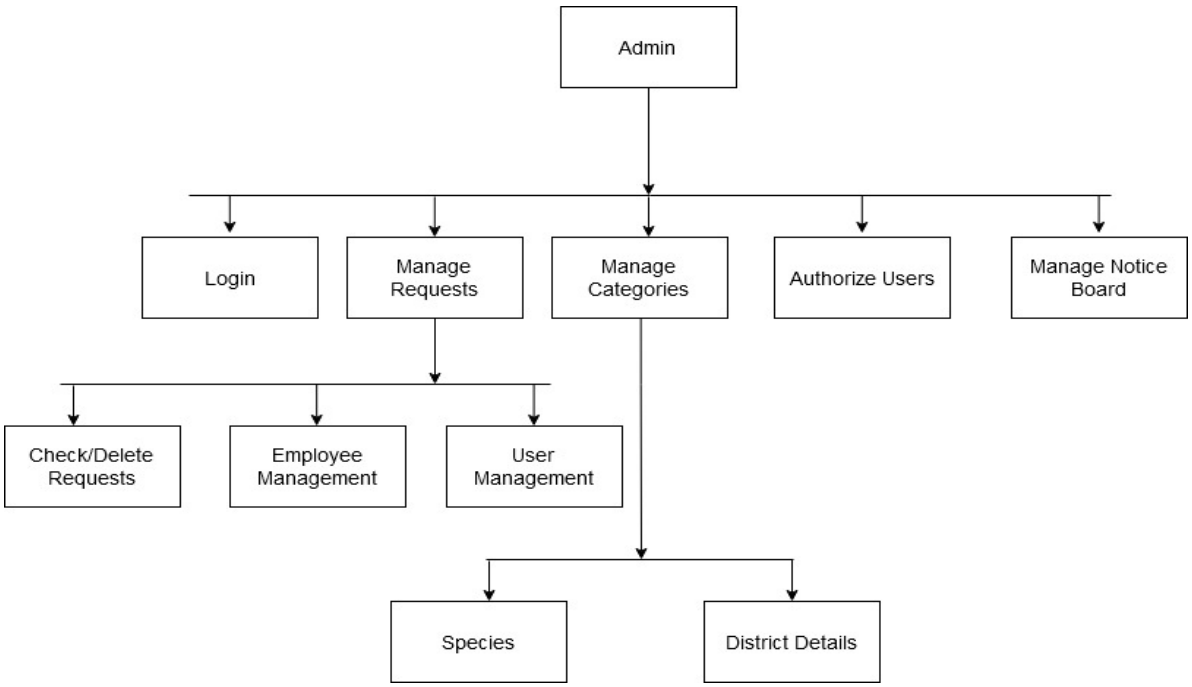
A system consists of many different activities or processes. We know the relation between the processes that process will contain several individual processes. We often show these relations in terms of process charts.






Registered User
Login
Application Form
Online Messaging
Application Renewal
Payment
Employee
Login
Renewal List
Verify Forms
MIS Reports
Seach Hatchery Details
Send Emergency alert
Send Warning
Send to Next Level
Cancel with Remarks


Level-2 Officer
Authorize Level-1 Officer
Level-3 Officer
Issue Certificate
Authorize Level-2 Officer


Admin
Login
Manage Requests
Manage Categories
Authorize Users
Manage Notice Board
Check/Delete Requests
Employee Management
User Management
Species
District Details

System Design

The most challenging phase of the system life cycle is system design. The term design describes a final system and the process by which it is developed. It refers to the technical specifications that will be applied in implementing the candidate system. It also includes the construction of programs and program testing. System design is a solution, a "how to" approach the creation of a new system. This important phase is composed of several steps. It provides understanding and procedural details necessary for implementing the system recommended in the feasibility study. Emphasis is on translating the performance requirements into design specifications. The first step is to determine how the output is to be produced and in what format. Samples of the output and input are also presented. Second, input data and master files (database) have to be designed to meet the requirements of the proposed output. The operational (processing) phases are handled through program construction and testing, including a list of programs needed to meet the systems objectives and to complete documentation. Finally, details related to justification of the system and an estimate of the impact of the candidate system on the user and the organization are documented and evaluated by management as a step toward implementation. The basic steps in designing are :

- Output Design
- Input Design
- Database Design
- Process Design

Output Design

The design of output is the most important task of any system. During output design, developers identify the type of outputs needed, and consider the necessary output controls and prototype report layouts.

Objectives of Output Design:

The objectives of output design are –

• To develop output design that serves the intended purpose and eliminates the production of unwanted output.

• To develop the output design that meets the end users requirements.

• To deliver the appropriate quantity of output.

• To form the output in appropriate format and direct it to the right person.

• To make the output available on time for making good decisions.

In addition to deciding on the output device, the systems analyst must consider the print format and the editing for the final printout. The task of output preparation is critical, requiring skill and ability to align user requirements with the capabilities of the system in operation. The design considerations we have followed while designing output are:

• Name or title.

• Space and arrangement.

• Headers and footers.

In online applications, the layout sheet for displayed output is similar to the layout chart used for designing input. In these cases, the output forms are similar to the input forms. Other type of applications output forms like reports used to make decisions must be designed carefully.

Heading 1	Heading 2	Heading 3
Data 1	Data 2	Data 3
Data 4	Data 5	Data 6

Data 7	Data 8	Data 9

Input Design

In an information system, input is the raw data that is processed to produce output. Therefore, the quality of system input determines the quality of system output. Well designed input forms and screens have following properties –

• It should serve specific purpose effectively such as storing, recording, and retrieving the information.

• It ensures proper completion with accuracy.

• It should be easy to fill and straightforward.

• It should focus on user's attention, consistency, and simplicity.

• All these objectives are obtained using the knowledge of basic design principles regarding –

- What are the inputs needed for the system?
- How end users respond to different elements of forms and screens.

Objectives for Input Design :

The objectives of input design are –

• To design data entry and input procedures

• To reduce input volume

• To design source documents for data capture or devise other data capture methods

• To design input data records, data entry screens, user interface screens, etc.

• To use validation checks and develop effective input controls.

Data Input Methods:

It is important to design appropriate data input methods to prevent errors while entering data. These methods depend on whether the data is entered by customers in forms manually and later entered by data entry operators, or data is directly entered by users on the PCs.

A system should prevent user from making mistakes by–

- Clear form design by leaving enough space for writing legibly.
- Clear instructions to fill form.
- Clear form design.
- Reducing key strokes.
- Immediate error feedback.

Some of the popular data input methods are –

- Batch input method (Offline data input method)
- Online data input method
- Computer readable forms
- Interactive data input

Forms Design

Both forms and reports are the product of input and output design and are business document consisting of specified data. The main difference is that forms provide fields for data input but reports are purely used for reading. For example, order forms, employment and credit application, etc.

- During form designing, the designers should know –
    - who will use them o where would they be delivered
    - the purpose of the form or report

• During form design, automated design tools enhance the developer's ability to prototype forms and reports and present them to end users for evaluation.

Objectives of Good Form Design:

A good form design is necessary to ensure the following–

• To keep the screen simple by giving proper sequence, information, and clear captions.

• To meet the intended purpose by using appropriate forms.

• To ensure the completion of form with accuracy.

• To keep the forms attractive by using icons, inverse video, or blinking cursors etc.

• To facilitate navigation.

Form Types:

There are three types of forms classified by what it does in the system. They are: action forms – to perform some action such as storing, modifying, and deleting data, memory forms – to perform extraction and display operations on existing historical data, and report forms – to generate decision support data from existing records. We used reports as output forms. As an input media we used both action and memory forms in combination.

Form Layout:

When form is designed, a list is prepared of all the items to be included on the form and the maximum space to be reserved. The form user to make sure it has the required details should check the list.

• Title

• Data Zoning

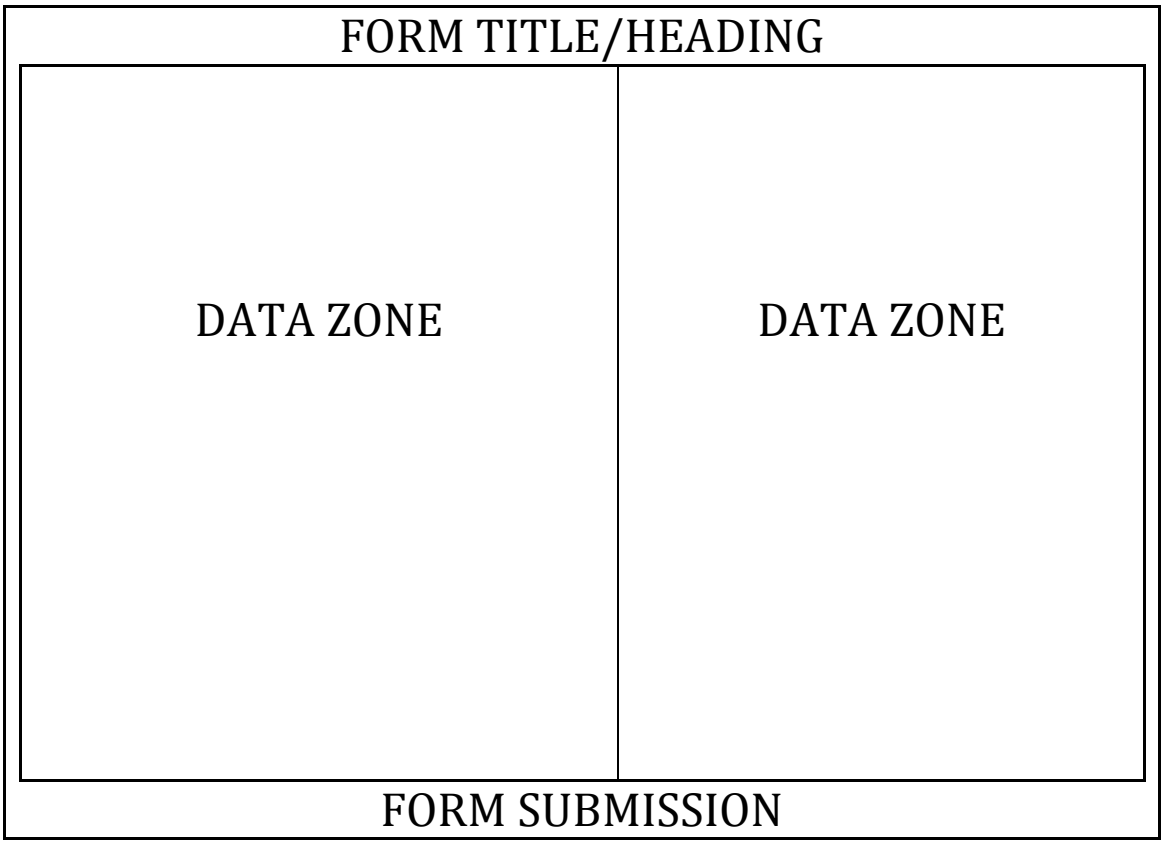
• Rules and Captions

Design Considerations:

In designing these forms we taken care several attributes that are mentioned below:

- Identification and wording.
  - – Form titles and labels.
- Maximum readability and use.
  - – Legible, intelligible, uncomplicated, and space.
- Physical factors.
  - – Composition, color, layout.
- Order of data items.
  - – Logical sequence, data relation.
- Ease of data entry.
  - – Field positions.
- Size and arrangement.
  - – Size, storing, filing, and space for signs.
- Use of instructions.
  - – Online help for data entry, status info.

The following diagram describes the sample form layout we used to design forms in our project.



Database Design

Database Design is a collection of processes that facilitate the designing, development, implementation and maintenance of enterprise data management systems. Properly designed database are easy to maintain, improves data consistency and are cost effective in terms of disk storage space. The database designer decides how the data elements correlate and what data must be stored. The main objectives of database design in DBMS are to produce logical and physical designs models of the proposed database system. The logical model concentrates on the data requirements and the data to be stored independent of physical considerations. It does not concern itself with how the data will be stored or where it will be stored physically. The physical data design model involves translating the logical DB design of the database onto physical media using hardware resources and software systems such as database management systems (DBMS).

Importance of Database Design :

It helps produce database systems

1. That meet the requirements of the users

2. Have high performance.

Database design process in DBMS is crucial for high performance database system.

Database design defines the database structure used for planning, storing, and managing information. Accuracy in data can only be accomplished if a database is designed to store only valuable and necessary information.

A well-designed database is imperative in guaranteeing information consistency, eliminating redundant data, efficiently executing queries, and improving the performance of the database. Meticulously designing a database saves you from wasting time and getting frustrated during the database development phase. A good database design also allows you to easily access and retrieve data whenever needed.

The reliability of data depends on the table structure; whereas creating primary and unique keys guarantees uniformity in the stored information. Data replication can be avoided by forming a table of probable values and using a key to denote the value. So, whenever the value changes, the alteration happens only once in the main table.

As the general performance of a database depends on its design, a good database design uses simple queries and faster implementation. It is easy to maintain and update; whereas fixing trivial interruptions in a poor database design may harm stored events, views, and utilities.

Entity:

An entity can be a real-world object, either animate or inanimate, that can be easily identifiable. For example, in a school database, students,

teachers, classes, and courses offered can be considered as entities. All these entities have some attributes or properties that give them their identity.

An entity set is a collection of similar types of entities. An entity set may contain entities with attribute sharing similar values. For example, a Students set may contain all the students of a school; likewise a Teachers set may contain all the teachers of a school from all faculties. Entity sets need not be disjoint.

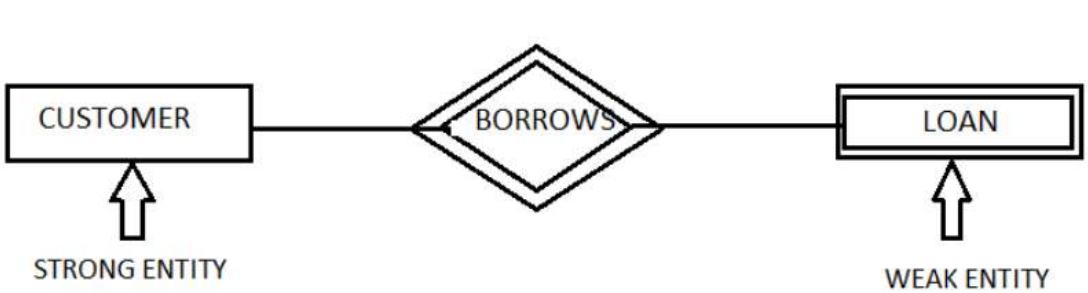
Entities are represented by means of rectangles. Rectangles are named with the entity set they represent.

Hatchery Owner	Employee

Types of entity:

- Strong Entity: A strong entity is not dependent of any other entity in the schema. A strong entity will always have a primary key. Strong entities are represented by a single rectangle. The relationship of two strong entities is represented by a single diamond. Various strong entities, when combined together, create a strong entity set.

- Weak Entity: A weak entity is dependent on a strong entity to ensure the it's existence. Unlike a strong entity, a weak entity does not have any primary key. It instead has a partial discriminator key. A weak entity is represented by a double rectangle. The relation between one strong and one weak entity is represented by a double diamond.

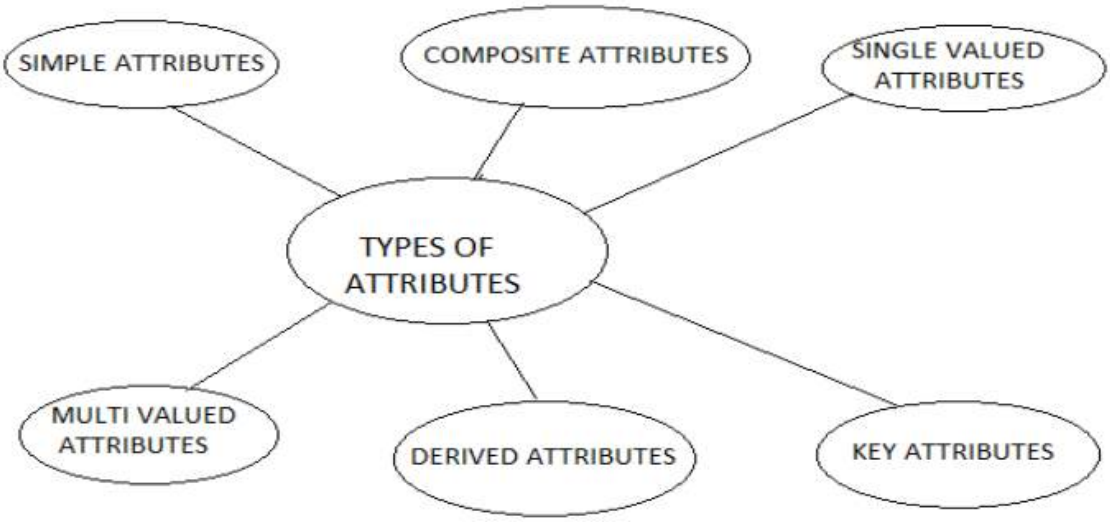


Attributes:

Entities are represented by means of their properties, called attributes. All attributes have values. For example, a student entity may have name, class, and age as attributes.

There exists a domain or range of values that can be assigned to attributes. For example, a student's name cannot be a numeric value. It has to be alphabetic. A student's age cannot be negative, etc.

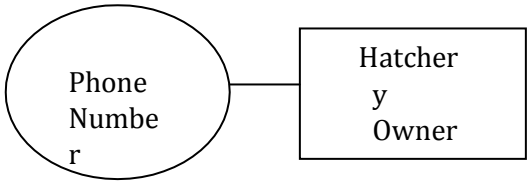
Attributes are represented by means of ellipses. Every ellipse represents one attribute and is directly connected to its entity (rectangle).



Types of Attributes:

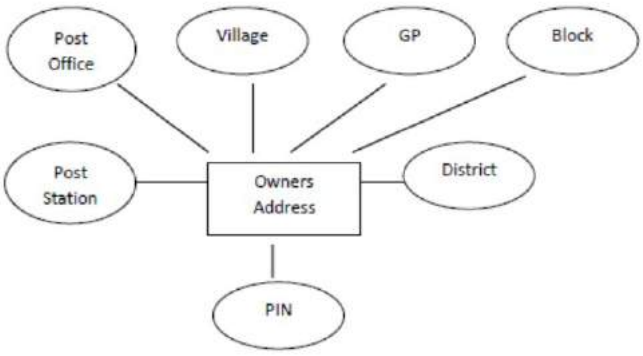
- Simple Attribute:

Simple attributes are atomic values, which cannot be divided further. For example, a hatchery owner phone number is an atomic value of 10 digits.



- Composite Attribute:

Composite attributes are made of more than one simple attribute. For example, a hatchery owner address can be split into district, block, GP, village, post office, police station, pin.

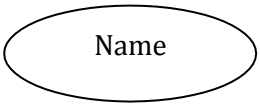


- Derived Attribute:

Derived attributes are the attributes that do not exist in the physical database, but their values are derived from other attributes present in the database. For example, average_salary in a department should not be saved directly in the database, instead it can be derived. For another example, age can be derived from date_of_birth.

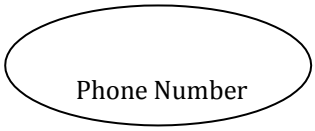
- Single-value Attribute:

Single valued attributes are those attributes which can take only one value for a given entity from an entity set.



- Multi-value Attribute:

Multi-value attributes may contain more than one values. For example, a person can have more than one phone number, email_address, etc.



These attribute types can come together in a way like −

- simple single-valued attributes
- simple multi-valued attributes
- composite single-valued attributes
- composite multi-valued attributes

Entity-Set and Keys:

Key is an attribute or collection of attributes that uniquely identifies an entity among entity set.

For example, the Sl_no of a student makes him/her identifiable among students.

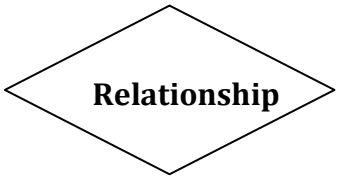
- Super Key − A set of attributes (one or more) that collectively identifies an entity in an entity set.

- Candidate Key − A minimal super key is called a candidate key. An entity set may have more than one candidate key.

- Primary Key − A primary key is one of the candidate keys chosen by the database designer to uniquely identify the entity set.

Relationship:

The association among entities is called a relationship. For example, an employee works_at a department, a student enrolls in a course. Here, Works_at and enrolls are called relationships.



Relationship Set:

A set of relationships of similar type is called a relationship set. Like entities, a relationship too can have attributes. These attributes are called descriptive attributes.

Degree of Relationship:

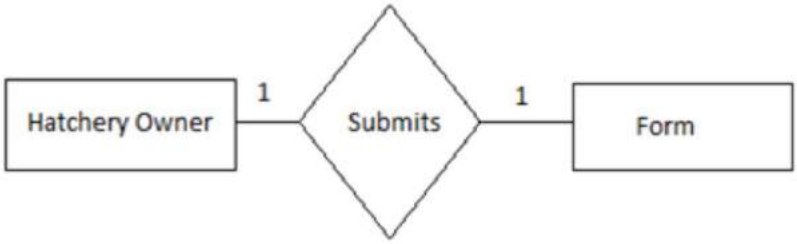
The number of participating entities in a relationship defines the degree of the relationship.

- Binary = degree 2
- Ternary = degree 3
- n-ary = degree n

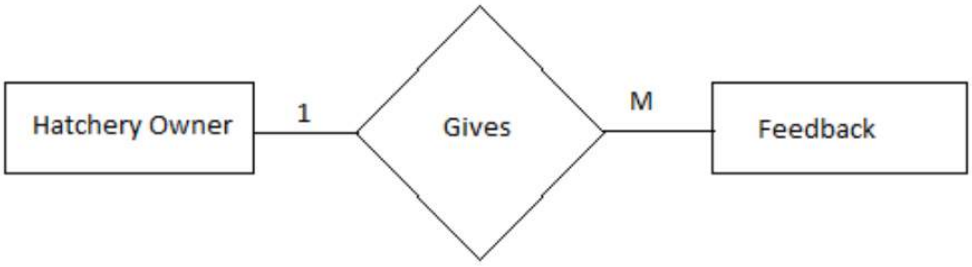
Mapping Cardinalities:

Cardinality defines the number of entities in one entity set, which can be associated with the number of entities of other set via relationship set.

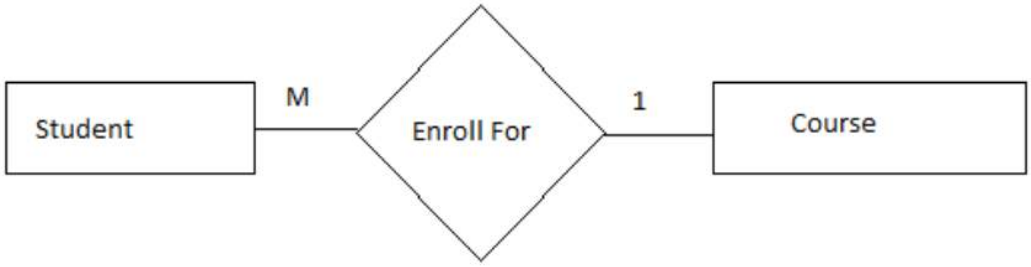
- One-to-one – One entity from entity set A can be associated with at most one entity of entity set B and vice versa.



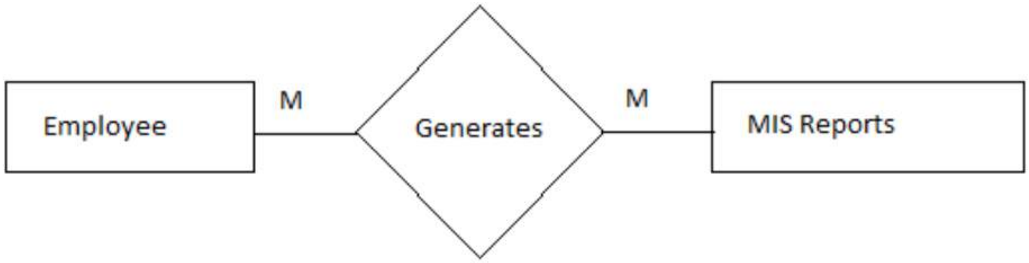
- One-to-many – One entity from entity set A can be associated with more than one entities of entity set B however an entity from entity set B, can be associated with at most one entity.



- Many-to-one – More than one entities from entity set A can be associated with at most one entity of entity set B, however an entity from entity set B can be associated with more than one entity from entity set A.



- Many-to-many – One entity from A can be associated with more than one entity from B and vice versa.



Entities:

- Reg_tb
- Emp_tb
- User_feedback
- Login_tb

- Hatchery_tb
- Pay_tb
- Sts_tb
- Feedback_tb
- MIS_tb
- Notice_tb
- Admin_tb

Attributes:

Reg_tb	ID,Name,Type,Password,Email,District,Certificate Id
Emp_tb	ID,Name,Type,Password,Email,District,Auth_st,AuthBy,Auth_type,Auth_Date,Auth_time
Login_tb	Slno,ID,log_time,log_date
Certify_tb	CetificateId,Name
Hatchery_tb	ID, ID Year, Owner's Name, Father's Name, Owner's District, Owner's Block, Owner's GP, Owner's Village, Owner's Post Office, Owner's Police Station, Owner's PIN, Phone 1, Phone 2, Email, Hatchery Name, Hatchery District, Hatchery Block, Hatchery GP, Hatchery Village, Hatchery Post Office, Hatchery Police Station, Hatchery PIN, Species, Owner's Photo, Hatchery Photo, Aadhar Photo, Challan Photo, App Date, Year, Acc No, Acc Date, Acc Valid, Acc DFO, DFO date, Acc ADF, ADF date, Acc JDF, JDF date, Current, Remarks
Pay_tb	Transaction Id, ID Transaction Date, Amount, Card No, Bank
Sts_tb	ID,Acc No, Acc Date, Acc Valid, Acc level 1 emp name, level 1 date, Acc level 2 emp name, level 2 date, Acc level 3 emp name , level 3 date, Current status.
Feedback_tb	sl_no,ID,SenderID,Sendername,District,Message,Type,Date,Time,Reply
MIS_tb	Sl_no, Report name.
Notice_tb	Sl_no, Date,Notice,Uploader.
Admin_tb	ID,Name,Email,Password
User_feedback	Sl_no,Name,Email,Subject,Message

Relationships :

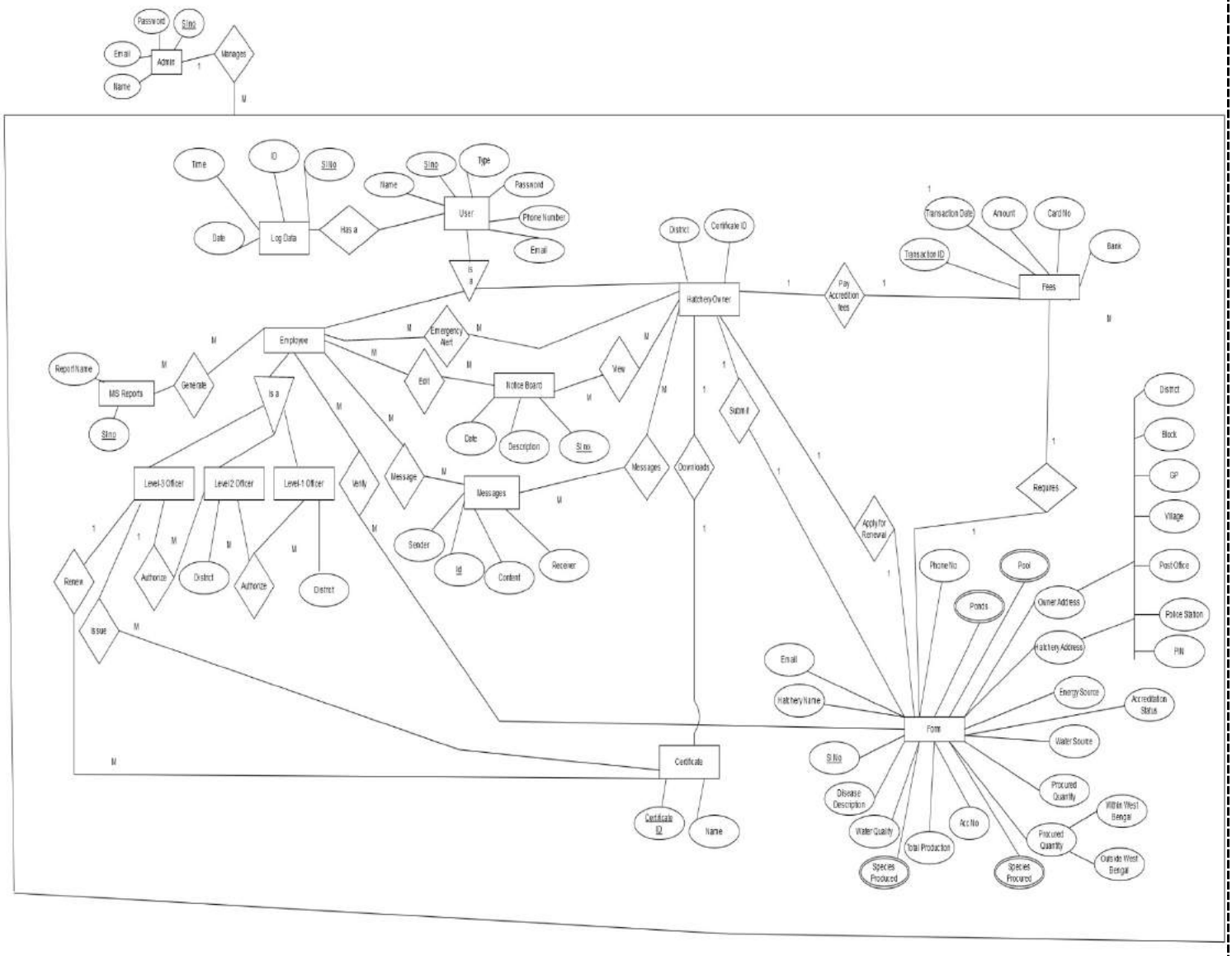
- Admin manages Hatchery Accreditation system
- User is a Employee
- User is a Hatchery owner
- Hatchery owner submits/renew form of accreditation.
- Hatchery owner view notice board.
- Hatchery owner message messages.
- Hatchery owner downloads certificate.
- Hatchery owner pays accreditation fees.
- Form requires accreditation fees.
- Employee is a Level 1 Officer
- Employee is a Level 2 Officer
- Employee is a Level 3 Officer
- Employee generates MIS Reports.
- Employee generates Emergency alert
- Level 3 Officer renew certificate
- Level 3 Officer issue certificate
- Level 3 Officer authorize Level 2 Officer
- Level 2 Officer authorize Level 1 Officer
- Employee message messages
- Employee can verify forms

ER Diagram:

An Entity–relationship model (ER model) describes the structure of a database with the help of a diagram, which is known as Entity

Relationship Diagram (ER Diagram). An ER model is a design or blueprint of a database that can later be implemented as a database. The main components of E-R model are: entity set and relationship set.

An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in database, so by showing relationship among tables and their attributes, ER diagram shows the complete logical structure of a database.



Normalization:

Normalization is the process of refining the data model built by the ER diagram. The normalization technique, logically groups the data over the number of tables, with minimum redundancy of data. The entities or tables resulting from normalization contain data items, with relationships being represented by replication of key data items.

The goal of relational database design is to generate a set of relation schemes that allow us to store information with minimum redundancy of data and allow us to retrieve information easily and efficiently. The approach followed is to design schemas that are in an appropriate form one of the so-called normal form.

The first step towards normalization is to convert the ER model into tables or relations. The next step is to examine the database for redundancy and if necessary, change them to non-redundant forms. This non-redundant model is then converted into a database definition, which achieves the objective of the database design phase. We defined database from the above ER model by normalizing it to 3rd normal form. We will show the definitions of those database tables later at the time of physical database design phase.

Data Dictionary:

A data dictionary contains metadata i.e. data about the database. The data dictionary is very important as it contains information such as what is in the database, who is allowed to access it, where is the database physically stored etc. The users of the database normally don't interact with the data dictionary, it is only handled by the database administrators. These are some of the most common elements used in a data dictionary, though there’s variation:

- Attribute name
- Attribute type
- Entity-relationship
- Reference data

- Rules for validation, schema, or data quality
- Detailed properties of data elements
- Physical information about where data is stored

In a data dictionary we will find a list of all the elements composing the data flow through a system.

Table Name: admin_tb

Description: This table describes the details of administrator

Contents:

Name	Datatype	Null	Key
id	int(10)	NOT Null	Primary Key
name	varchar(25)		
email	varchar(35)		
password	varchar(100)		

Table Name: reg_tb

Description: This table describes the hatchery owner details

Contents:

Name	Datatype	Null	Key
id	int(10)	NOT Null	Primary Key
name	varchar(25)		
type	varchar(25)		
password	varchar(100)		
email	varchar(35)		
district	varchar(35)		
certificate_id	varchar(50)		
phnum	int(10)		
status	varchar(50)		

astatus	varchar(50)		

Table Name :login_tb

Description : Thistable describes the details of login users.

Contents :

Name	Datatype	Null	Key
sl no	int(10)	NOT Null	Primary Key
id	int(10)	NOT Null	Foreign Key
log_time	date		
log_date	varchar(10)		

Table Name : hatchery_tb

Description : This table describes the details of application submitted by user

Contents :

Name	Datatype	Null	Key
ID	int(10)	NOT Null	Primary Key
ID Year	int(10)	NOT Null	Foreign Key
Owner's Name	varchar(50)		
Father's Name	varchar(100)		
Owner's District	varchar(35)		
Owner's Block	int(10)		
Owner's GP	varchar(100)		
Owner's Village	varchar(100)		
Owner's Post Office	varchar(100)		
Owner's Police Station	varchar(100)		
Owner's PIN	int(6)		

Phone 1	int(10)		
Phone 2	int(10)		
Email	varchar(100)		
Hatchery Name	varchar(100)		
Hatchery District	varchar(100)		
Hatchery Block	varchar(100)		
Hatchery GP	varchar(100)		
Hatchery Village	varchar(100)		
Hatchery Post Office	varchar(100)		
Hatchery Police Station	varchar(100)		
Hatchery PIN	int(10)		
Species	varchar(100)		
Owner's Photo	varchar(100)		
Hatchery Photo	varchar(100)		
Aadhar Photo	varchar(100)		
Challan Photo	varchar(100)		
App Date	date		
Year	int(10)		
Acc No	int(10)		
Acc Date	date		
Acc Valid	varchar(100)		
Acc DFO	varchar(100)		
DFO date	date		
Acc ADF	varchar(100)		
ADF date	date		
Acc JDF	varchar(100)		
JDF date	date		
Current	varchar(100)		
Remarks	varchar(100)		

Table Name :pay_tb

Description : This table describes the details of accreditation fees paid by hatchery owner.

Contents :

Name	Datatype	Null	Key
Transaction Id	int(30)	NOT Null	Primary Key
id	int(10)	NOT Null	Foreign Key
Transaction Date	date		
Amount	int(10)		
Card No	int(20)		
Bank	int(50)		

Table Name :sts_tb

Description : This table describes the status of the accreditation form.

Contents :

Name	Datatype	Null	Key
id	int(10)	NOT Null	Primary Key, Foreign Key
acc_level_1_emp_name	varchar(50)		
Level_1_date	date		
acc_level_2_emp_name	varchar(50)		
level_2_date	date		
acc_level_3_emp_name	varchar(50)		
level_3 _date	date		
current_status	varchar(100)		

Table Name :feedback_tb

Description : This table describes the messages sent between the sender and reciever .

Contents :

Name	Datatype	Null	Key
sl_no	int(10)	NOT Null	Primary Key
ID	int(10)		
SenderID	int(10)		
Sendername	varchar(1000)		
District	varchar(1000)		
Message	varchar(1000)		
Type	varchar(1000)		
Date	date		
Time			
Reply	varchar(1000)		

Table Name :mis_tb

Description : This table stores mis reports information.

Contents :

Name	Datatype	Null	Key
sl_no	int(10)	NOT Null	Primary Key
report_name	varchar(100)		

Table Name :user_feedback

Description : This table describes the feedback of general user.

Contents :

Name	Datatype	Null	Key
sl_no	int(10)	NOT Null	Primary Key
name	varchar(100)		
email	varchar(100)		

subject	varchar(1000)		
message	varchar(1000)		

Table Name :notice_tb

Description : This table describes the notice of the notice board .

Contents :

Name	Datatype	Null	Key
sl_no	int(10)	NOT Null	Primary Key
date	date		
notice	varchar(100)		
uploader	Varchar(1000)		

Process Design:

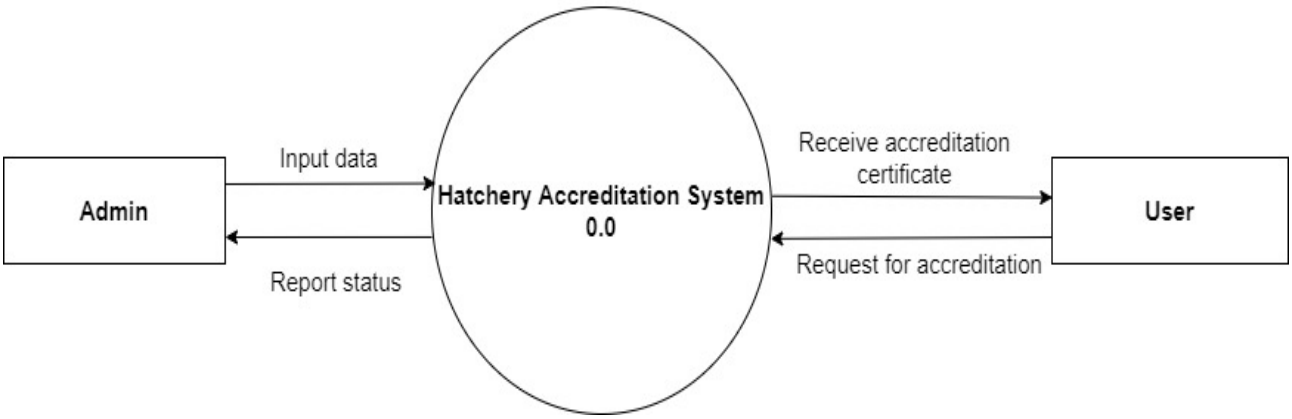
Structured design is a data flow based methodology. The approach begins with a system specification that identifies inputs and outputs and describes the functional aspects of the system. The next step is the definition of the modules and their relationships to one another in a form called a structure chart, using a data dictionary, DFD, and other structured tools. Structured design partitions a program into small, independent modules. They are arranged in a hierarchy that approximates a model of the business area and is organized in a top – down manner.

Data Flow Diagram

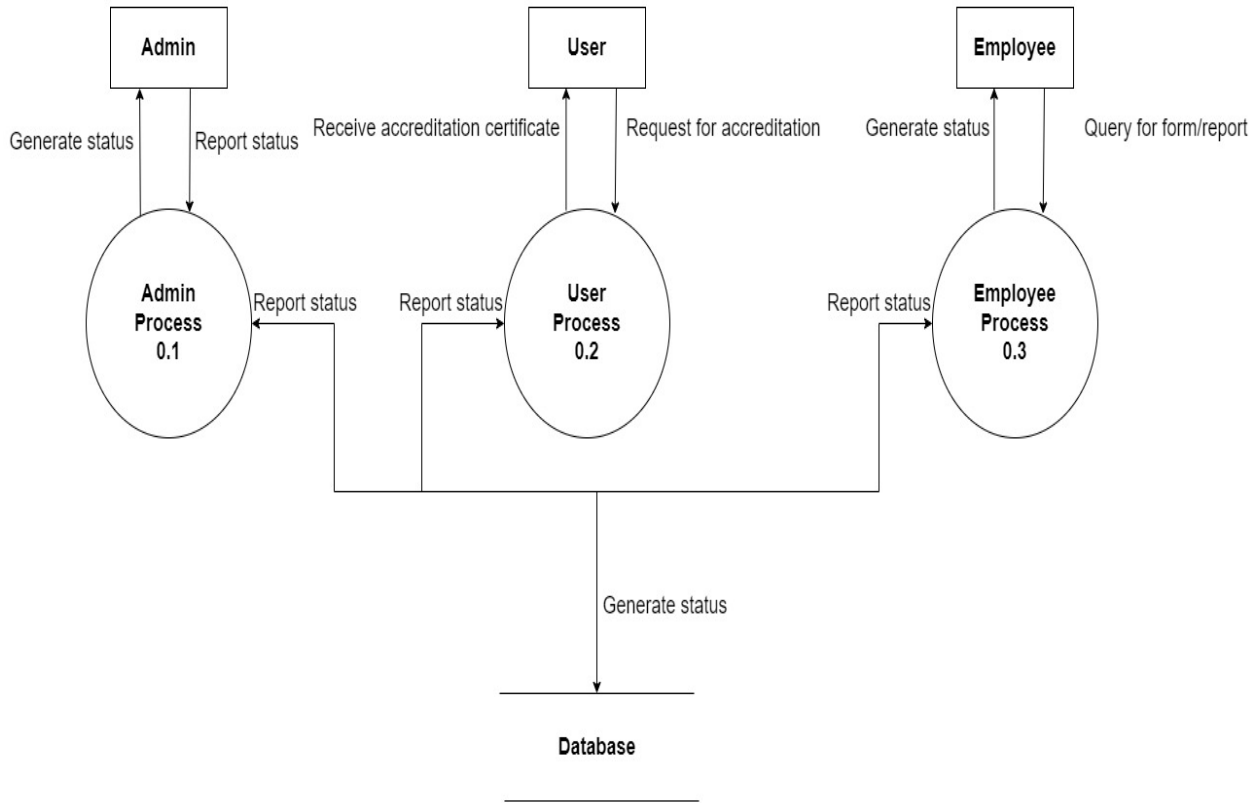
A data flow diagram (DFD) is a graphic tool used to describe and analyse the movement of data through a system - manual or automated – including the processes, stores of data, and delays in the system. Data flow diagrams are the central tools and the basis from which other components are developed. The transformation of data from input to output, through processes, may be described logically and independently of the physical components associated with the system.

The Data Flow Diagrams of our project are as follows:

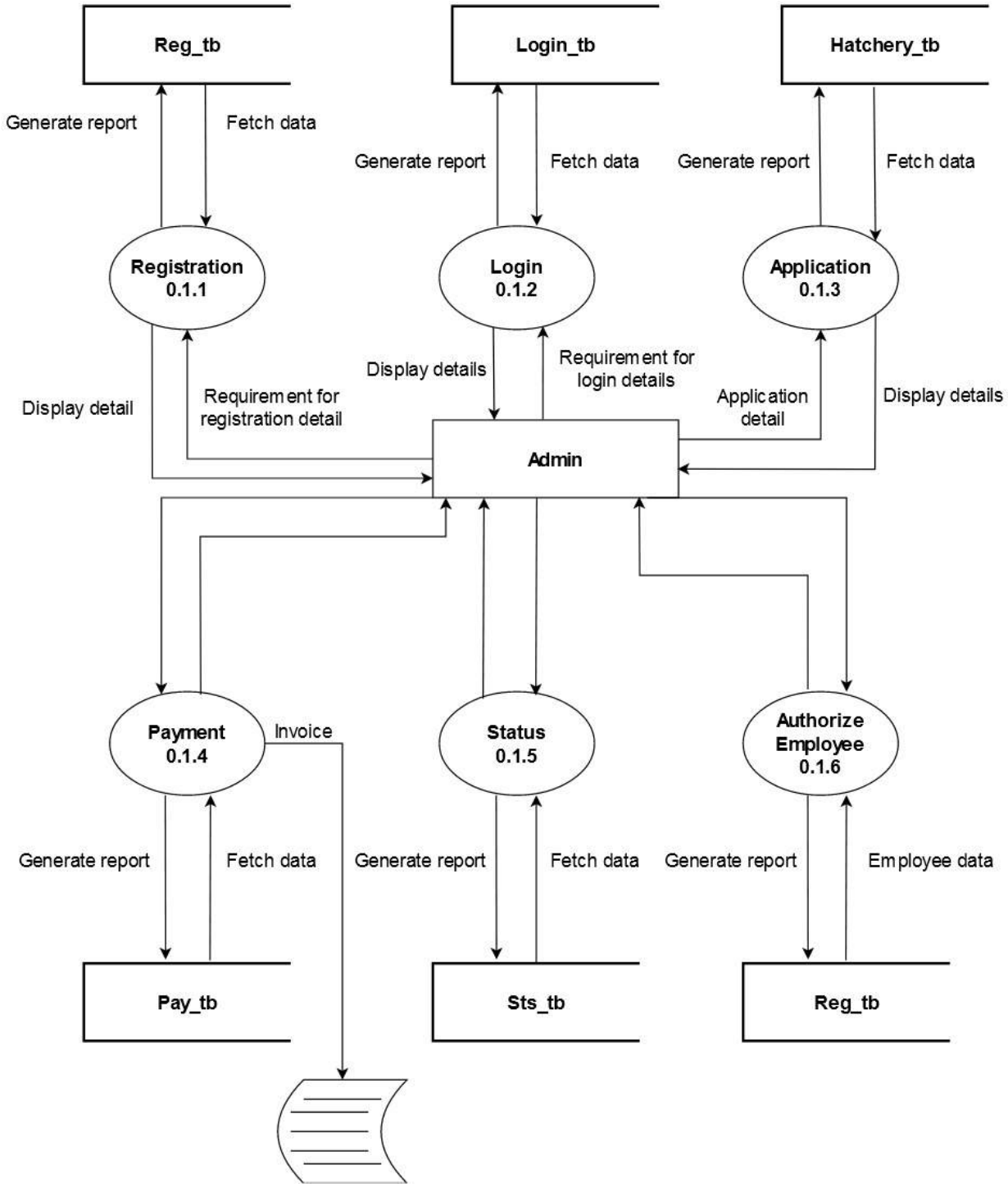
Context Level DFD:



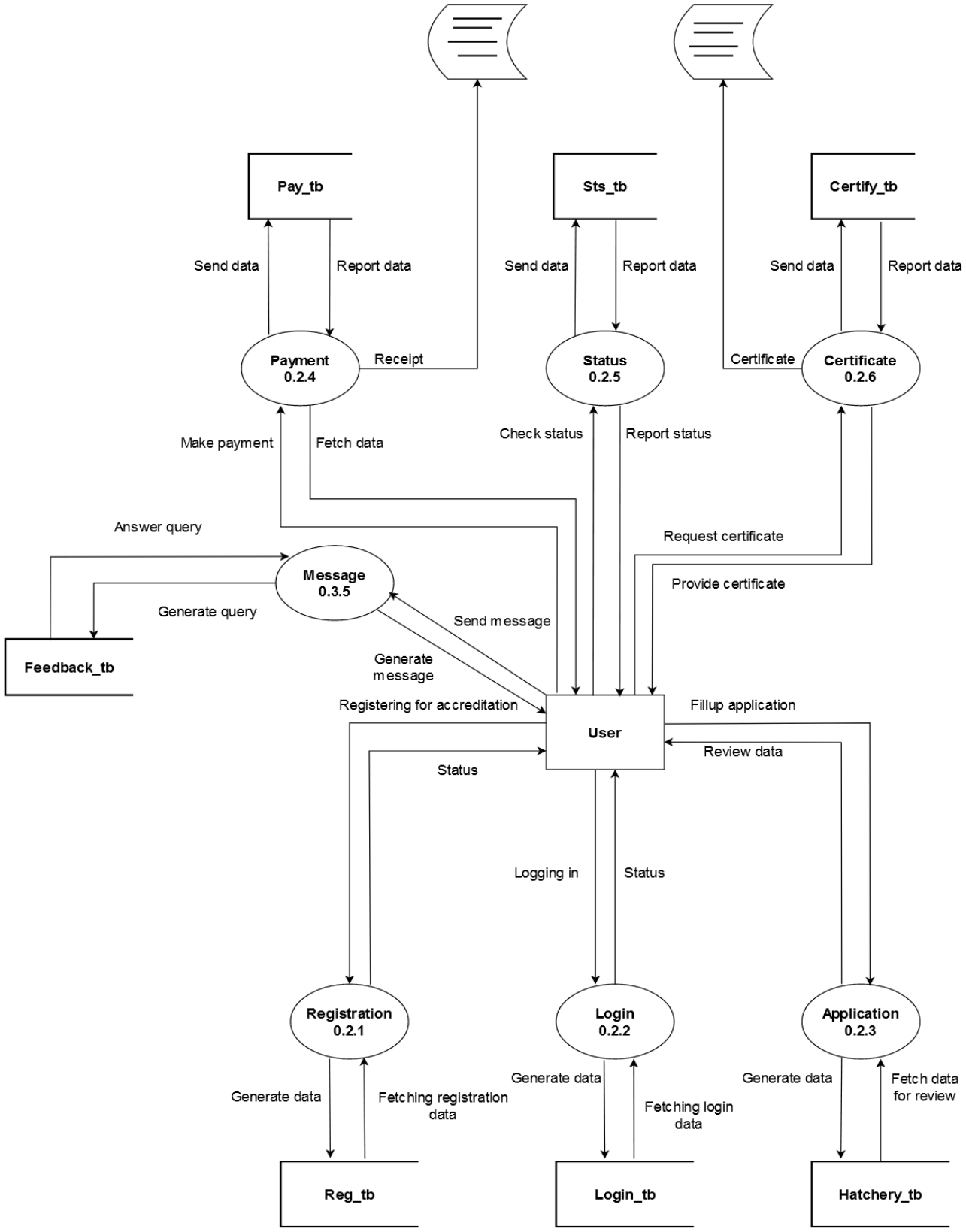
Zero level DFD:



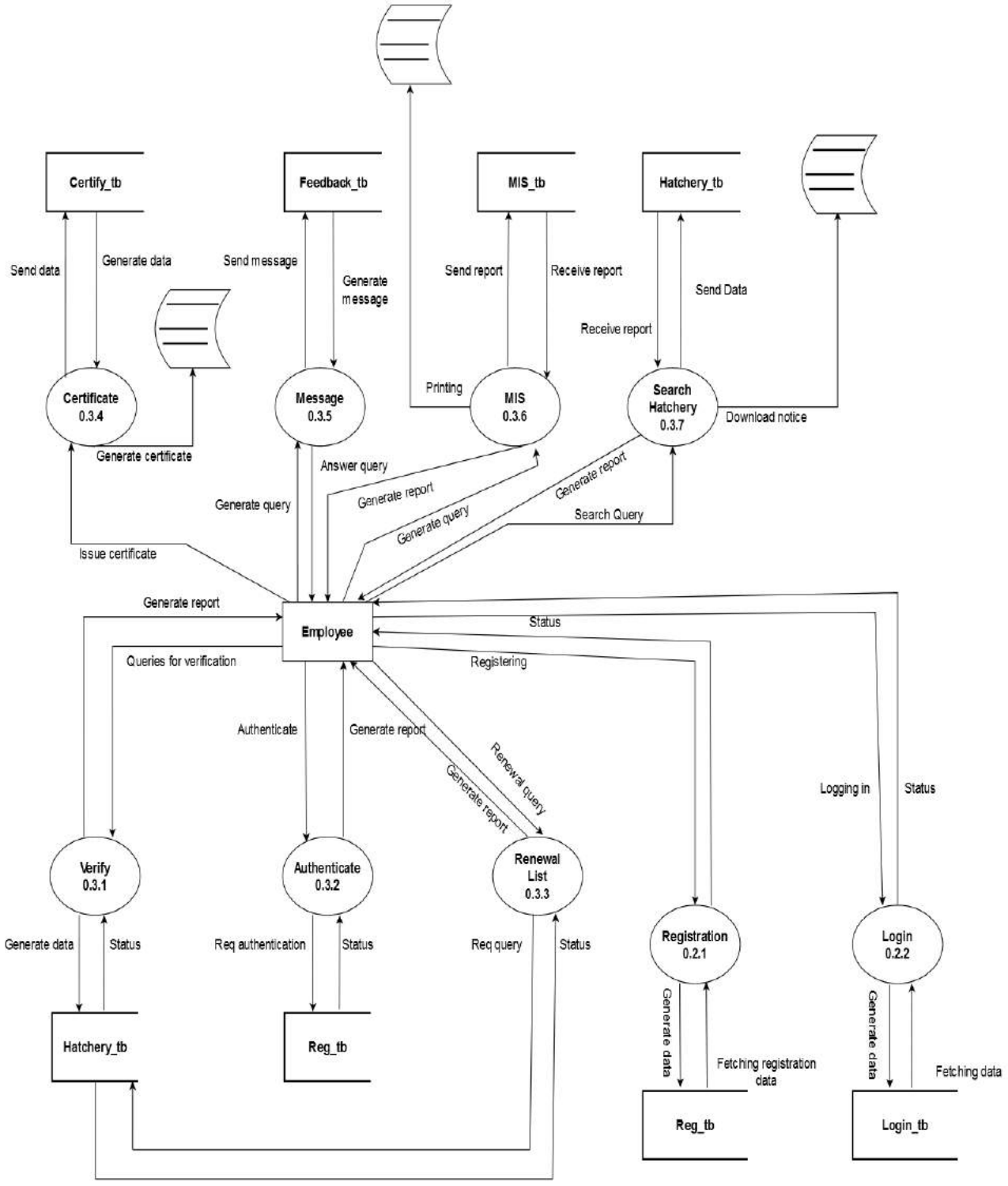
Level one admin DFD



Level one DFD for user:



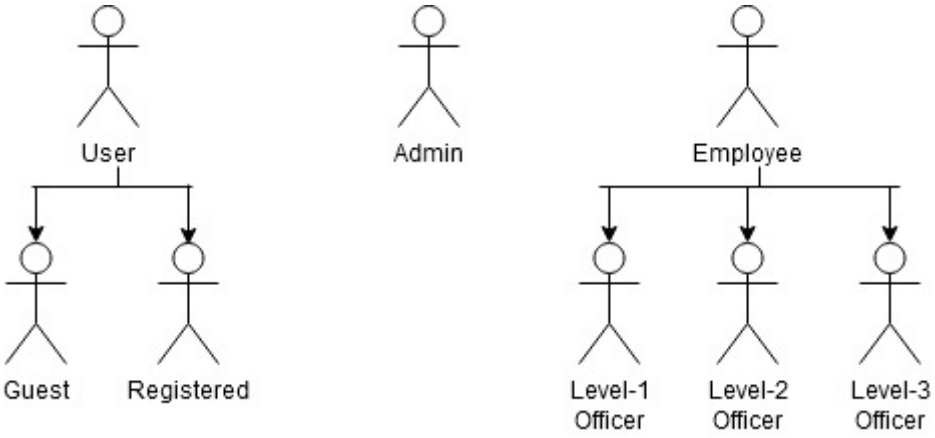
Level one DFD for employee:

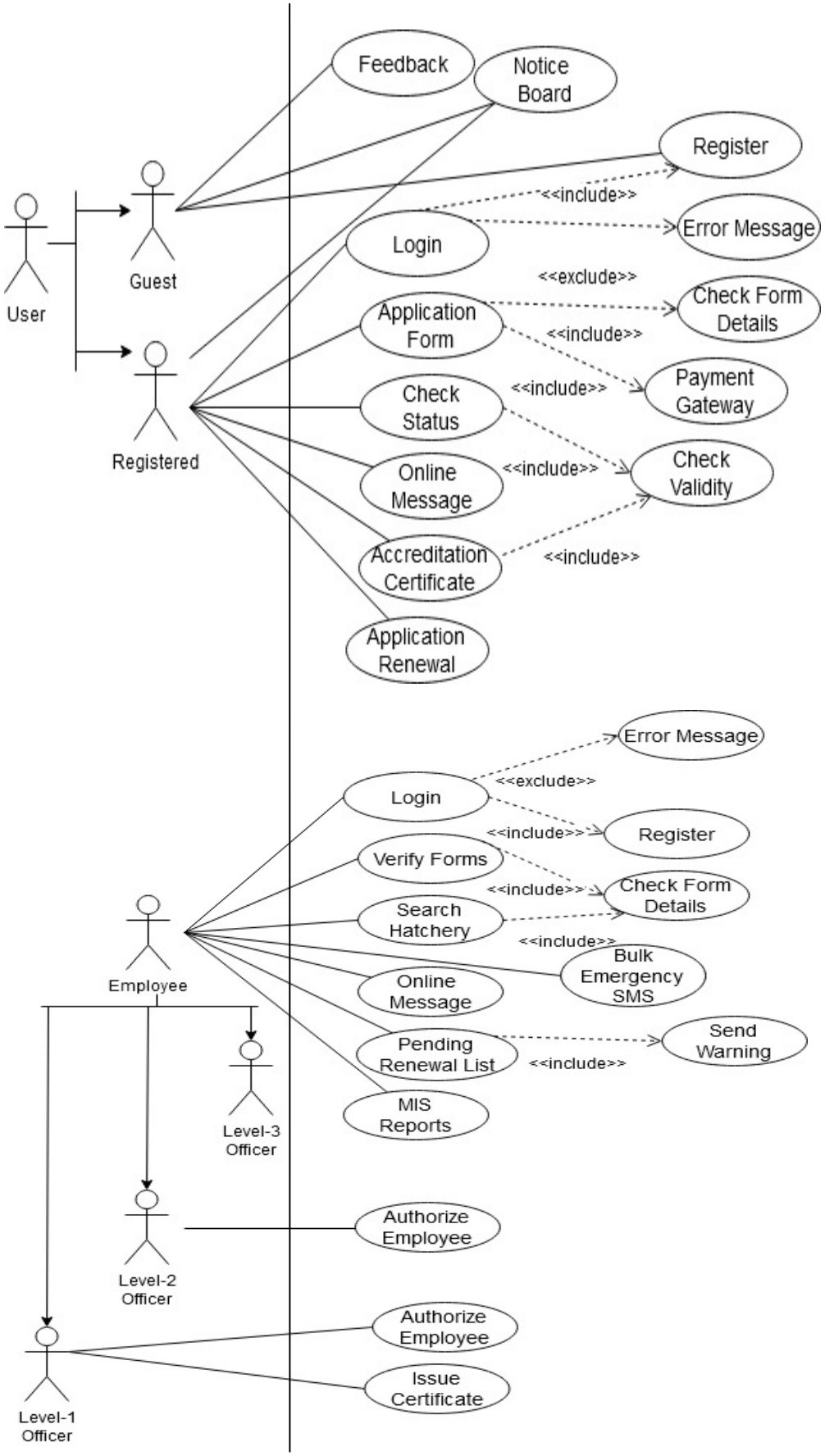


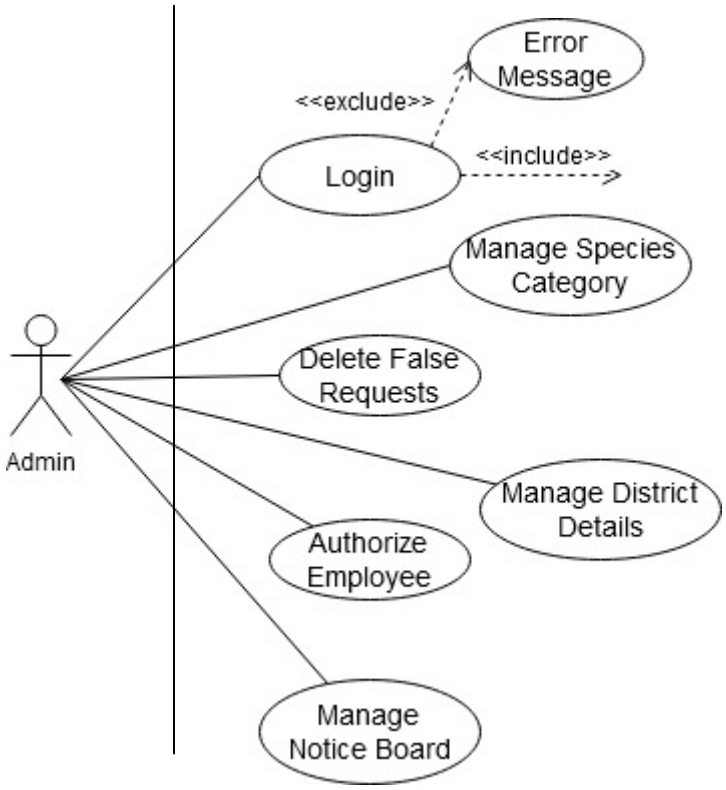
Use–Case Diagram:

A use case diagram is a graphical depiction of a user's possible interactions with a system. A use case diagram shows various use cases and different types of users the system has and will often be accompanied by other types of diagrams as well. The use cases are represented by either circles or ellipses. The users are often shown as stick figures. The purpose of a use case diagram is to capture the dynamic aspect of a system. They provide a simplified graphical representation of what the system should do in a use case. Further diagrams and documentation are needed for a complete functional and technical outlook on the system.

Use – case diagram shows us the way how we'll interact with the software as a normal user. The use-case diagram for this software is given below:




Feedback
Notice Board
Register
<<include>>
Error Message
Login
<<exclude>>
Check Form Details
Application Form
<<include>>
Payment Gateway
Check Status
<<include>>
Check Validity
Online Message
<<include>>
Accreditation Certificate
<<include>>
Application Renewal
User
Guest
Registered
Error Message
<<exclude>>
Login
<<include>>
Register
Verify Forms
<<include>>
Check Form Details
Search Hatchery
<<include>>
Bulk Emergency SMS
Online Message
Pending Renewal List
<<include>>
Send Warning
MIS Reports
Employee
Level-3 Officer
Authorize Employee
Level-2 Officer
Authorize Employee
Issue Certificate
Level-1 Officer



Activity Diagram:

Activity diagram is another important diagram in UML to describe the dynamic aspects of the system.

Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system.

The control flow is drawn from one operation to another. This flow can be sequential, branched, or concurrent. Activity diagrams deal with all type of flow control by using different elements such as fork, join, etc.

Purpose of Activity Diagram:

The basic purposes of activity diagrams is similar to other four diagrams. It captures the dynamic behaviour of the system. Other four diagrams are used to show the message flow from one object to another but activity diagram is used to show message flow from one activity to another.

Activity is a particular operation of the system. Activity diagrams are not only used for visualizing the dynamic nature of a system, but they are also used to construct the executable system by using forward and reverse engineering techniques. The only missing thing in the activity diagram is the message part.

It does not show any message flow from one activity to another. Activity diagram is sometimes considered as the flowchart. Although the diagrams look like a flowchart, they are not. It shows different flows such as parallel, branched, concurrent, and single.

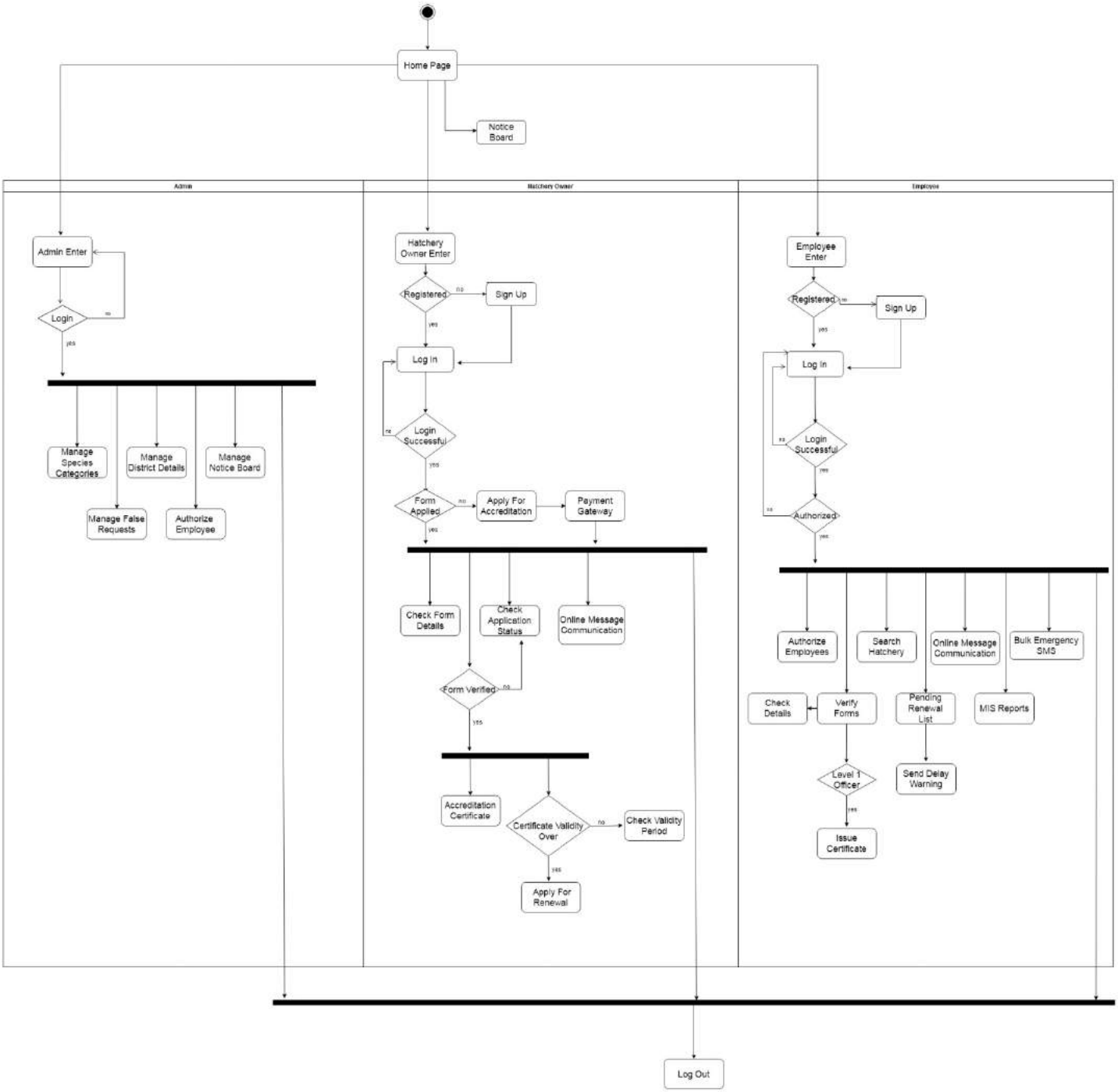
The purpose of an activity diagram can be described as −

- Draw the activity flow of a system.
- Describe the sequence from one activity to another.
- Describe the parallel, branched and concurrent flow of the system.

Activity diagram can be used for −

- Modelling work flow by using activities.
- Modelling business requirements.
- High level understanding of the system's functionalities.
- Investigating business requirements at a later stage.

The activity diagram for this software is given below :-


Home Page
Notice Board
Admin
Hatchery Owner
Employee
Admin Enter
Login
Manage Species Categories
Manage District Details
Manage Notice Board
Manage False Requests
Authorize Employee
Hatchery Owner Enter
Registered
Sign Up
Log In
Login Successful
Form Applied
Apply For Accreditation
Payment Gateway
Check Form Details
Check Application Status
Online Message Communication
Form Verified
Accreditation Certificate
Certificate Validity Over
Check Validity Period
Apply For Renewal
Employee Enter
Registered
Sign Up
Log In
Login Successful
Authorized
Authorize Employees
Search Hatchery
Online Message Communication
Bulk Emergency SMS
Check Details
Verify Forms
Pending Renewal List
MIS Reports
Level 1 Officer
Send Delay Warning
Issue Certificate
Log Out

IMPLEMENTATION

What is Implementation:

Implementation is a process of ensuring that the information system is operational. It involves – Constructing a new system from scratch Constructing a new system from the existing one. Implementation allows the users to take over its operation for use and evaluation. It involves training the users to handle the system and plan for a smooth conversion.

How the Project Is Implemented:

A crucial phase in the system life cycle is the successful implementation of the new system design. The change to make a web based web page took place in phased manner. First the system was used to enter, validate and store the different types of data in the database used by the systems. The static data were also entered in the directory files. The comparison testified to the reliability, speed and accuracy of the web based system.

Types of Implementations:

There are three types of Implementations:

• **Implementation of a computer system to replace a manual system:-**In this implementation software may be defined as a process where a manual record are replaced with new software. During the process some problems come in the form of conversion of files, user training, accurate system of files and verifying printouts for integrity etc.

• **Implementation of a new computer system to replace an existing one:-**When an old software is replaced with a new software implementation that the name of this process is Replacement implementation. This process is very difficult and a proper planning is needed for this, otherwise many problems can arise.

• **Implementation of a modified web page to replace an existing one:-**When an old software is replaced by new software with some alteration then this process is called modified implementation. We can

easily handle this type of implementation because area of modification is not so large in files.

The proposed system is an implementation from computer based system to Web based System. More clearly we can state that user can access the system on web efficiently while the previous system is window based.

Conversion means changing from one system to another. That is data in the old formats run through a program, or a series of programs, to convert it into the new format. Conversion can also be from one hardware medium to another. The objective is to put the tested system into operation while holding costs, risk and personnel irritation to a minimum. Conversion should be exciting because it is the last step before the candidate system begins to show result. Unfortunately, the results of conversion have been chaotic and traumatic for many firms. Unforeseen difficulties crop up as the system breaks down, data files are damaged and tempers grow short. The training package is frequently not complete and people are trying to figure out what to do. Much of these steams of poor planning at all. Let us examine the steps that preceded conversion. It involves :

I. Creating computer compatible files.

II. Training the operating staff.

III. Installing terminals and hardware.

Creating computer compatible files:

The best method for gaining control of the conversion is to use well-planned test files for testing all new programs. Before testing live data, test are created on the old system, copied over to the new system, and used for initial test of each program. The test file offers the following:

• Predictable results

• Previously determined output results to check with a sampling of different types of records.

User Training:

User training helps the user in operating the system in efficient way. During the training a manual is given to every user so that they can understand the problem and solved it. The content of training is about the use of data that how they can edit, add, query and delete the records. If a user have not sufficient capability of working on system then many kind of errors and problems can occur.

• End-user training is an important part of the computer-based information system development, which must be provided to employees to enable them to do their own problem solving.

• User training involves how to operate the equipment, troubleshooting the system problem, determining whether a problem that arose is caused by the equipment or software.

• Most user training deals with the operation of the system itself.

The training courses must be designed to help the user with fast mobilization for the organization. It focuses on two factors :

• User capabilities

• Nature of the system being installed

• The user may range from naive to sophisticated users. Naive users have fear onwards exposure to new system. Therefore, formal user training is required with some training aids like :

- o User manual
- o User-friendly screen
- o Data dictionary
- o Proper flow of system

Post Implementation:

Operational systems are quickly taken for granted. Every system requires periodic evaluation after implementation. A post-implementation review measures the system's performance against

predefined requirements. Unlike system testing, this determines where the system fails so that necessary adjustments can be. Made, a post-implementation review determines how the system continues to meet performance specifications. It is after the fact after the design and con-versions are complete. It also provides information to determine whether major redesign is necessary. A post implementation review is an evaluation of a system in terms of the extent to which the system accomplishes stated objectives and actual project costs exceed initial estimates. It is usually review of major problems that need converting and those that surfaced during the implementation phase. The primary responsibility for initiating the review lies with the user.

Implementation of Security:

The first and most common security risk is the user input. This is the users way to interact with the web page and therefore the most common way for a hacker to infiltrate server/company. The securing of input strings also ensures that SQL injection is not possible. It is not enough to validate the user input on the client side of the application. The most important thing is to secure the inputs on the server side. This is because a web client can never be trusted; the user can turn of scripts or change them. The only thing with the client side validation that is good is the fact that it can handle simple input mistakes to reduce the number of times the server has to validate input. There are a lot of solutions on how to solve this problem, but the best way is to only allow a list of valid characters. It is also easier to check input against a list of valid characters then to strip unwanted characters. This is because it is difficult to determine all possible malicious characters.

Another big dilemma is the authentication. People who want access to a web page can steal passwords and gain access to the web page by sniffing up the user information. Using the sniffing technique an attacker can get the username and password of other users. To solve this problem the web page should send the login id and the hashed password to the database server. At the server stored procedure

should be used to authenticate the user. To make it more secure the traffic between client and server should be encrypted.

Both web and standalone applications share some security vulnerabilities. The main difference is that a web application can be reached from the internet which allows almost anyone to access and attack it.

And we also need to follow the following rules :

- **Login pages should be encrypted**
- **Data Validation should be done server – side**
- **Try to use strong, cross – platform compatible encryption**
- **Don’t share login credentials.**

Testing and Analysis

Introduction:

Software Testing is the process of executing a program or system with the intent of finding errors. Or, it involves any activity aimed at evaluating an attribute or capability of a program or system and determining that it meets its required results Software is not unlike other physical processes where inputs are received and outputs are produced. Where software differs is in the manner in which it fails. Most physical systems fail in a fixed (and reasonably small) set of ways. By contrast, software can fail in many bizarre ways. Detecting all of the different failure modes for software is generally infeasible unlike most physical systems; most of the defects in software are design errors, not manufacturing defects. Software does not suffer from corrosion, wear-and-tear -- generally it will not change until upgrades, or until obsolescence. So once the software is Shipped, the design defects -- or bugs -- will be buried in and remain latent until activation. Software bugs will almost always exist in any software module with moderate size: not because programmers are careless or irresponsible, but because the complexity of software is generally

intractable -- and humans have only limited ability to manage complexity.

It is also true that for any complex systems, design defects can never be completely ruled out. Discovering the design defects in software is equally difficult, for the same reason of complexity. Because software and any digital systems are not continuous, testing boundary values are not sufficient to guarantee correctness. All the possible values need to be tested and verified, but complete testing is infeasible. Exhaustively testing a simple program to add only two integer inputs of 32-bits (yielding 2^64 distinct test cases) would take hundreds of years, even if tests were performed at a rate of thousands per second. Obviously, for a realistic software module, the complexity can be far beyond the example mentioned here. If inputs from the real world are involved, the problem will get worse, because timing andunpredictable environmental effects and human interactions are all possible input parameters under consideration.

The testing activities are done in all phases of the lifecycle in an iterative software development approach. However, the emphasis on testing activities varies in different phases. This procedure explains the focus of testing in inception, elaboration, construction and transition phases. In the inception phase most of requirements capturing is done and the test plan is developed. In elaboration phase most of design is developed, and test cases are developed. Construction phase mainly focuses on development of components and units, and unit testing is the focus in this phase. Transition phase is about Deploying software in the user community and most of the system testing and acceptance testing is done in this phase.

Purpose:

The main purposes of this procedure are :

- To carry out comprehensive testing of the system/product and its individual components in order to ensure that the developed system/product conforms to the user requirements/ design.

- To verify the proper integration of all components of the software.
- To verify that all requirements have been correctly implemented.
- To identify and ensure defects are addressed prior to the deployment of the software.

Test Planning:
Initial test plan addresses system test planning, and over the elaboration, construction and transition phases this plan is updated to cater other testing requirements of these phases, like, unit & integration testing.

The test Plan must contain the following :

- Scope of testing
- Methodology to be used for testing
- Types of tests to be carried out
- Resource & system requirements
- A tentative Test Schedule
- Identification of various forms to be used to record test cases and test results.

Testing is usually performed for the following purposes :

- ***To improve quality:*** Quality means the conformance to the specified design requirement. Being correct, the minimum requirement of quality, means performing as required under specified circumstances. Debugging, a narrow view of software testing, is performed heavily to find out design defects by the programmer. The imperfection of human nature makes it almost impossible to make a moderately complex program correct the first time. Finding the problems and get them fixed, is the purpose of debugging in programming phase.

- ***For Verification & Validation (V&V):*** Just as topic Verification and Validation indicated, another important purpose of testing is verification and validation (V&V). Testing can serve as metrics. It is heavily used as a tool in the V&V process. Testers can make claims based on interpretations of the testing results, which either the product works under certain situations or it does not work. We can also compare the quality among different products under the same specification, based on results from the same test.

Testing Methods Used For Project:

There is a plethora of testing methods and testing techniques, serving multiple purposes in different life cycle phases. Classified by purpose, software testing can be divided into: Correctness testing, performance tests, reliability testing and security testing. Classified by life-cycle phase, software testing can be classified into the following categories: requirements phase testing, design phase testing, program phase testing, evaluating test results, installation phase testing, acceptance testing and maintenance testing. By scope, software testing can be categorized as follows: unit testing, component testing, integration testing, and system are testing.

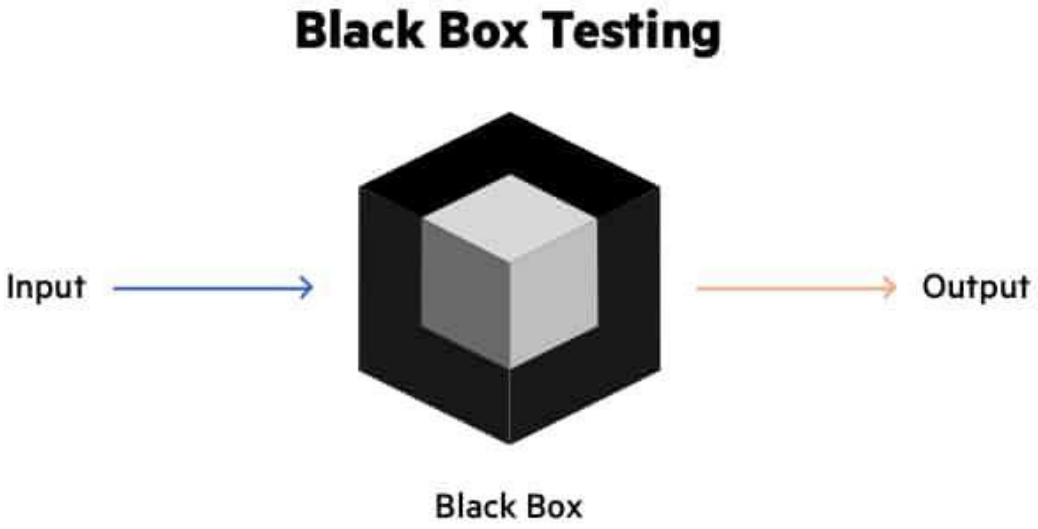
Correctness testing:

Correctness is the minimum requirement of software, the essential purpose of testing. Correctness testing will need some type of oracle, to tell the right behavior from the wrong one. The tester may or may not know the inside details of the software module under test, e.g. control flow, data flow, etc. Therefore, either a white-box point of view or black-box point of view can be taken in testing software. We must note that the black box and white-box ideas are not limited in correctness testing only.

Black Box Testing:

Black box testing is a technique of software testing which examines the functionality of software without peering into its internal structure or coding. The primary source of black box testing is a specification of requirements that is stated by the customer.

In this method, tester selects a function and gives input value to examine its functionality, and checks whether the function is giving expected output or not. If the function produces correct output, then it is passed in testing, otherwise failed. The test team reports the result to the development team and then tests the next function. After completing testing of all functions if there are severe problems, then it is given back to the development team for correction.



Generic Steps of Black Box Testing:

- The black box test is based on the specification of requirements, so it is examined in the beginning.
- In the second step, the tester creates a positive test scenario and an adverse test scenario by selecting valid and invalid input values to check that the software is processing them correctly or incorrectly.
- In the third step, the tester develops various test cases such as decision table, all pairs test, equivalent division, error estimation, cause-effect graph, etc.

- The fourth phase includes the execution of all test cases.
- In the fifth step, the tester compares the expected output against the actual output.
- In the sixth and final step, if there is any flaw in the software, then it is cured and tested again.

White Box Testing:

White box testing is a testing technique, that examines the program structure and derives test data from the program logic/code. The other names of glass box testing are clear box testing, open box testing, logic driven testing or path driven testing or structural testing.

White Box Testing Techniques :

- **Statement Coverage -** This technique is aimed at exercising all programming statements with minimal tests.
- **Branch Coverage -** This technique is running a series of tests to ensure that all branches are tested at least once.
- **Path Coverage -** This technique corresponds to testing all possible paths which means that each statement and branch is covered.

Advantages of White Box Testing :

- Forces test developer to reason carefully about implementation. • Reveals errors in "hidden" code.
- Spots the Dead Code or other issues with respect to best programming practices.

Disadvantages of White Box Testing :

- Expensive as one has to spend both time and money to perform white box testing.
- Every possibility that few lines of code are missed accidentally.

- In-depth knowledge about the programming language is necessary to perform white box testing.

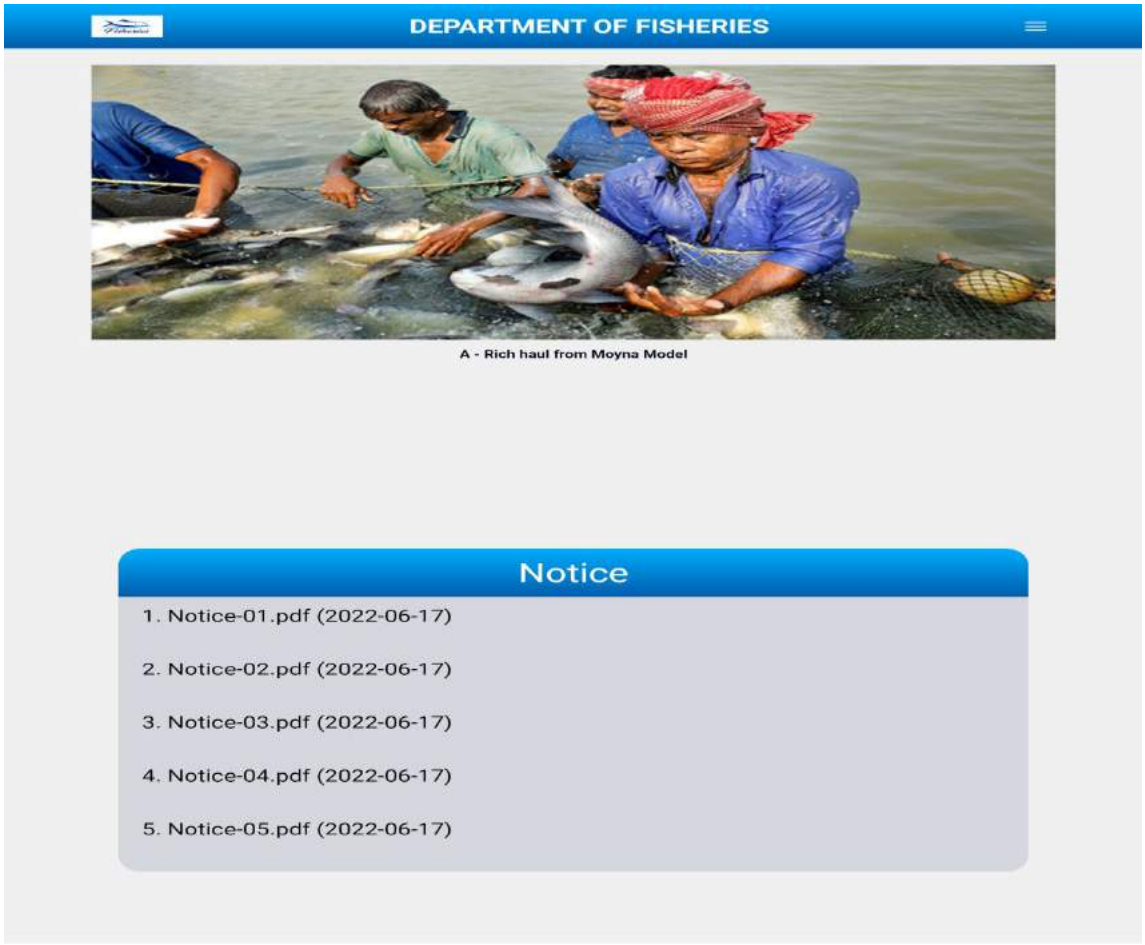
Performance Testing:

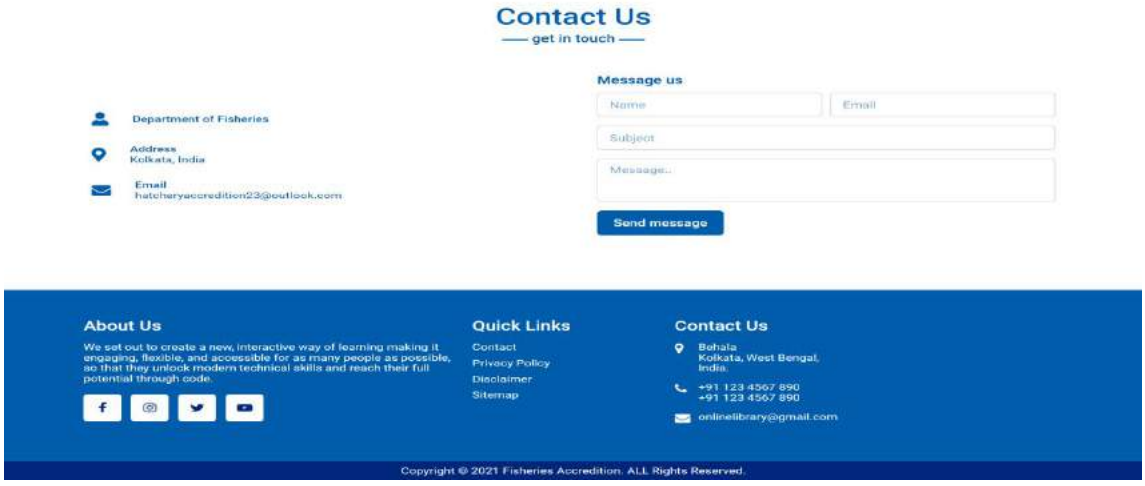
Not all software systems have specifications on performance explicitly. But every system will have implicit performance requirements. The software should not take infinite time or infinite resource to execute. "Performance bugs" sometimes are used to refer to those design problems in software that cause the system performance to degrade. Performance has always been a great concern and a driving force of computer evolution. Performance evaluation of a software system usually includes: resource usage, throughput, and stimulus-response time and queue lengths detailing the average or maximum number of tasks waiting to be serviced by selected resources. Typical resources that need to be considered include network bandwidth requirements, CPU cycles, disk space, disk access operations, and memory usage. The goal of performance testing can be Performance bottleneck identification, performance comparison and evaluation, etc. The typical method of doing performance testing is using a benchmark -- a program, workload or trace designed to be representative of the typical system usage.

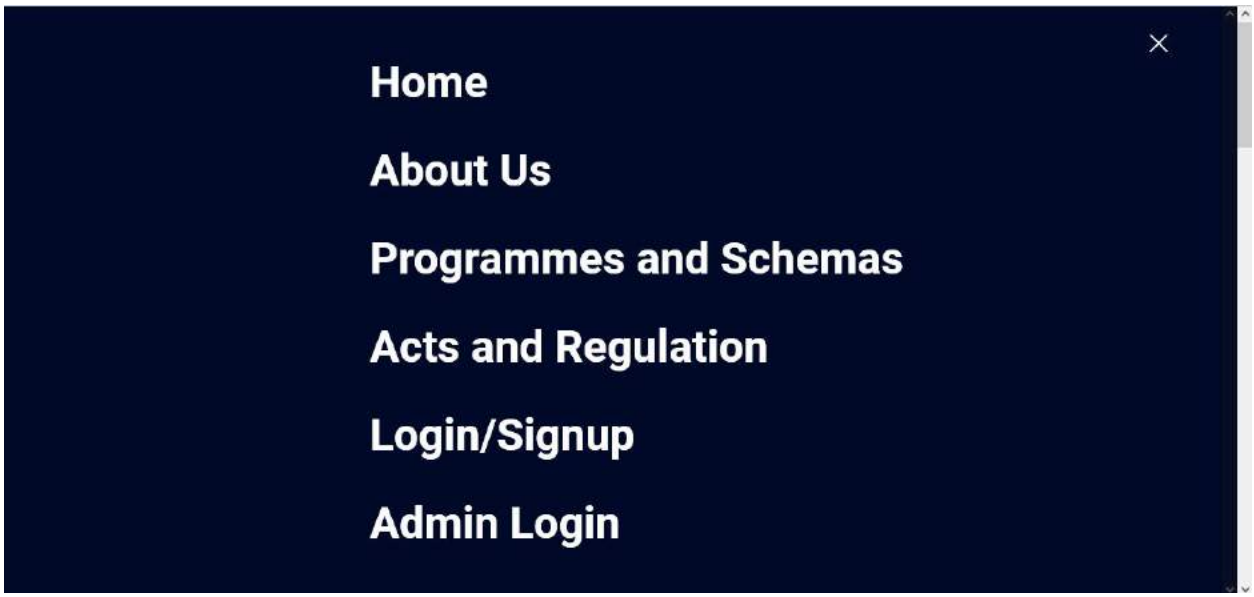
RESULTS AND DISCUSSION:

Results

Home page with navbar:








```
<div class="scroll-up-btn">
      <i class="fas fa-angle-up"></i>
   </div>
   <nav class="navbar">
      <div class="max-width">
         <img src="images/logo.jpg" style="height: 40px;width: 100px; padding-right: 10px;"
class="photo">
         <div class="logo">
            <a href="#">DEPARTMENT OF<span>FISHERIES</span></a></div>
               <button class="toggle-menu">
                  <span></span>
               </button>
      </div>

   <div id="menu" class="">
      <nav class="main-nav">
        <ul>
          <li>
            <a href="index.html">
```

```
            Home
          </a>
        </li>
        <li>
          <a href="about.html">
            About Us
          </a>
        </li>
        <li>
          <a href="programmesandschemas.html">
            Programmes and Schemas
          </a>
        </li>
        <li>
            <a href="#">
              Acts and Regulation
            </a>
          </li>
          <li>
            <a href="signup.php">
              Login/Signup
            </a>
          </li>
      </ul>
    </nav>
  </div>
</nav>
<!-- home section start -->
<section class="home" id="home">
```

```
<div class="max-width">
   <div class="row">
    <div class="home-content">
       <div class="photoslider">
          <div class="slideshow-container">
            <div class="mySlides fade">
              <img src="images/slider1.jpg" class="photo">
              <figcaption>Application of feed for increasing productivity</figcaption>
            </div>
            <div class="mySlides fade">
              <img src="images/slider2.jpg" class="photo">
              <figcaption>A - Rich haul from Moyna Model</figcaption>
            </div>
            <div class="mySlides fade">
              <img src="images/slider3.jpg" class="photo">
              <figcaption>Brackish water shrimp farming</figcaption>
            </div>
            <div class="mySlides fade">
             <img src="images/slider4.jpg" class="photo">
             <figcaption>Crab Fattening - A new avenue for coastal aqua culture</figcaption>
           </div>
           <div class="mySlides fade">
             <img src="images/slider5.jpg" class="photo">
             <figcaption>Induced breeding for quality fish seed production</figcaption>
           </div>
           <div class="mySlides fade">
             <img src="images/slider6.jpg" class="photo">
             <figcaption>Ornamental fish farming by women S.H.G</figcaption>
           </div>
```

```
                <br>
                <div style="text-align:center">
                  <span class="dot"></span>
                  <span class="dot"></span>
                  <span class="dot"></span>
                  <span class="dot"></span>
                  <span class="dot"></span>
                  <span class="dot"></span>
                 </div>
               </div>
             </div>
             </div>
         </div>
       </div>
  </div>
</section>
<section class="noticeSection">
  <div class="noticeHead">
    <h1>Notice</h1>
  </div>
  <div class="notice">
    <div class="dl">
      <?php
        foreach ($posts as $post)
      {?>
          <a href='notices/<?php echo $post['Notice'] ?>' target='_blank'>
            <?php echo $i++ .'. '. $post['Notice'] ?>
            (<?php echo $post['Date'] ?>)
          </a>
```

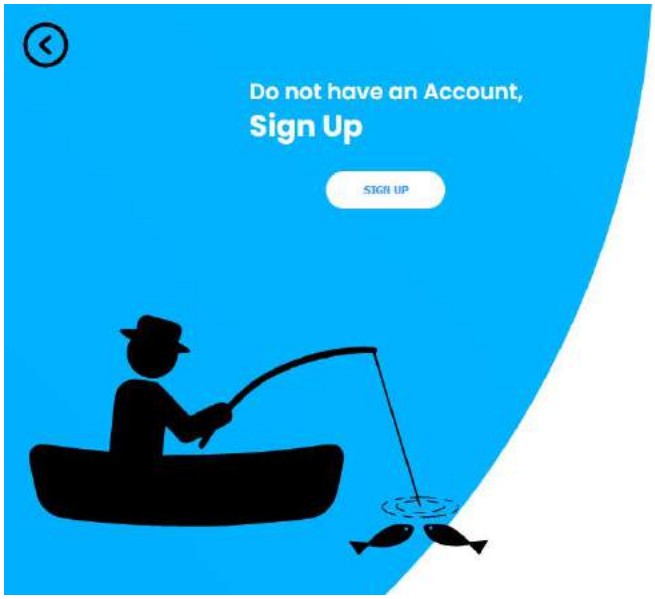
```
      <?php
      }?>
    </div>
  </div>
</section>
<!-- contact section start -->
<section class="contact" id="contact">
   <div class="max-width">
      <h2 class="title">Contact Us</h2>
      <div class="contact-content">
         <div class="column left">
            <div class="icons">
               <div class="row">
                  <i class="fas fa-user"></i>
                  <div class="info">
                     <div class="head">Department of Fisheries</div>
                  </div>
               </div>
               <div class="row">
                  <i class="fas fa-map-marker-alt"></i>
                  <div class="info">
                     <div class="head">Address</div>
                     <div class="sub-title">Kolkata, India</div>
                  </div>
               </div>
               <div class="row">
                  <i class="fas fa-envelope"></i>
                  <div class="info">
                     <div class="head">Email</div>
```

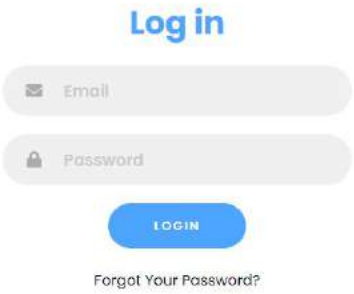
```
                        <div class="sub-title">hatcheryaccredition23@outlook.com</div>
                    </div>
                </div>
            </div>
            <div class="column right">
                <div class="text">Message us</div>
                <form class="contact-form" action="feed.php" method="POST">
                    <div class="fields">
                        <div class="field name">
                            <input type="text" class="fullname" placeholder="Name" name="name">
                        </div>
                        <div class="field email">
                            <input type="text" class="email-input" placeholder="Email" name="email">
                        </div>
                    </div>
                    <div class="field">
                        <input type="text" class="subject" placeholder="Subject" name="subject">
                    </div>
                    <div class="field textarea">
                        <textarea class="message" cols="30" rows="10" placeholder="Message.."
name="message"></textarea>
                    </div>
                    <div class="button-area">
                        <button class="send-msg" type="submit" name="send">Send message</button>
                    </div>
                </form>
            </div>
        </div>
```

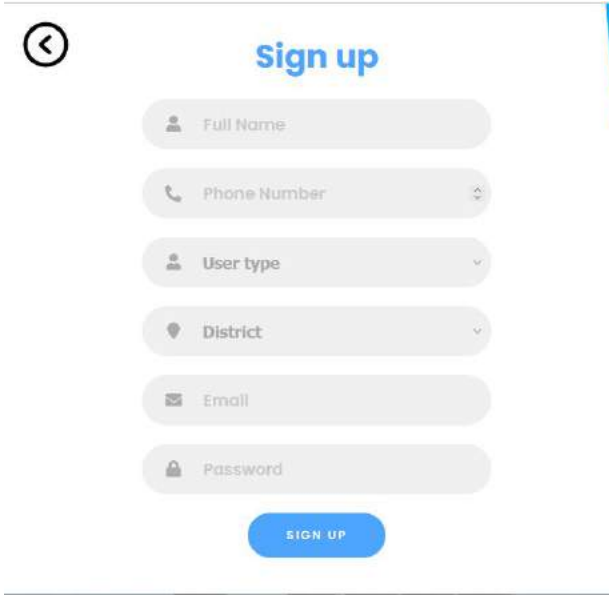
```
    </div>
  </section>
  <!-- footer section start -->
   <footer>
     <div class="container">
        <div class="sec aboutus">
           <h2>About Us</h2>
           <p>We set out to create a new, interactive way of accrediton making it faster, flexible, and accessible for as many people as possible, so that they unlock modern technical skills and reach their full potential.</p>
           <ul class="sci">
              <li><a href="#"><i class="fa fa-facebook" aria-hidden="true"></i></a></li>
              <li><a href="#"><i class="fa fa-instagram" aria-hidden="true"></i></a></li>
              <li><a href="#"><i class="fa fa-twitter" aria-hidden="true"></i></a></li>
              <li><a href="#"><i class="fa fa-youtube-play" aria-hidden="true"></i></a></li>
           </ul>
        </div>
        <div class="sec quicklinks">
           <h2>Quick Links</h2>
           <ul>
              <li><a href="#contact">Contact</a></li>
              <li><a href="#">Privacy Policy</a></li>
              <li><a href="#">Disclaimer</a></li>
              <li><a href="sitemap.html">Sitemap</a></li>
           </ul>
        </div>
        <div class="sec contact">
           <h2>Contact Us</h2>
           <ul class="info">
              <li>
```

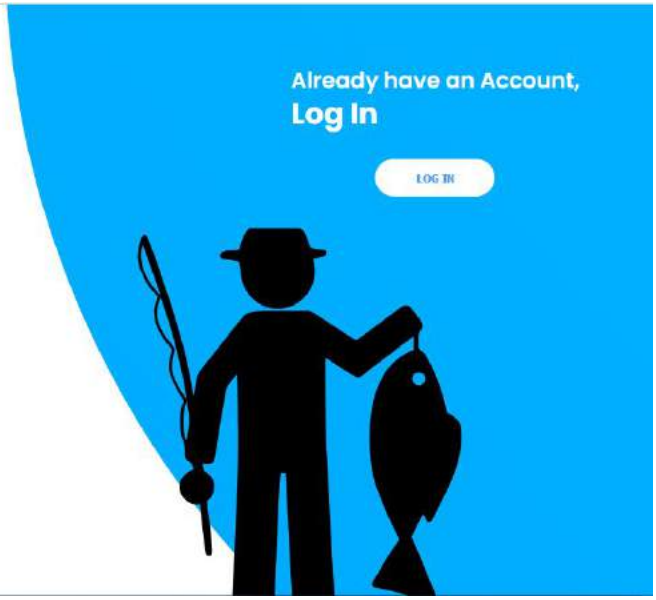
```
                    <span><i class="fa fa-map-marker" aria-hidden="true"></i></span>
                    <span>Behala<br>Kolkata, West Bengal,<br>India.</span>
                </li>
                <li>
                    <span><i class="fa fa-phone" aria-hidden="true"></i></span>
                    <p><a href="tel:+9112345678900">+91 123 4567 890</a><br>
                      <a href="tel:+9112345678900">+91 123 4567 890</a></p>
                </li>
                <li>
                    <span><i class="fa fa-envelope" aria-hidden="true"></i></span>
                    <p><a href="mailto:onlinelibrary@gmail.com">onlinelibrary@gmail.com</a></p>
                </li>
            </ul>
        </div>
    </div>
</footer>
<div class="copyrightText">
    <p>Copyright © 2021 Fisheries Accredition. ALL Rights Reserved.</p>
</div>
```

Signup page/Login Page:










```
<div class="return">
    <a href="index.php">
      <img src="images/return.svg" class="returnImg">
      <img src="images/returnHover.svg" class="ImgHover">
    </a>
  </div>
  <div class="container">
    <div class="forms-container">
```

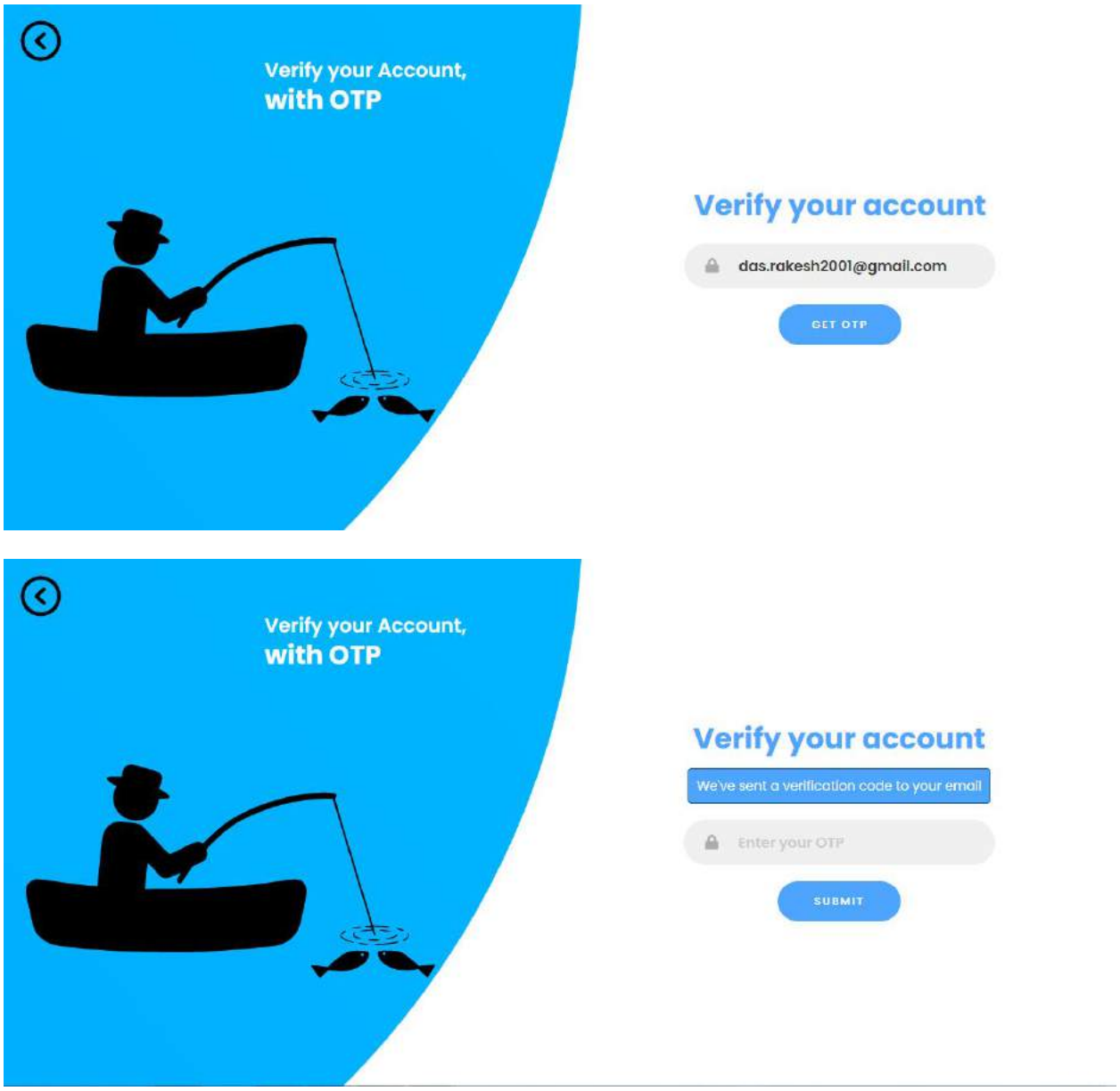
```
<div class="signin-signup">
  <form action="login.php" class="sign-in-form" method="POST">
    <h2 class="title">Log in</h2>
    <?php if($msg!=""){
       if($msg=="Registration Successful and Login Now"){
       ?><div class="succ-text" style="">
       <?php
       echo $msg
       ?> </div>
    <?php }
     else{
    ?><div class="error-text" style="">
       <?php
       echo $msg
       ?> </div>
    <?php }}?>
    <div class="input-field">
      <i class="fas fa-envelope"></i>
      <input type="email" name="email" placeholder="Email" />
    </div>
    <div class="input-field">
      <i class="fas fa-lock"></i>
      <input type="password" name="password" placeholder="Password" />
    </div>
    <input type="submit" value="Login" class="btn solid" />
    <p class="social-text"><a style="text-decoration: none" href="forgetpass.php">Forgot Your
Password?</a></p>
  </form>
  <form action="signupreq.php" class="sign-up-form" method="POST">
```

```
        <h2 class="title">Sign up</h2>

        <?php if($msg!=""){ ?><div class="error-text" style=" color: #fff;background:
#4ea5ff;padding: 8px 10px;border-radius: 5px;margin-bottom: 10px;border: 1px solid rgb(0, 69,
133);"><?php echo $msg?> </div><?php }?>

        <div class="input-field">

          <i class="fas fa-user"></i>

          <input type="text" name="name" placeholder="Full Name" required />

        </div>

        <div class="input-field">

          <i class="fas fa-phone fa-rotate-90"></i>

          <input type="number" name="phn" placeholder="Phone Number" required />

        </div>

        <div class="input-field">

          <i class="fas fa-user"></i>

          <select class="userType" name="type" required>

            <option value="placeholder">User type</option>

            <option>Hatchery Owner</option>

            <option>Level-1 Officer</option>

            <option>Level-2 Officer</option>

            <option>Level-3 Officer</option>

            </select>

        </div>

        <div class="input-field">

          <i class="fas fa-map-marker"></i>

          <select class="district" name="district" required>

            <option value="placeholder">District</option>

            <option>Alipurduar</option>

            <option>Bankura</option>

            <option>Birbhum</option>

            <option>Cooch Behar</option>
```

```
    <option>Dakshin Dinajpur</option>
    <option>Darjeeling</option>
    <option>Hooghly</option>
    <option>Howrah</option>
    <option>Jalpaiguri</option>
    <option>Jhargram</option>
    <option>Kalimpong</option>
    <option>Kolkata</option>
    <option>Malda</option>
    <option>Murshidabad</option>
    <option>Nadia</option>
    <option>North 24 Parganas</option>
    <option>Paschim Bardhaman</option>
    <option>Paschim Medinipur</option>
    <option>Purba Bardhaman</option>
    <option>Purba Madinipur</option>
    <option>Purulia</option>
    <option>South 24 Parganas</option>
    <option>Uttar Dinajpur</option>
    </select>
</div>
<div class="input-field">
  <i class="fas fa-envelope"></i>
  <input type="email" placeholder="Email" name="email" required/>
</div>
<div class="input-field">
  <i class="fas fa-lock"></i>
  <input type="password" placeholder="Password" name="password" required />
</div>
```

```
          <input type="submit" class="btn" value="Sign up" />
        </form>
      </div>
    </div>
    <div class="panels-container">
      <div class="panel left-panel">
        <div class="content">
          <h3>Do not have an Account,</h3><h1>Sign Up</h1><br>
          <button class="btn transparent" id="sign-up-btn">
            Sign up
          </button>
        </div>
        <img src="images/SignUp-Image.svg" class="image" alt="" />
      </div>
      <div class="panel right-panel">
        <div class="content">
          <h3>Already have an Account,</h3><h1>Log In</h1><br>
          <button class="btn transparent" id="sign-in-btn">
            Log in
          </button>
        </div>
        <img src="images/SignIn-Image.svg" class="image" alt="" />
      </div>
    </div>
  </div>
```

OTP Verification:



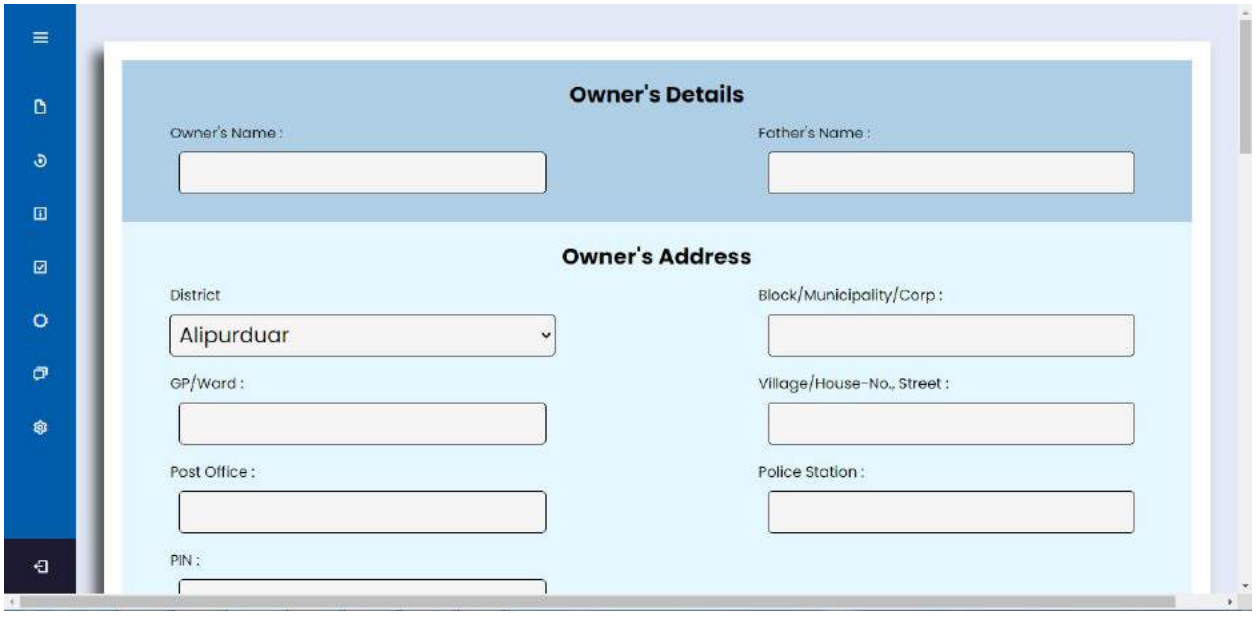

```
<div class="return">
    <a href="sesdestroy.php">
      <img src="images/return.svg" class="returnImg">
      <img src="images/returnHover.svg" class="ImgHover">
    </a>
  </div>
  <div class="container">
    <div class="forms-container">
```

```
        <div class="signin-signup">
          <form action="mail.php" class="sign-in-form" method="POST">
            <h2 class="title">Verify your account</h2>
            <?php if($msg!=""){ ?><div class="error-text" style="text-align: center; color:
#fff;background: #4ea5ff;padding: 8px 10px;border-radius: 5px;margin-bottom: 10px;border: 1px
solid rgb(0, 69, 133);"><?php echo $msg?> </div><?php }?>
            <div class="input-field">
              <i class="fas fa-lock"></i>
              <input type="email" name="email" value="<?php echo $email;?>" readonly/>
            </div>
            <input type="submit" value="Get OTP" class="btn solid" />
          </form>
        </div>
      </div>
      <div class="panels-container">
        <div class="panel left-panel">
          <div class="content">
            <h3>Verify your Account,</h3><h1>with OTP</h1><br>
          </div>
          <img src="images/SignUp-Image.svg" class="image" alt="" />
        </div>
      </div>
    </div>
<?php
session_start();
$email=$_POST['email'];
$code = rand(111111,999999);
$_SESSION['otp']= $code;
$subject = "Email Verification Code";
$message = "Your verification code is $code";
```

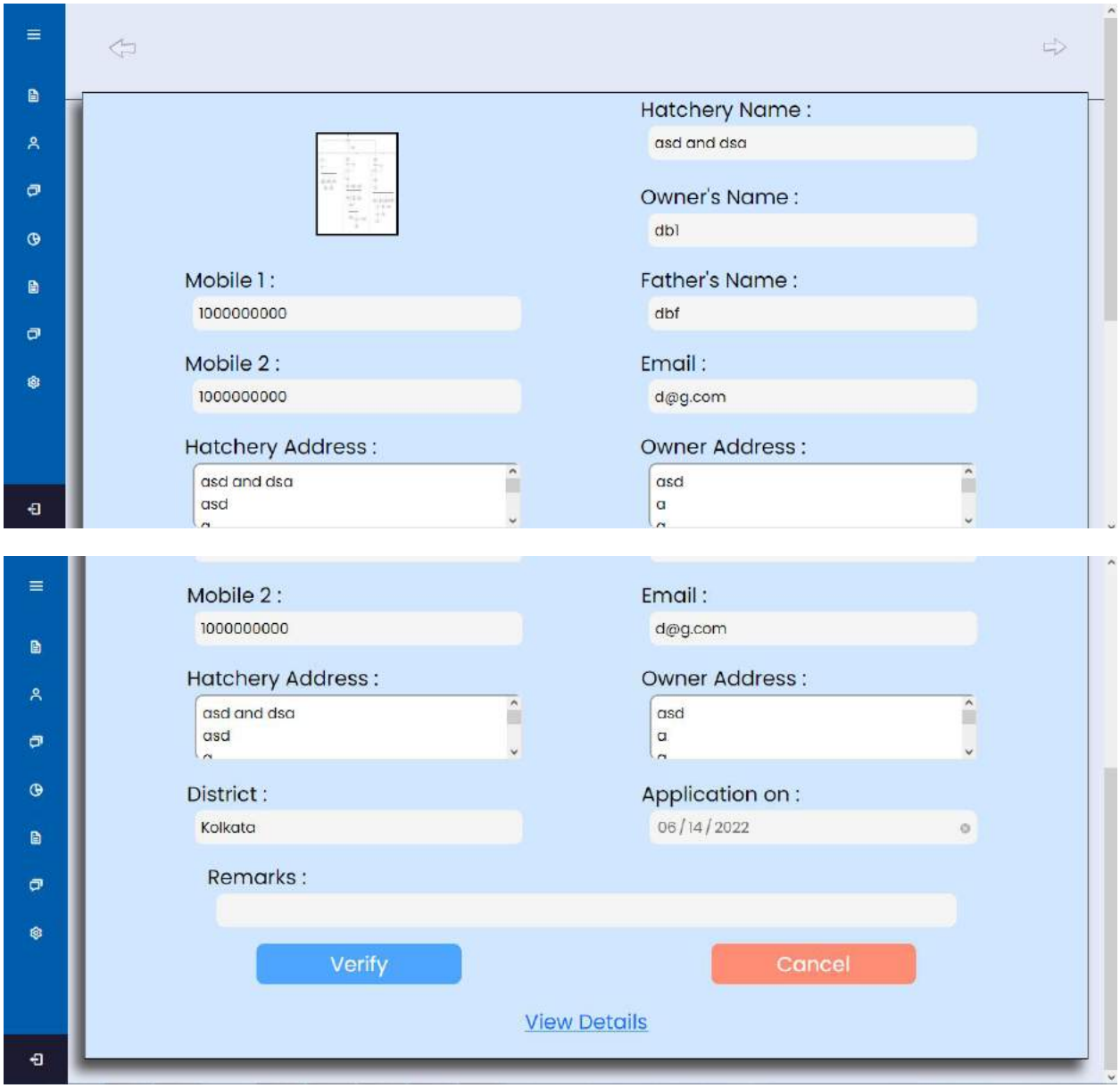
```
$sender = "From: hatcheryaccredition@outlook.com";
if(mail($email, $subject, $message, $sender))
{
   header("Location:otpauthorization.php?msg=We've sent a verification code to your email");
}
else
{
   session_unset();
   session_destroy();
   header("Location:signup.php?msg=Failed while sending code!Try after some time");
}
<div class="return">
     <a href="sesdestroy.php">
       <img src="images/return.svg" class="returnImg">
       <img src="images/returnHover.svg" class="ImgHover">
     </a>
   </div>
   <div class="container">
     <div class="forms-container">
       <div class="signin-signup">
         <form action="verify.php" class="sign-in-form" method="POST">
           <h2 class="title">Verify your account</h2>
           <?php if($msg!=""){ ?><div class="error-text" style="text-align: center; color:
#fff;background: #4ea5ff;padding: 8px 10px;border-radius: 5px;margin-bottom: 10px;border: 1px
solid rgb(0, 69, 133);"><?php echo $msg?> </div><?php }?>
           <div class="input-field">
             <i class="fas fa-lock"></i>
             <input type="password" name="otp" placeholder="Enter your OTP" />
           </div>
           <input type="submit" value="Submit" class="btn solid" />
```

```
      </form>
    </div>
  </div>
  <div class="panels-container">
    <div class="panel left-panel">
      <div class="content">
        <h3>Verify your Account,</h3><h1>with OTP</h1><br>
      </div>
      <img src="images/SignUp-Image.svg" class="image" alt="" />
    </div>
  </div>
</div>
```

Fresh Accreditation:

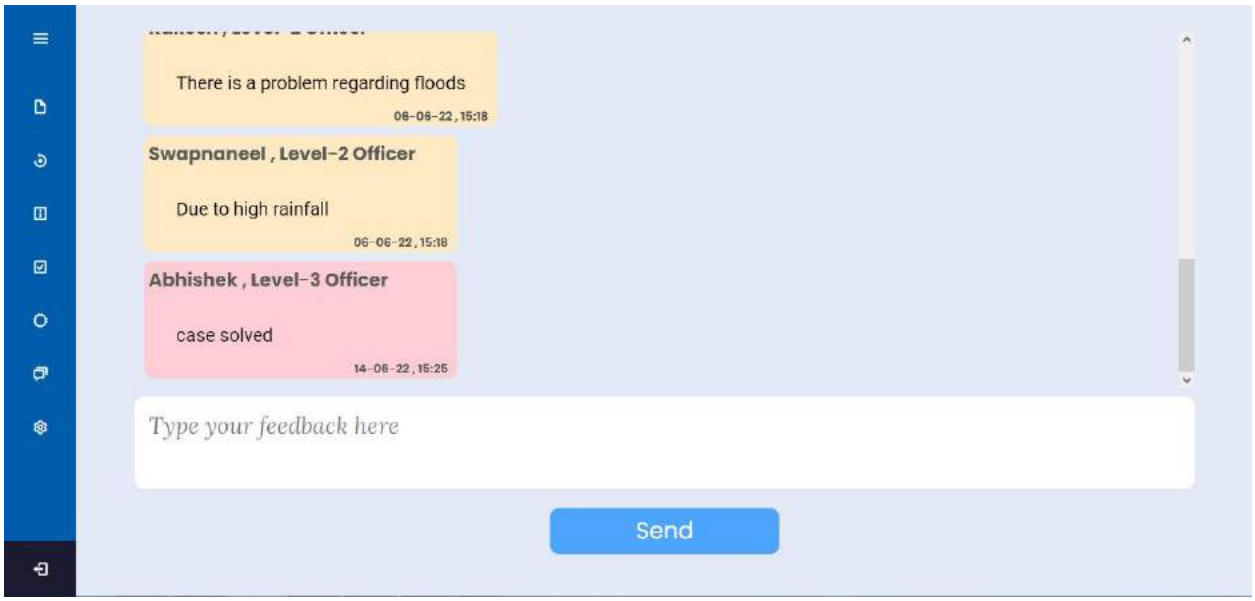


Verification of form by employees:

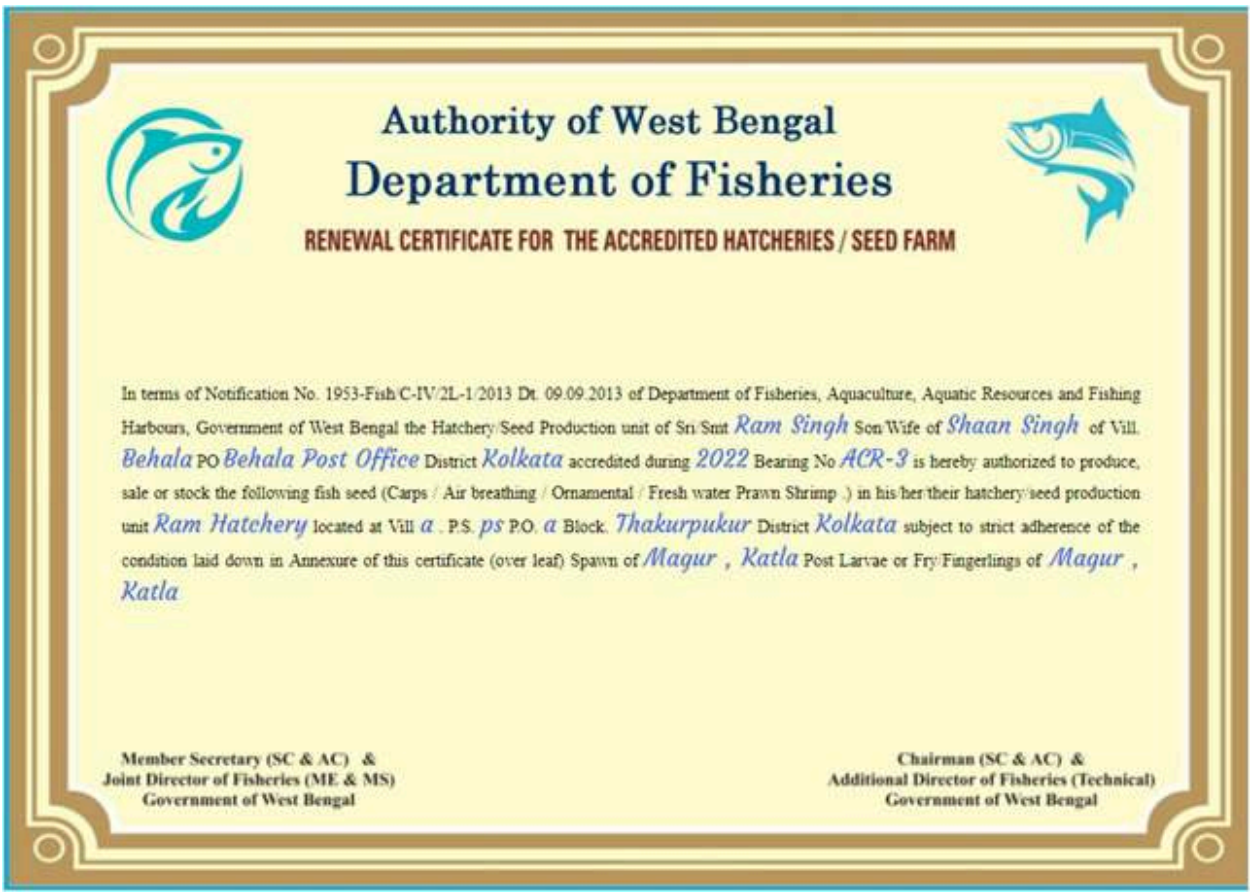


Tracking of Application:

Chat application between user and employee:



Accreditation Certificate:



Authority of West Bengal

Department of Fisheries

RENEWAL CERTIFICATE FOR THE ACCREDITED HATCHERIES / SEED FARM

In terms of Notification No. 1953-Fish/C-IV/2L-1/2013 Dt. 09.09.2013 of Department of Fisheries, Aquaculture, Aquatic Resources and Fishing Harbours, Government of West Bengal the Hatchery/Seed Production unit of Sri/Smt *Ram Singh* Son/Wife of *Shaan Singh* of Vill. *Behala* PO *Behala Post Office* District *Kolkata* accredited during *2022* Bearing No *ACR-3* is hereby authorized to produce, sale or stock the following fish seed (Carps / Air breathing / Ornamental / Fresh water Prawn Shrimp .) in his/her/their hatchery/seed production unit *Ram Hatchery* located at Vill *a* . P.S. *ps* P.O. *a* Block. *Thakurpukur* District *Kolkata* subject to strict adherence of the condition laid down in Annexure of this certificate (over leaf) Spawn of *Magur* , *Katla* Post Larvae or Fry/Fingerlings of *Magur* , *Katla*

Member Secretary (SC & AC) &
Joint Director of Fisheries (ME & MS)
Government of West Bengal

Chairman (SC & AC) &
Additional Director of Fisheries (Technical)
Government of West Bengal

Serial No. :

ANNEXURE

(General instructions for the Certificate Holder)

1. (i) The certificate holder shall maintain separately for each place of business mentioned above, a Register showing correctly :
   (a) Opening stock of seed each day :
   (b) The quantities produced on each day showing the place(s) of fishery and the total value in respect of each species of fish :
   (c) The quantities of seed sold or otherwise disposed of an each day and the sale price of each species of fish seed (spawn / fry /fingerlings) by size :
   (d) Closing stock of each day including variety :
   (ii) The certificate holder shall complete his accounts for each day on the day to which they relate, unless prevented by reasonable cause, the burden of proving which shall rest on him.
2. The Certificate holder shall give all facilities at the place of business centre including fish seed producing centre at all reasonable time to the Certifying Authority or any Officer authorized by him for inspection of his accounts, books, registers or any other documents about the transactions relating to his business.
3. The Certificate holder shall comply with any directions that may be given to him by the State Government or any officer duly authorized, in regard to production, brooder management, infrastructure facilities, water quality, sale of fish seed and in regard to the language in which the returns, receipts, mentioned in clause 2 shall be written and the Registers mentioned in clause 1 shall be maintained and authenticated.
4. The Certificate holder shall not fraudulently or willfully fail, neglect or refuse to maintain regular supply of fish seed for sale or suspend his business. If this certificate is suspended or cancelled it shall be delivered to the Issuing Authority within three days of order of suspensions or cancellation of the certificate.
5. The Seed producers holding the certificate shall not offer for sale or store any fish seed which is dead, deformed or decomposed, or unfit for aquaculture practices. The equipment for oxygen packing will be arranged for every transaction for sale of seed.
6. The Certificate holder shall use the standard metric weights / container / bati in his transactions.
7. The Certificate holder shall not refuse to sale fish seed lying in his stock to any customer.

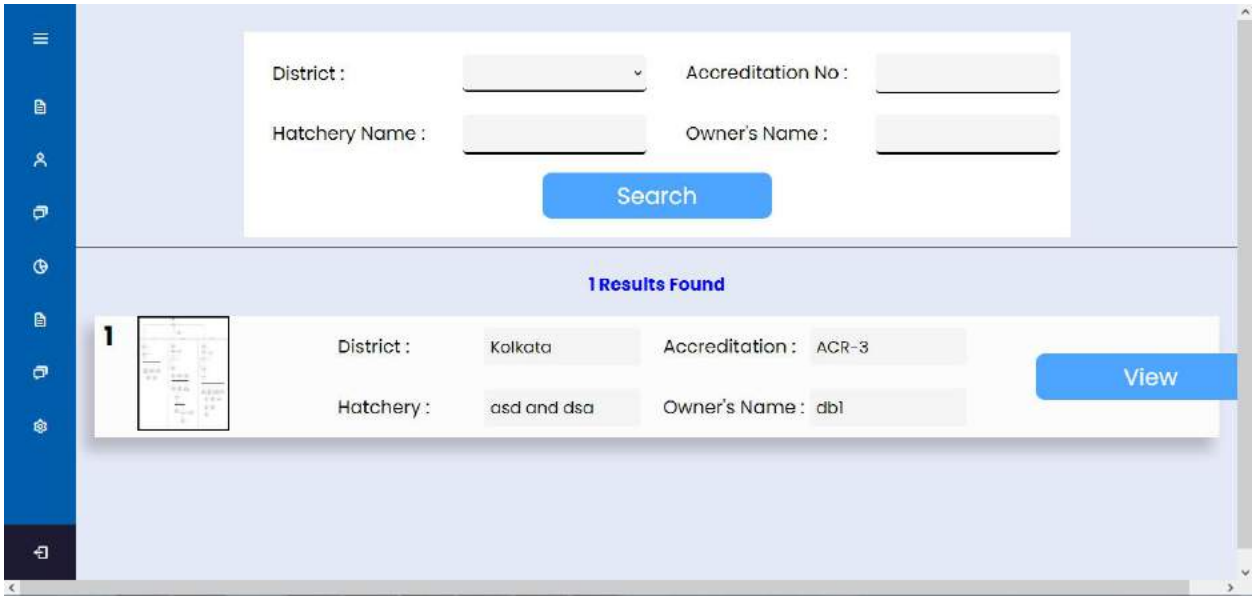
9. This Certificate shall be attached to the application for next renewal.
10. The Certificate will be renewed subject to maintaining the terms & conditions as laid down by the competent authority.
11. Unauthorized breeding and seed production of any fish/ shell fish which are not approved by the competent authority at recognized hatchery / seed producing centre, the same one shall be tantamount to cancellation of the certificate by the authority.

Sd/
Member Secretary (SC & AC) &
Joint Director of Fisheries (ME & MS)
Government of West Bengal

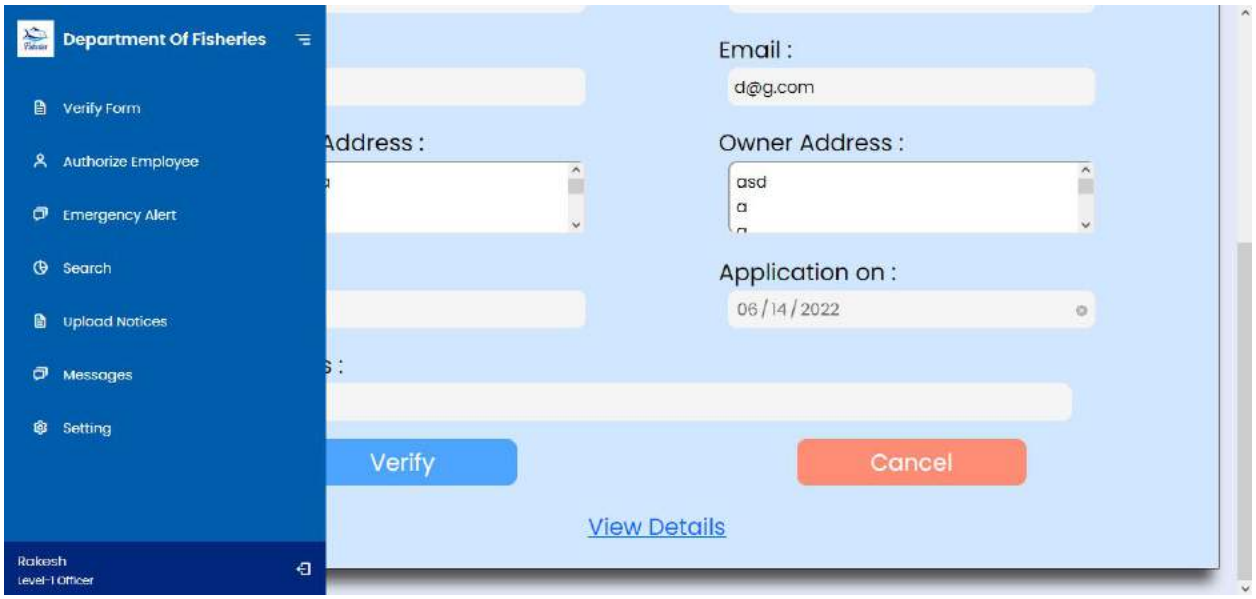
Sd/-
Chairman (SC & AC) &
Additional Director of Fisheries (Technical)
Government of West Bengal

Authorize Employee:

Search accreditation data using district hatchery name owners name and accreditation no:

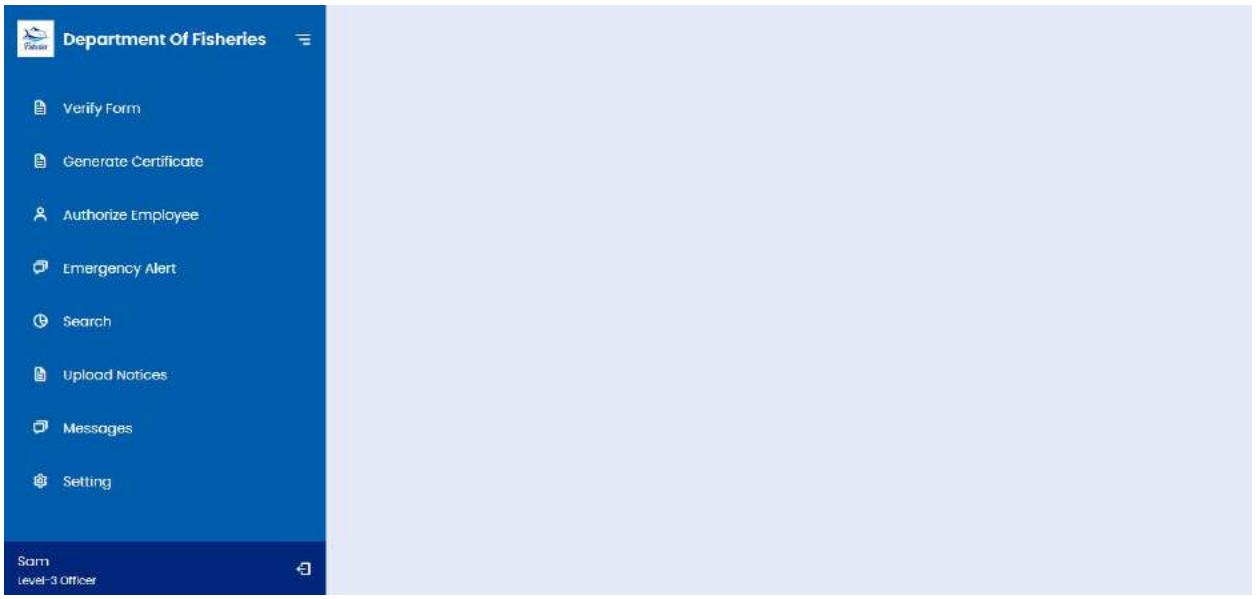


Level-1 Employee Dashboard:

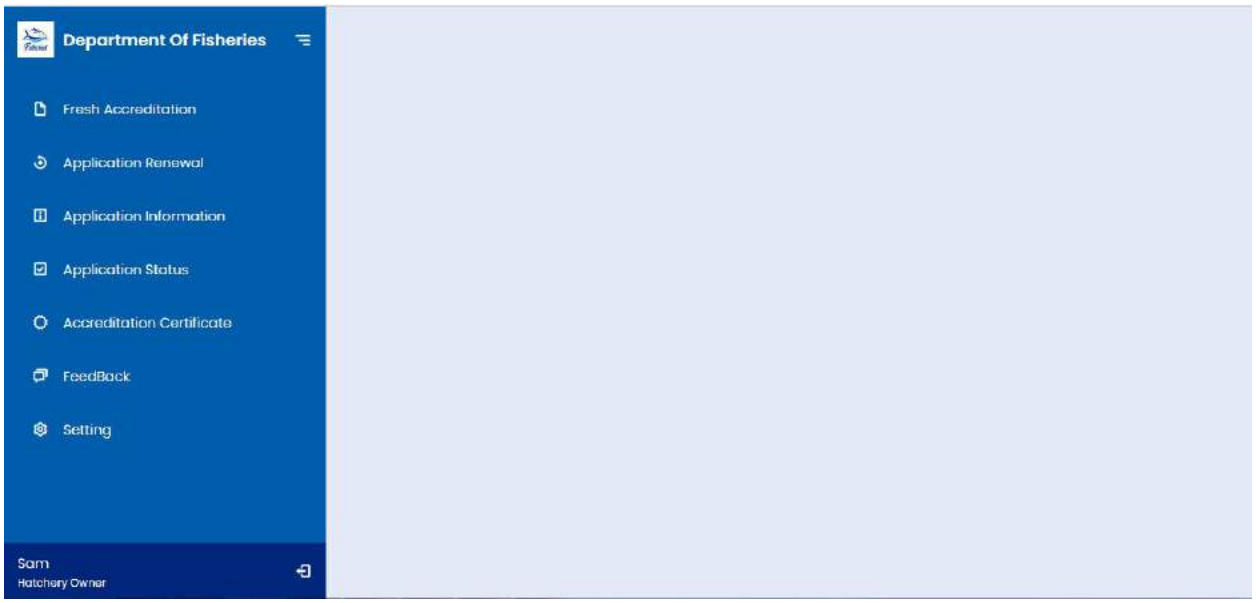


Level-2 Employee Dashboard:

Level-3 Employee Dashboard:

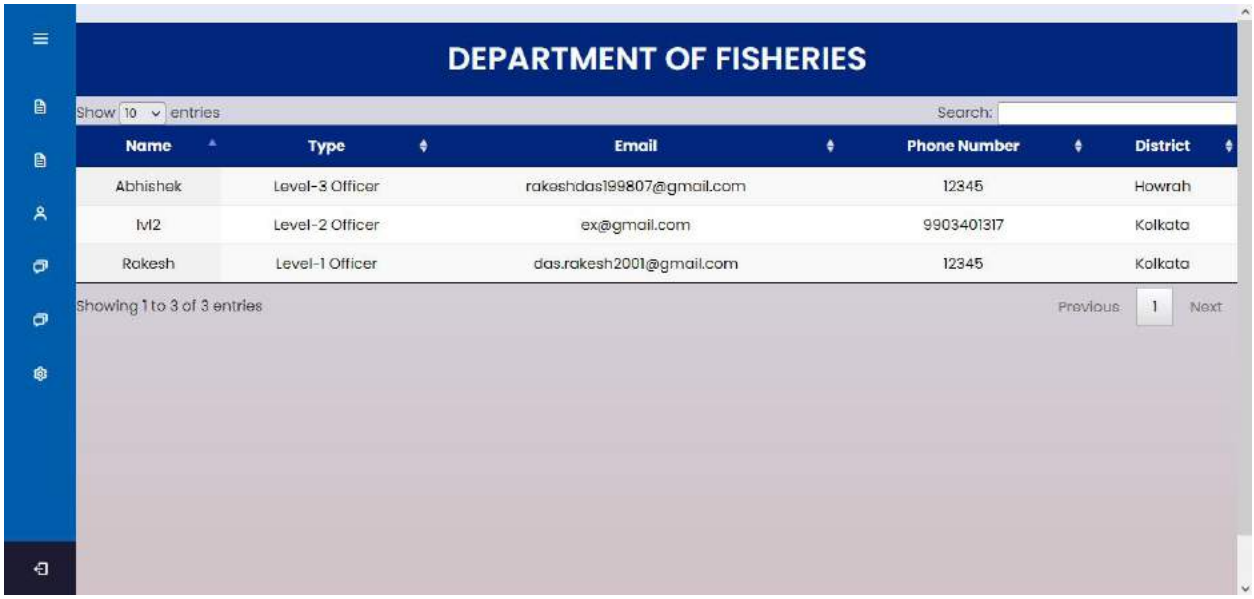


User Dashboard:



Admin Dashboard:

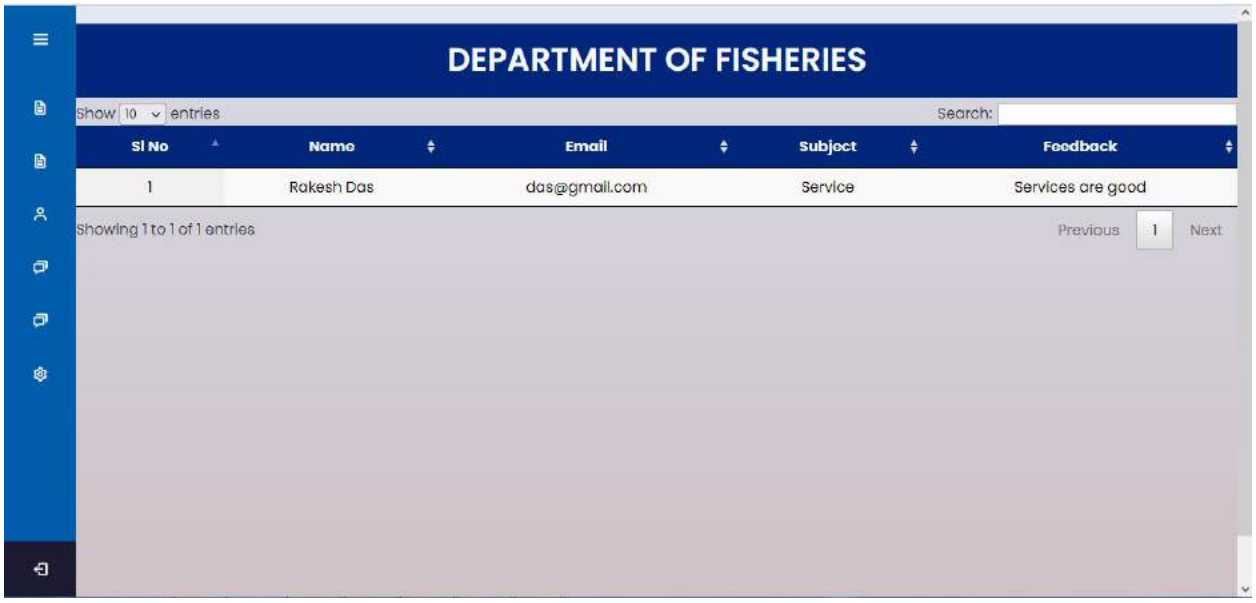
View All Employee:



View All Users:

View Logins:

View Feedback:



Discussion

The objective of the project was to create a domain for both the Fisheries Officials and Hatchery Owners to make it the process of Accreditation comfortable. Though there are limitations in this system we have tried our utmost to provide any and every possible feature that can be included for a hassle free and smooth experience. We will

be further looking to improve our project in the future and keep it up-to-date with the latest standards and practice of web design and user comfort. Each one of us are thrilled on the completion of the project and are very satisfied with the level of commitment everyone has shown in the past few months. We look forward to being part of many such teams and complete many such beautiful and innovative projects.

Limitations of the System

- As a large number of fishermen or Hatchery Owners come from very poor households they might find it difficult to get into this system as computers and mobile technologies might be unknown to them. Hence proper training must be provided to the users for a comfortable experience
- Internet facilities are still unavailable or are very slow in some remote villages where accessing the website and making requests might take a bit too long.

Maintenance

Maintenance is a very important task & is poorly managed. Times spent and effort required in maintaining software and keeping it operational takes about 40% to 70% of the total cost of the life cycle. "Software maintenance is the activity that includes error corrections, enhancements of capabilities, deletion of obsolete capabilities and optimization." Basically, any work done to change the software after it is in operation is considered to be maintenance. Its purpose is to preserve the value of the software.

Corrective Maintenance

It means modifications made to the software to correct the defects can result from design errors, logic errors, coding errors, data processing errors and system performance errors.

Adaptive Maintenance

It includes modifying the software to match changes in the ever-changing environment. Environment refers to the totality of ll conditions and influences which act from outside upon the software.

E.g. business rules, government policies, work patterns and software/hardware operating platforms.

Perfective Maintenance
It means improving processing efficiency or peformance or restructuring the Software to improve changeability.

Process
The process of maintenance for given software can be divided into four stages as follows:

- Program understanding: It consists of analyzing the program in order to understand it. The ease of understanding the program is primarily affected by complexity and documentation of the program.
- Generate particular maintenance proposal: The ease of generating the maintenance proposal is primarily affected by extensibility of the program.
- Account for ripple effect: If any change is made to any part of the system, it may affect the other parts also. Thus, there is a kind of ripple effect from the location of modification to the other parts of the software. The primary feature affecting the ripple effect is stability.
- Modified program testing: The modified program is to be tested again and again to check that the software has enhanced and reliability is validated.

Models
The models that present for the maintenance of the software are-

- Quick-Fix Model
- Iterative Enhancement Model
- Reuse Oriented Model
- Boehm's Model

CONCLUSION:

This project is successfully completed and works properly according to the need. The frontend of this project has been developed using HTML, CSS, JavaScript, bootstrap and the backend has been developed using PHP, MySQL, jQuery. The system maintains data consistency by avoiding manual error and documents are maintained accurately which reduces the losses that can be made due to various environment features. All the requirement regarding to this problem are solved the needs specified in the problem definition are fulfilled. This project will help all end users as a user-friendly.

Future Scope:

1. Currently we are providing hatchery accreditation for West Bengal only. In future we are going to update so users can see accreditation details for every state in India.

2. Currently our project is web based only. In future we are going to launch it as an application. So that they can use this more comfortably.

3. We will provide more data of service providers, officers and help centres etc. so that user can find all services in their nearby areas.

4. We will update the notices and weather reports regularly in our website so that user can get updated time to time.

5. To be more aware from any hackers, we will try to increase the security of our website.

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We are also thankful to our respected teacher whose guidance helped us to achieve the milestone for this project.