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# Model of Grievance Redressal System using PHP-A Preferred Web Technology

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**Abstract:** *Grievance Redressal System is considered as a platform to obtain and to perform suitable actions on the complaints registered by complainants facilitating timely resolutions on issues raised by them and ensuring effective and efficient working of the redressal process. Implementation of smart web portal for grievance processing bridges the gap between the aggrieved person and action-takers and thus helps to pursue timely resolution of grievances, while maintaining affordability and ease to the users.*

*In this paper, we focus on the development and the execution of the above mentioned web portal which can be incorporated for the same. This paper put an insight into the incorporation of the major functionalities and the problem areas. Our focus will be on the major activities of Grievance Handling Module which is to receive various types of grievances from complainants, facilitate speedy processing of Grievances received, updating the status of Grievances as and when required, informing the complainant about the action taken. The entire solution is developed using web technologies and data operation is performed over a web server. Functionalities and implementation of PHP is analyzed and the shortcomings are overcome accordingly.*

**Keywords:** *Redressal, Complainants, Server-side scripting, Command-line scripting, SQL injection.*

## I. INTRODUCTION

A grievance is considered as oppression or hardships which are suffered by a person in any organization due to unconventional circumstances or unhealthy working environment. Various reasons are associated for the raising of complaints by an individual, and numerous methods are considered for timely and successful redressal of complaints. Grievance Redressal System acts as a medium between a particular organization and aggrieved person for taking prompt actions on any issue raised by them. Redressal of the grievances is regarded as a parameter to measure the efficiency of an organization. For any organization to be responsive and employee friendly, it should have a well-versed mechanism of issue redressal with minimum levels of the concerned department in the escalation matrix. We are developing a grievance module which is intended to capture complaints/suggestions from the complainant. Any user can file complaints by logging in the portal through their registration id. Moreover, users can check the status of their present or past complaints in the status box. Previously, the complaint redressal procedure is time consuming due to the absence of a proper platform and the complaint is monitored at various levels in an organization. The platform ensures the direct communication between the complainant and the case officer or facilitation officer of a particular department through admin. Case officer sends the verification mail to ensure the grievance is genuine and all the documents/proofs are valid and status is updated from Processing to Accepted. This data can be easily viewed and modified whenever required. A proper handbook and information regarding the process of redressal in various departments is also provided to maintain the accuracy and transparency of the entire procedure. In this paper we also talk about PHP or Hypertext preprocessor which is undoubtedly one of the most trusted and effective web development frameworks for building dynamic web page designs, website development and generating web applications.

## II. OBJECTIVE

- A. Reduction in paperwork.
- B. Time of operation is also saved.
- C. Reliability, Flexibility & Accuracy will increase.
- D. Manual efforts are reduced.
- E. Easy maintenance of Data.
- F. Secure data due to password protection & encryption.
- G. 24\*7 availability that makes the system user friendly .
- H. Increased confidentiality since the complainant can file complaints without any oppression or intimidation.
- I. All the procedures starting from the complaint registration to the action taken & its closure are being automated.

### III.LITERATURE SURVEY

A. In an article published in 'INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, ECONOMICS & MANAGEMENT' certain findings are

- 1) Grievance is defined as dissatisfaction of workers either as an individual or in a group emerging out due to poor working environment, policies and a number of other factors.
- 2) An effective Grievance handling mechanism is required to ensure productivity in any organization and simple enough for an average aggrieved person to grasp.
- 3) Grievance model is built upon the model Grievance procedure i.e. a hierarchical model built from the aggrieved employee (floor level) to the highest level of Organization.

B. "Compilation of Guidelines for Redress of Public Grievances", findings are

- 1) Need proper integration of the decision making process with the Grievance handling mechanism.
- 2) Careful analysis of Grievances must be done in order to ascertain problem areas.
- 3) A Grievance officer should be designated on the basis of his/her suitability after proper assessment, reporting directly to the head of the organization.
- 4) The officer has the authority to demand files and proof that is needed at any time, and the power to make the final decision with approval of the head of the department, and can also communicate the final result.

C. During the work on "complaint management system" during an internship period in DRDO, it was observed

Since the system was built up on asp.net, there were several lacking areas due to its low compatibility, lack of object oriented features, time consumption and overhead due to its COM architecture. It was proposed that instead of asp.net that the system should be built upon PHP which is more preferable as it overcame several shortcomings in the previous system.

### IV.APPROACH.

We have developed a Grievance Redressal System which is mainly focusing on entities:  
Complainant, Admin and Case Officer.

A. User/ Complainant

The User module handles the activities of the users registered in the system. The user is a complainant who can easily login to the system by specifying the credentials (username and password). After login, the user registers a complaint to a particular department and checks the status. The user should be able to:

- 1) View and update profile: Users can view their profile and make updates if needed.
- 2) Register complaint: Users can register their complaints to a particular department.
- 3) Check complaint status: Users are able to view their complaint status to know the action taken.
- 4) Renew complaint: Users can reopen their complaints which have been closed by the department head after they are solved.
- 5) Send feedback: Users can send feedback to different departments for the future enhancements.

B. Case Officer

With the help of proper credentials department heads can login to the grievance system. All the registered complaints will be displayed in their status box. After analyzing the complaint and related documents, required action has been taken. This entity should be able to:

- 1) View Complaint: The department head can view all the complaints received by their department.
- 2) Approve Complaint: Head has to view and approve the complaint before processing it.
- 3) Change Status: The head can change the status of each complaint based on the action taken.
- 4) Close Complaint: The head can close any complaints that have been solved.
- 5) View Feedback: The Department head can view the feedback sent by the users.

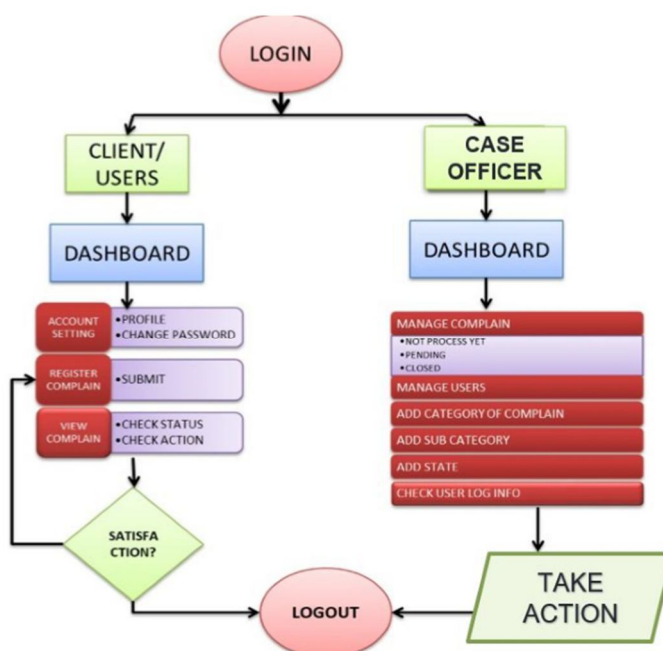


Fig.1Flow of our web application

## V. IMPLEMENTING OUR WEB APPLICATION WITH THE HELP OF PHP

We have developed our web application based on PHP and on the basis of the features, application of this web application we have identified various advantages and shortcomings of PHP. We have also tried to find solutions for the same.

### A. Working of PHP

PHP is a server-side scripting language and its interpretation takes place at server side. When we create a website or any other web application say index.php .Then firstly browser requests the server to interpret the index.php file and then returns it after interpretation.

- 1) *Server Used in Our Web Application:* Apache HTTP Server-Apache is an open-source web server application that helps to deliver web content to be accessed through the internet. Apache played a key role in initial growth of the World Wide Web. It has an ability to host one or more HTTP-based websites. This software is written in C language and is used mostly in Unix-like systems.

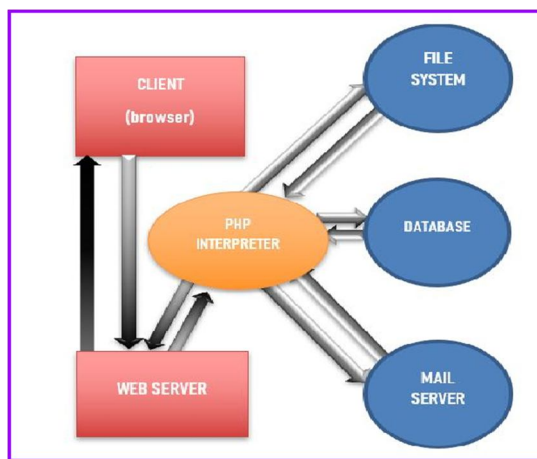


Fig.2 Flow of PHP



## B. PHP Development

*A Preferred Web Technology:* Besides being easy to learn and use, PHP is considered as a stable platform for developing impressive websites. PHP can be used in three primary ways:

- 1) **Server-side scripting:** Server-side scripting is related to the web pages and refers to the PHP code that is executed on the web server before data is passed to the browser.
- 2) **Command-line scripting:** PHP is used in the majority with web servers but besides that we can also use command line interface to run various scripts.
- 3) **Client-side GUI applications:** We can create desktop applications in PHP with Graphical User Interface.

## C. Pros Of Using PHP

### 1) High Functionality

- a) PHP SESSIONS is a special array used to store information across the page requested by a user during its visit on website or web application. We used Sessions in our login form to store the username and used it in functions of other pages.
- b) PHP has a garbage collector and has a complex memory manager. The amount of memory being used by the script can be increased or decreased during the execution of the script.
- c) PHP consists of some predefined error reporting constants that generate warning on encountering error notice.
- d) No compilation is required in PHP. When the users are compiling their programs. Since PHP is a language which is optimized in nature it is very fast and doesn't need to be compiled.
- e) PHP has become the main provider of solutions even in the areas of Content Management Systems (CMS) and small to medium shop systems. Some well-known solutions are mentioned below:

### 2) CMS: Word Press, Drupal, TYPO3.

Online Shopping system: magento, WooCommerce, Shopware.

- a) PHP possesses various other abilities such as outputting images, PDF files and even Flash movies generated on the fly. We can also easily output any text, such as XHTML or any other XML file.
- b) In order to represent the graphical data usually in the field of e-commerce, PHP can be incredibly useful since it helps in creating up to fourteen different types of charts including pie charts, bar graphs, dot/scatter etc. using image graph.
- 3) **Cost:** PHP is an open source web technology, which is free and readily available without payment or any restrictive license.
- 4) **Database Interactivity and Platform Independent:** PHP has a rich Application Programming Interface (API's) for handling database connections. Therefore, these frameworks are designed to work hand in hand with a wide variety of relational as well as no. of SQL databases including MS SQL Server MySQL and PL SQL. PHP is platform independent and can run on any platform-Linux, UNIX, Windows.

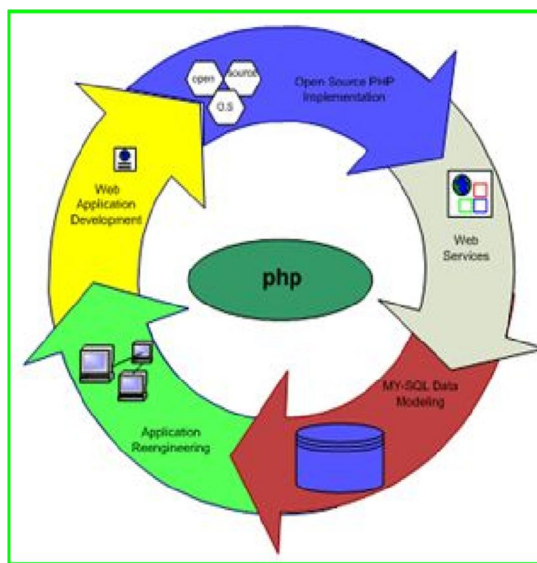


Fig.3 Areas of PHP

#### D. Cons of Using PHP & Its Solutions

Apart from its various empowering features, PHP also has some issues which can be resolved through following given solutions: -  
Security Issues:

PHP being an open source programming language, provides access to the source code to all its users i.e. its design is publicly accessible which can lead to several issues on another side. While working on projects, we get to know about various 'Security Vulnerabilities' in PHP and some of them are mentioned below:

- 1) **SQL Injection:** It is one of the most common web hacking techniques that includes the placement of malicious code like SQL statements through input of the web page that might destroy the database.
  - a) **Problem:** If we enter any SQL statement in the form of value in the URL or web form such as "truncate table statement" so it might delete content of the entire table in the database.
  - b) **Solution:** We can overcome this problem by using PDO (PHP data objects) prepared statements.  
For example, firstly we call a function for making connections then change the query function to "prepare" and put a: dial where the id value should go. The prepare() function does not actually execute a query, it just returns a PDO Statement object. Then we call bind Param for substituting each placeholder with the real value followed by execute() to actually make the SQL injection free query. Finally, to get required data from the query, we finish up calling either fetch() or fetchAll().
- 2) **XSS (Cross Site Scripting):** It is regarded as the injection/placement of any client-side code in the web form or through hyperlinks. If we have a simple form in which there is a text box for data input and a submit button. Once the form is submitted, it will submit the data to the PHP file. Now if, user writes some JavaScript code in place of providing some text input, so he could easily submit the following which will generates a popup in the browser with the message "hacked".
  - a) **Solution:** we prevent this with the help of following:
    - i) **Data Validation:** It is the process of ensuring that our application is running with the correct form of data.
    - ii) **Data Sanitization:** It focuses on manipulating the data to make sure it is safe by removing any unwanted bits from the data and normalizing it to the correct form. Example: sanitization and validation of a phone number.
- 3) **Session Hijacking/ Cookie Hijacking:** It is defined as the exploitation of a valid computer session to gain unauthorized access of information or services in a computer system.
  - a) **Problem:** Private information such as username or password if stored in sessions (temporary storage) can be stolen via XSS attack.
  - b) **Solution:** Use session\_regenerate\_id () function to change the session ID and notify the client. We prevent it by using a function of set cookies.
- 4) If there is a need to perform function asynchronously (without the need to reload the page), then PHP will not work.
  - a) **Problem:** While working on a project we need to display some of the selected information by the user on the same page which is not possible through PHP without submitting.
  - b) **Solution:** We use AJAX (Asynchronous JavaScript and XML), so that the browser doesn't need to reload the entire page when only a small a bit of data on the page has changed. AJAX passes only the updated information to and from the server.

#### VI.FUTURE ENHANCEMENTS

Though many future enhancements of the system worked upon are possible, the prime focus includes the development of a mobile application in order to increase the mobility of the application since the future demarcates the usage of mobile applications and as seen portable devices are ubiquitous which will facilitate the receiving of all the notifications in the cell phone by the members and students associated with the application further increasing the reliability of the system and the rate of problem-solving.

A toll-free helpline could be made available on a 24\*7 basis for the victims in order to lodge complaints at emergency hours or to seek counsel in case of catastrophes.

Prioritizing of complaints can be done so that the complaints that require the immediate action can be resolved at a faster rate. Dynamic updation of the escalation matrix will help the complainant to view the level of department at which the complaint is being processed currently and hence increases the transparency of the overall system.

## VII. CONCLUSION

This was a brief overview of Grievance redressal system using PHP. This website is mainly designed to bridge the gap between the complainant and the resolving authority by providing an online platform using web technology and used over a server. Grievances can be simply lodged in and timely resolved with updation of the status of Grievances as and when required, informing the complainant about the action taken. Hence providing an easy and affordable solution to the problem of Grievance handling. The technology we preferred for this is PHP which contributed to the cost-effectiveness of our website. From our analysis, it turned out to be efficient and flexible web technology for our Database Management System (DBMS) – easy for us to edit, add and delete information from a webpage or web app online. Hence, our proposed system is suitable, affordable and simple for the Grievance redressal and with the help of PHP which only helps in enhancing its features and simplicity.

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