Digital Technique for Allowance Estimation

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Abstract: Generally the miscellaneous allowances or remuneration of the employees of an organisation are calculated manually. Particularly the remuneration of a faculty of an institute concerning examination is calculated manually. Sometimes the faculty has to fill-up a form to write distinct required information. This work is seemed cumbersome. It is a complex process and takes time. It bears scope of numerous errors. In this perspective, this research work aims to develop a digital system. It will take less time. It is easier in estimating the allowances. The obtained result is accurate. The faculty or employee of an institute or organization can use this digital system in order to enumeration their remuneration related with examination. It is very effective process. Huge number of individuals as well as organization will be benefited using this digital system. This digital system is developed for desktop application (windows) and web based application. As a desktop application user can use this system without internet. As a web based application user must need internet. The desktop application is being developed using Dot net framework using C# programming language and the web based application is being developed using PHP, JavaScript, HTML, JQuery and CSS and DBMS like MySQL, Bootstrap, Laravel Framework.

Keywords : Allowance, Digital technique, HTML, PHP

I. INTRODUCTION

Employee allowances are such benefits known as workplace bonuses because the workers get paid extra money for things that are not part of their regular salaries. We can use two types of methods to determine the allowances of the employer. These are manual methods and computerized methods. The manual method is a complex process and the possibility of a mistake in accounting. An experienced person is required for accounting. Some problem of the manual systems are given below

Time Consuming: Manual calculation process take exceeding time to calculation remuneration or allowance of employees.

Trouble in Rewriting: In traditional process, there is no edit option. If any error is happened, there is no way to rewrite calculation.

Difficulty in calculation: Employees have numerous allowance factors. The calculation of those factors is difficult when using manual calculation.

Error Probability: It is difficult to provide accuracy for mountainous calculation by manual process.

Analog System: In present era, everything is converting as digital system. The calculation of remuneration or allowance is still analog.

On the other hand computerized method is more usable than manual method. In here different related computerized works are described in short.

i) Work: Check the teacher’s salary against the 2017-18 pay scales with this calculator [1].

A UK teacher’s salary will most likely be influenced by the national teachers’ pay scale. Although not all schools are legally obliged to implement the pay scales, many still use them to guide their own pay structure. One can check their current salary using this pay scale calculator. There are different pay scales on above of the pay level for unqualified or qualified teachers. One's pay will also depend on whether you're employed in central London, outside London, in the fringe area of London, or elsewhere in England or Wales.


One can use this system to determine if he/she may be affected by an annual allowance fee and have to file tax return up to and also including 2014 to 2015 for tax years.

iii) Work: NWS Benefits Calculator [3].

Some personal information must be entered in the tech.NSW value calculator. Does not maintain or monitor this material. The calculator provided results are descriptive only.

iv) Work: Maryland State Retirement and Pension System [4].

The State Retirement and Pension System of Maryland, the State Retirement Agency and the Board of Trustees ("Program") do not keep records of the estimates provided by this estimator. The output of this estimator is based on information given by us only, and does not include any information contained in System records. The results the estimator provides are not intended to constitute a contractual statement on the system.

Our proposed Digital allowance Estimation technique is a computerized system, which calculates employee allowance automatically. The proposed system is useful for any kind of Institute or Business Company to estimate their employee allowance in a suitable manner and accurately. The proposed system is developed for desktop application and web application. So the user can use this system over the internet and without internet.

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II. METHODOLOGY

2.1 Software Development model

We have employed Software Development Life Cycle (SDLC) for our work. SDLC is a mechanism consisting of a set of planned activities for the development or alteration of the Software products. There are many styles of software development within the SDLC. We choose the pattern which is known as Agile Model.

2.2 Data Flow Diagram

Some of the main data flow diagrams are given below which we have used in our work.

2.2.1 Basic Diagram:

This diagram reflects overall view of our proposed system. Fig.1 shows the basic diagram.

Fig.1. Basic diagram

2.2.2 Flowchart

The flowchart for our work is shown in Fig.2.

Fig.2. Flow chart

2.2.3 Database Table

A database is composed of several elements, the most important of which is the table. The database table is where all the data is stored in a database, and there wouldn't be much use for relational databases without tables. A database is composed of one table or more. Each table consists of columns and rows. If we think of a table as a grid, the column goes across the grid from left to right, and each data entry is identified as a row. In our work we need six table that shown in Fig.3.

Fig.3. Database table

2.2.4 DFD 0-Level Diagram

A data flow diagram (DFD) is graphical representation of data that flow through an information system, representing the process aspects thereof. A DFD is often used as a first step to build a system summary without going into much depth which can be expanded later on. DFDs can also be utilized for data processing visualization. We show the DFD 0-Level Diagram for our work in Fig.4.

Fig.4. DFD 0-level diagram
2.3 Testing

It includes in-application error detection. The testing process begins with a test plan that recognizes test-related activities such as the generation of test cases, test criteria and the allocation of resources for testing. The code is tested against the design document created during the design phase and mapped against. The test phase output is a test report that contains errors that occurred while testing the application. The primary purpose of the testing is to determine the compliance of the program with the stated needs. The Unit Testing, Implementation Testing, Program Testing and Acceptance Testing are four main test stages.

Using integration testing technique we tested our program. The different units of the system are incorporated in integration testing to shape the complete system and this kind of monitoring inspects the device as a whole to ensure it does what it is meant to do. The integrated system testing may be performed top-down, bottom-up, or big bang. Some parts will be tested using white box testing in this type of testing, and some with black box testing techniques. This type of testing plays a very important part in increasing the productivity of the systems.

2.4 Technologies

Software technology is a dictionary of Computing. Software technology is a general term covering the development methods, programming languages, and tools to support them that may be used in the development of software. The following tools are needed to implement our system.

Fig.5. Presentation layer of the digital allowance system
2.4.1 Project Category
Our system is built for both desktop applications and web applications.
- Desktop Application: Users will get all the facilities without internet and all the database information will be stored on its own computer.
- Web Application: A web-based application is any program that uses a website as the front-end or GUI. Users can easily access the application from any computer connected to the Internet using a standard browser. Database information is store in a hosting server.

2.4.2 Development Tools
Desktop Application:
- Development Environment: Windows Machine,
- Design Tools: Adobe Photoshop, Microsoft Paint.
- IDE: Visual Studio 2015
- Programming Language: C#

Web Application:
- Development Environment: Windows, Linux, Smart phone
- Design Tools: Adobe Photoshop, Microsoft Paint.
- Front End: HTML5, CSS3, Twitter Bootstrap-4, JavaScript, JQuery etc.
- Back End: PHP (Laravel 5.4), MySQL
- IDE: Visual Studio Code
- Compatible Browsers: Mozilla 43+, Chrome: 38+, IE 50+

2.4.3 Server Requirements
Desktop application:
- Operating System: Windows,
- .NET Framework: 4.5 or Above

Web application:
- Operating System: Windows, Linux
- Web Server: Apache/NGINX
- PHP Version: Minimum 5.6
- MySQL version: Minimum 5.0
- RAM: Minimum 4 GB
- Storage: Minimum 10 GB
- Bandwidth: Minimum 5 GB/month

2.5 Work Screenshot
Screenshots of our system is given below-

2.5.1 Presentation Layer
Presentation Layer of our System is shown in Fig.5.

![Login page](image)

![Total user list](image)
Fig. 7 shows total user list. The list of the departments is shown in Fig. 8.

![Fig. 8. Total department list](image1)

Any department can be added according to the Fig. 9. And Fig. 10 shows course list.

![Fig. 9. Add new department](image2)  
**Fig. 9. Add new department**  
**Fig. 10. Total course list**

2.5.2 Admin Layout

Following are the Outlook of admin panel of the website, which we developed. The Login Page of the website is shown in Fig. 6. New course can be included as Fig. 11. According to Fig. 12 the rate of various fields can be updated.

III. RESULT AND DISCUSSION

Our developed system provides well-decorated and accurate calculation of employee’s remuneration or allowance. The result shows as PDF format that can be easily downloaded and print for further use. Our developed system shows all types of allowance against employees, allowance rate, and total amount of allowance. The calculation of allowance is converted into PDF format from traditional calculation. The figure of output format is given Fig. 13-16.
Fig. 12: Update the rate of various fields

Fig. 13. Result sheet one

Fig. 14. Result sheet two

Fig. 15. Result sheet three
IV. CONCLUSION

In this work, our developed system named as Digital Allowance Estimation Technique for Employee is mainly implemented for teachers. Our system focuses on the calculation of teacher’s allowance for taking examination. We will add feature in our system, where user can edit, save, preview and check their calculation.

REFERENCES


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Md. Abul Hasan is a Full Stack Web Developer in America IT Company LTD. He received his B.Sc Engineering degree from Department of Information and Communication Engineering (ICE), Noakhali Science and Technology University, Chattogram, Bangladesh. He is expert software developer. His area of interest is Internet of Thing (IoT), Machine learning, Algorithm Design, Database Design. He is an honest, tech-learner, dedicated and hardworking person.

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