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Revenue Recovery System

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Abstract: *Revenue recovery is one of the major tasks of the government, which is used to raise the funds to be used in development process. At district level, to manage the revenue recovery system, there include many authorities from village level to district level. This online web application will ease the working of all the revenue officials from managers of different departments to Revenue Divisional Officer to District Collector. Security with respect to payments, receipts and balance sheet will be provided, since only the official authorities will be able to access them. Instant statistics of the balance sheet will be available to District Collector to examine the financial report, rate of products per quantities, amount utilized by various sectors etc. Managers, accountants as well as Revenue Divisional Officer will do their duty being more responsible since their activities would be transparent to higher authorities. The main objective of the Revenue Recovery System project is providing a completely transparent, responsive and optimized Revenue Recovery System. Another purpose is for the speedy generation of reports to maintain the monthly, quarterly, half-yearly and annual statistics. This Revenue Recovery System project will completely automate the existing system of revenue collection, reducing the burden on District Collector. The revenue collection will be become easier, speedy as well as flawless when it comes to collect revenue from heads like educational cess, stamp duty etc.*

Existing System: Revenue Recovery System is a tedious task when it comes to villages. All data is maintained manually and there is no transparency. So, the system is more prone to corruption. Moreover, generating any report will take a huge time and manual effort. Even after that, one cannot be sure that the data provided is complete in all respects and not missing. Further adding, it becomes very difficult to monitor at different levels like District level, Mandal level and Division level. The data flow is simply non-systematic, unsecure and highly time consuming.

Proposed System: The new fully automated Revenue Recovery System will remove all the inconsistencies imparted by the existing system. All the revenue recovered reports can be generated by a single mouse click by just specifying the time frame (monthly, quarterly, half-yearly or annually). Even the graphical representation of the data over a time frame can also be generated for a better understanding of the scenario. This Revenue Recovery System software will certainly enhance the functionality of the revenue department by providing it the required transparency, responsiveness and security. It will reduce the manual effort wasted in report generation thus reducing the work load of the higher officials. As the data provided will be completely authentic, it will help in better analysis of the revenue recovered till date. With everything going flawless, work can be completed in the given time frame as well as level wise abstraction of data become easier. This software had additional advantage of storing and keeping a backup of the data.

Keywords: Revenue recovery, Revenue Divisional Officer, District Collectors

I. INTRODUCTION

In India, among the various departments functioning under the control of the Government, Revenue Department is one of the vital departments which have direct contact with public in all its activities. Revenue generation and recovery is one of the major and important aspects of the government. It becomes a very tedious task for the government of India to recover revenue from such a large population through different states, sectors and departments. Revenues are the amounts that a business earns from selling goods or providing services to its customers. A company's revenue may be subdivided according to the divisions that generate it. Government Revenues refer to all receipts the government gets, including taxation, fees, fines, inter-governmental grants or transfers, securities sales, custom duties, revenue from state-owned enterprises, capital revenues and foreign aid. Government Revenues are part of government budget balance calculation. For example, a retailer's revenues will include its sales of merchandise, a law firm's revenues will include the fees it earns from providing legal services to its clients, and a bank's revenues will include the interest that it earns on the loans to borrowers. Two main sources of government revenue are – Tax Revenue and Non-tax Revenue. Tax revenue includes – union excise duty, customs, income tax, corporation tax, hotel expenditure tax, tax on foreign travel, wealth tax etc. Whereas, non-tax revenue includes – surplus profits of the Reserve Bank of India, railways, public enterprises owned by Central Government. At the district level, Collectors and District Revenue Officers assisted by the Revenue Divisional Officers, Tehsildars, Revenue Inspectors, Village Administrative Officers and Village Assistants are in-charge of these duties. Each district is headed by a District Collector who is assisted by Deputy Collectors among others. Each revenue division is headed by a Revenue Divisional Officer and assisted by Senior Superintendent among others. Each Taluka is headed by a Tehsildar and Additional Tehsildar who is assisted by Deputy Tehsildar among others. Each Village is headed by a Village Officer who is assisted by Special Village Officer, Village Assistant and Village man. The Collector is the principal officer in-charge of not only maintenance of Law and Order and land related matters, but also of all developmental activities and implementation of various schemes through various departments. The Revenue Divisional Officer exercises certain administrative powers over its jurisdiction. A revenue division is headed by a Revenue Divisional Officer.

II. SOFTWARE REQUIREMENT SPECIFICATION

The Software Requirements Specification is produced at the culmination of the analysis task. The function and performance allocated to software as part of system engineering are refined by establishing a complete information description, a detailed functional and behavioural description, an indication of performance requirements and design constraints, appropriate validation criteria, and other data pertinent to requirements.

- **Modules**: The Revenue Recovery System comprises of three modules:
- **Entry Module**: All the revenue related information will be entered here and will be directly stored in the database.
- **Report Generation Module**: This module will help in report generation. You can easily view the monthly reports, quarterly reports, half yearly reports and annual reports. Even the graphical data reports are also generated here.
- **Site Administration Module**: This is the admin panel of the software. The admin has the complete authority over the software.

2.1 Identification of Need:

The old manual system was suffering from a series of drawbacks. Since whole of the system was to be maintained with hands the process of keeping, maintaining and retrieving the information was very tedious and lengthy. The records were never used to be in a systematic order. there used to be lots of difficulties in associating any particular transaction with a particular context. If any information was to be found it was required to go through the different registers, documents there would never exist anything like report generation. There would always be unnecessary consumption of time while entering records and retrieving records. One more problem was that it was very difficult to find errors while entering the records. Once the records were entered it was very difficult to update these records. The reason behind it is that there is lot of information to be maintained and have to be kept in mind while running the business. For this reason, we have provided features Present system is partially automated (computerized), actually existing system is quite laborious as one has to enter same information at three different places. Documents and reports that must be provided by the new system: there can also be few reports, which can help management in decision-making and cost controlling, but since these reports do not get required attention, such kind of reports and information were also identified and given required attention.

- Details of the information needed for each document and report.
- The required frequency and distribution for each document.

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- Probable sources of information for each document and report.
- With the implementation of computerized system, the task of keeping records in an organized manner will be solved. The greatest of all is the retrieval of information, which will be at the click of the mouse. So,the proposed system helps in saving the time in different operations and making information flow easy giving valuable reports.
- All hardware and software cost has to be borne by the organization.
- Overall, we have estimated that the benefits the organization is going to receive from the proposed system will surely overcome the initial costs and the later on running cost for system.

III. MATERIALS AND METHODS

3.1 Hardware Configuration

- Processor: Pentium IV
- Processor speed: 2.4GHz
- RAM: 512 MB
- Monitor: Standard colour Monitor
- Hard disk: 40 GB
- Floppy drive: 1.44 MB
- CD drive: LG 52X
- Key board: Multi Media Standard 102 keys keyboard
- Mouse: Scrollable 3 buttons

3.2 Software Configuration

- Operating system: Windows 98/2000/XP, Unix/Linux
- Language: Java/ Servlets/ JSP /Swings
- GUI: DHTML
- Backend: Oracle
- Web Server: Apache Tomcat 6.0

3.3 Advantages

- It easy to learn and adjust to the system
- this system does not require the staff to be highly educated
- the requirements to tackle this job may be limitedto
- Willing to work longhours
- data is not easilylost
- it easy to manage the system due to the high number of staffworking

IV. TECHNOLOGIES USED IN THE APPLICATION

Java: It is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. It isa general-purpose programming language intended to let programmers *write once, run anywhere* (WORA), meaning that compiled Java code can run on all platforms that support Java without the need to recompile. Java applications are typically compiled to bytecode that can run on any Java virtual machine (JVM)regardless of the underlying computer architecture. The syntax of Java is similar to C and C++, but has fewer low-level facilities than either of them. The Java runtime provides dynamic capabilities (such as reflection and runtime code modification) that are typically not available in traditional compiled languages. As of 2019, Java was one of the most popular programming languages in use according to GitHub, particularly for client–server web applications, with a reported 9 million developers.

Servlet: A **Jakarta Servlet** (formerly Java Servlet) is a Java software component that extends the capabilities of a server. Although servlets can respond to many types of requests, they most commonly implement web containers for hosting web applications on web servers and thus qualify as a server-sideservlet web API. Such web servlets are the Java counterpart to other dynamic web content technologies such as PHP and ASP.NET.

JSP: **Jakarta Server Pages** (**JSP**; formerly Java Server Pages) is a collection of technologies that helps software developers create dynamically generated webpages based on HTML, XML, SOAP, or other document types. Released in1999 by Sun Microsystems,[1] JSP is similar to PHP and ASP, but uses the Javaprogramming language. To deploy and run Jakarta Server Pages, a compatible web server with a servlet container, such as Apache Tomcat or Jetty, is required.

Swing (Java):**Swing** is a GUI widget toolkit for Java. It is part of Oracle's Java Foundation Classes (JFC) – an API for providing a graphical user interface (GUI) for Javaprograms. Swing was developed to provide a more sophisticated set ofGUI components than the earlier Abstract Window Toolkit (AWT). Swing provides a look and feel that emulates the look and feel of several platforms,and also supports a pluggable look and feel that allows applications to have alook and feel unrelated to the underlying platform. It has more powerful and flexible components than AWT. In addition to familiar components such asbuttons, check boxes and labels, Swing provides several advanced componentssuch as tabbed panel, scroll panes, trees, tables, and lists.Unlike AWT components, Swing components are not implemented by platform specificcode. Instead, they are written entirely in Java and therefore areplatform-independent.In December 2008, Sun Microsystems (Oracle's predecessor) releasedthe CSS / FXML based framework that it intended to be the successor to Swing,c alled JavaFX.

GUI DHTML: **Dynamic HTML**, or **DHTML**, is a term which was used by some browservendors to describe the combination of HTML, style sheets and client-sidescripts (JavaScript, VBScript, or any other supported scripts) that enabledcreation of interactive and animated documents. The application of DHTMLwas introduced by Microsoft with the release of Internet Explorer 4 in 1997.DHTML allows scripting languages to change variables in a web page'sdefinition language, which in turn affects the look and function of otherwise"static" HTML page content, after the page has been fully loaded and during theviewing process. Thus, the dynamic characteristic of DHTML is the way itfunctions while a page is viewed, not in its ability to generate a unique pagewith each page load.By contrast, a dynamic web page is a broader concept, covering any web pagegenerated differently for each user, load occurrence, or specific variable values.This includes pages created by client-side scripting, and ones created by server-sidescripting (such as PHP, Python, JSP or ASP.NET) where the web server generates content before sending it to the client.

Apache Tomcat 6.0:**Apache Tomcat** (called "Tomcat" for short) is a free and opensourceimplementation of the Jakarta Servlet, Jakarta Expression Language,and WebSocket technologies. Tomcat provides a "pure Java" HTTP web server environment in which Java code can run.Tomcat is developed and maintained by an open community of developers under the auspices of the Apache Software Foundation, released underthe Apache License 2.0 license.

High Availability

A high-availability feature has been added to facilitate the scheduling of systemupgrades (e.g., new releases, change requests) without affecting the liveenvironment. This is done by dispatching live traffic requests to a temporaryserver on a different port while the main server is upgraded on the main port. Itis very useful in handling user requests on high-traffic web applications.

Web Application

It has added user- as well as system-based web applications enhancement to addsupport for deployment across the variety of environments. It also tries to manage sessions as well as applications across the network.Tomcat is building additional components. A number of additional componentsmay be used with Apache Tomcat. These components may be built by usersshould they need them or they can be downloaded from one of the mirrors.

V. TEST DRIVEN DEVELOPMENT

Test Driven Development is the process in which test cases are written before the code that validates those cases. It depends on repetition of a very short development cycle. Test driven Development is a technique in which automated Unit test are used to drive the design and free decoupling of dependencies.

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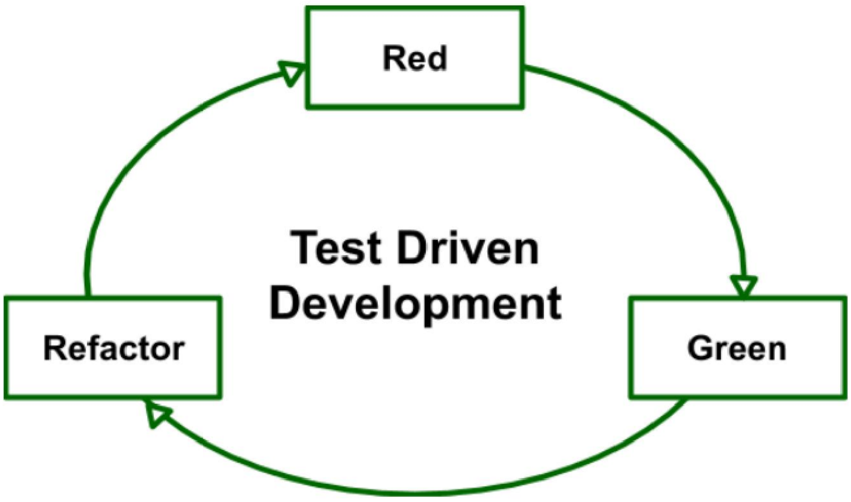
The following sequence of steps is generally followed:

- Add a test – Write a test case that describe the function completely. In order to make the test cases the developer must understand the features and requirements using user stories and use cases.
- Run all the test cases and make sure that the new test case fails.
- Write the code that passes the test case.
- Run the test cases.
- Refactor code – This is done to remove duplication of code.
- Repeat the above-mentioned steps again and again.



- **Red –** Create a test case and make it fail
- **Green –** Make the test case pass by any means.
- **Refactor –** Change the code to remove duplicate/redundancy.

Benefits:

- Unit test provides constant feedback about the functions.
- Quality of design increases which further helps in proper maintenance.
- Test driven development act as a safety net against the bugs.
- TDD ensures that your application actually meets requirements defined for it.
- TDD have very short development lifecycle.

VI. CONCLUSION

Generally, revenue related applications are of either national level or state level. This paper purely focuses on the revenue recovery process at district level. Since there include many revenue government officials from village level to district level, so it does not provide transparency and responsiveness among the officials, neither the official maintains timeliness in payments. Existing systems include validation of documents from village level to Mandal level, then to divisional level and then to district level, but our web application will reduce the work cycle of revenue recovery process. From village level to district level, there include many government officials who are responsible for validation process, but in this system, we reduce the government officials i.e., from managers to Revenue Divisional Officer and then to District Collector, this will make the system more effective in timeliness and integrity. Since we are providing online payment facility, manager of their respective department will be able to do the payment from any remote location and bank would provide them with instant receipts, so this will save their time as they will not have to stand in line for receiving the receipts from bank of their payments. Details of receipts would be stored in the centralized database which would contain information such as – date of transaction, department name, deposited amount, pending amount etc. Higher authorities would have access to all the receipts, so managers will do their duty with more responsiveness. Managers will forward the payment and receipt status to Revenue Divisional Officer, and in turn Revenue Divisional Officer will forward it to accounts department for validation. Once the validation of receipts would be successfully done by accounts department, accountant will create a balance sheet and will save it to database, and due to centralized database of balance sheet only the authorized people would have access to it, this would reduce the chances of thefts or frauds. District Collector will be provided with the highest security, because he is the one who will have access to the deposited amount of revenue recovery from bank and he will decide how much amount should be provided to various departments for development. Through balance sheets, District Collector would be able to examine the financial report, rate of products per quantities, amount utilized by various sectors etc. This system will provide District Collector with all the latest statistics through smart charts, so he would get to know that which sector needs more attention for revenue recovery process.

VII. FUTURE SCOPE

- **Entry Module:** All the revenue related information will be entered here and will be directly stored in the database.
- **Report Generation Module:** This module will help in report generation. You can easily view the monthly reports, quarterly reports, half yearly reports and annual reports. Even the graphical data reports are also generated here.
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