

Crew Scheduling Management System

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Abstract— Indian Railways is the world's ninth largest commercial or utility employer, by number of employees, with over 1.4 million employees. Indian Railways (reporting mark IR) is an Indian state-owned enterprise, owned and operated by the government of India through the Ministry of Railways. Our Railways were first introduced to India in 1853 from Bombay to Thane. Indian Railways is the golden era to our nation. **RUNNING ROOM** is a railway project which aims "To allocate the beds for the loco Pilots (LP's), Assistant Loco Pilots (ALP's) and Guards in the running room of all divisions. It is also used to display the allocated beds of different sections through online", is using J2EE technology. The project maintains the registers of the LP's, ALP's, Guards those who are traveling between different sections and to know the timings of Loco Pilots. In this the Loco-Pilot and Assistant-Pilots will take rest after traveling to a particular distance for a specified time. The LP/ALP must register into the book by giving the details like his name, incoming train no, outgoing date, outgoing train no, room which is allocated, room departure time and also along with his designation and head quarters. It is also called bed occupation register. In this project if the bed is filled it will be indicated with a particular color. By this we can get the remaining number of beds so that we can allocate for the other pilots all this information must be provided through online. When a pilot register in the login form and enter his details like username, password he will redirect to the bed occupation register. While entering to the designation and some other details the particular room number and the bed number will be allocated to the LP/ALP. The process will be easy, comparing to the present situation, which is done as paper work.

Keywords—Running Room, Loco-pilot, Assistant Loco-pilot, Bed allocation.

I. INTRODUCTION

1.1 Purpose

To allocate the beds for the loco Pilots (LP's), Assistant Loco Pilots (ALP's) and Guards in the running room of all divisions.

1.2 Scope

The scope of the project is as follows:

This system can be used as an application by the administrator to allocate the beds on behalf of the loco pilots and assistant loco pilots those who are travelling between different sections and to register the beds to take rest in between.

Manuscript received on May, 2013.

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1.3 Overview

Generally the Loco-Pilot and Assistant-Pilots will take rest after traveling to a particular distance for a specified time. The LP/ALP must register into the book by giving the details like his name, incoming train no, outgoing date, outgoing train no, room which is allocated, room departure time and also along with his designation and head quarters. It is also called **Bed Occupation Register**.

In this project if the bed is filled it will be indicated with a red color. By this we can get the remaining number of beds that are in green color which are ready for allocation. So that we can allocate for the other pilots. All this information must be provided through **online**. When a pilot registered by administrator in the login form and enters his details like username, password he will redirect to the bed occupation register. In this project we are going to add or delete the beds if necessary in the available rooms. The information will be displayed for the administrator.

II. EXISTING SYSTEM & PROPOSED SYSTEM

The Existing system is a not a computerized application maintains the registers of the LP's, ALP's, Guards those who are traveling between different sections. It is also called **bed occupation register**. The LP/ALP must register into the book by giving the details like his name, incoming train no, outgoing date, outgoing train no, room which is allocated, room departure time and also along with his designation and head quarters.

Limitations in Existing system:

- Maintaining the data in the registers is very hard to remember or to verify the details when required.
- No easy access to the required queries.
- Data redundancy, inconsistency, lot of human work need to be done in order analyze the details present in register. It leads to wastage of time.
- Calculation of time has to be done manually.
- Pilots have to remember their incoming time and outgoing time.
- Administrator has to remember whether the same pilot is going at his out time or not.
- Before allotting the bed to pilot or guard, it's the waste of time for the administrator to check the number of beds that are available.

To overcome all these problems we need to develop a software system which tracks all the above activities. This system is very helpful to store all the details and also reduces the time and manpower.

Proposed system:

The Proposed system is a software solution to overcome the difficulties in the existing system. It is an application which helps both administrator and pilot to access the required information with in short time. The beds will be selected and

allotted by administrator to the pilots by just entering the details about the incoming and outgoing train and also some details about the pilot or guard. Once pilots or guards allotted the beds, before completion of 8 hours administrator has to inform to that particular pilot or guard to vacate the room through the call boy or through sms.

Advantages over the Existing System:

1. Maintaining the data effectively across different sections of the running room.
2. Data redundancy, inconsistency, lot of human work will be reduced.
3. Calculation of time will be done automatically.
4. Pilots or guards can view their details and timings of the train.
5. This system provides a Common User Interface for the administrator to log on to the system.
6. Here the user interface is Graphical User Interface.
7. This application is a Web based Application.
8. Being a web based application it doesn't require any client side installation.
9. Any number of pilot's details can be taken and stored within the system by the administrator.

III. ANALYSIS

3.1 Feasibility study:

All projects are feasible, given unlimited resources and infinite time. But the development of software is plagued by the scarcity of resources and difficult delivery rates. It is both necessary and prudent to evaluate the feasibility of a project at the earliest possible time.

Three key considerations are involved in the feasibility analysis.

3.1.1 Economic Feasibility

Economic feasibility attempts to weigh the costs of developing and implementing a new system, against the benefits that would accrue from having the new system in place. This feasibility study gives the top management the economic justification for the new system.

A simple economic analysis which gives the actual comparison of costs and benefits are much more meaningful in this case.

In addition, this proves to be a useful point of reference to compare actual costs as the project progresses. There could be various types of intangible benefits on account of automation. These could include increased customer satisfaction, improvement in product quality better decision making timeliness of information, expediting activities, improved accuracy of operations, better documentation and record keeping, faster retrieval of information, better employee morale.

3.1.2 Technical Feasibility:

Evaluating the technical feasibility is the trickiest part of a feasibility study. This is because, at this point in time, not too many detailed design of the system, making it difficult to access issues like performance, costs on (on account of the kind of technology to be deployed) etc. A number of issues have to be considered while doing a technical analysis.

Understand the different technologies involved in the proposed system before commencing the project we have to be very clear about what are the technologies that are to be

required for the development of the new system. Find out whether the organization currently possesses the required technologies. Is the required technology available with the organization?

Operational Feasibility:

Proposed project is beneficial only if it can be turned into information systems that will meet the organizations operating requirements. Simply stated, this test of feasibility asks if the system will work when it is developed and installed. Are there major barriers to Implementation? Here are questions that will help test the operational feasibility of a project:

Is there sufficient support for the project from management from users? If the current system is well liked and used to the extent that persons will not be able to see reasons for change, there may be resistance.

Are the current business methods acceptable to the user? If they are not, Users may welcome a change that will bring about a more operational and useful systems.

Have the user been involved in the planning and development of the project?

Early involvement reduces the chances of resistance to the system and in general and increases the likelihood of successful project. Since the proposed system was to help reduce the hardships encountered. In the existing manual system, the new system was considered to be operational feasible.

IV. IMPLEMENTATION

HTML, an initialize of Hypertext Markup Language, is the predominant markup language for web pages. It provides a means to describe the structure of text-based information in a document — by denoting certain text as headings, paragraphs, lists, and so on — and to supplement that text with interactive forms, embedded images, and other objects. HTML is written in the form of labels (known as tags), surrounded by angle brackets. HTML can also describe, to some degree, the appearance and semantics of a document, and can include embedded scripting language code which can affect the behavior of web browsers and other HTML processors.

JavaScript is a script-based programming language that was developed by Netscape Communication Corporation. JavaScript was originally called Live Script and renamed as JavaScript to indicate its relationship with Java. JavaScript supports the development of both client and server components of Web-based applications. On the client side, it can be used to write programs that are executed by a Web browser within the context of a Web page. On the server side, it can be used to write Web server programs that can process information submitted by a Web browser and then update the browser's display accordingly

Even though JavaScript supports both client and server Web programming, we prefer JavaScript at Client side programming since most of the browsers supports it. JavaScript is almost as easy to learn as HTML, and JavaScript statements can be included in HTML documents by enclosing the statements between a pair of scripting tags

Here are a few things we can do with JavaScript:

Validate the contents of a form and make calculations.

Add scrolling or changing messages to the Browser's status line.



Animate images or rotate images that change when we move the mouse over them.
Detect the browser in use and display different content for different browsers.
Detect installed plug-ins and notify the user if a plug-in is required.
We can do much more with JavaScript, including creating entire application.

JavaScript Vs Java

JavaScript and Java are entirely different languages. A few of the most glaring differences are:
Java applets are generally displayed in a box within the web document; JavaScript can affect any part of the Web document itself.
While JavaScript is best suited to simple applications and adding interactive features to Web pages; Java can be used for incredibly complex applications.
There are many other differences but the important thing to remember is that JavaScript and Java are separate languages. They are both useful for different things; in fact they can be used together to combine their advantages.

Advantages

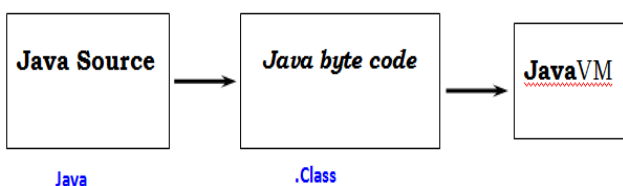
JavaScript can be used for Server-side and Client-side scripting.
It is more flexible than VBScript.
JavaScript is the default scripting languages at Client-side since all the browsers supports it.

Java Technology

Initially the language was called as "oak" but it was renamed as "Java" in 1995. The primary motivation of this language was the need for a platform-independent (i.e., architecture neutral) language that could be used to create software to be embedded in various consumer electronic devices.
Java is a programmer's language.
Java is cohesive and consistent.
Except for those constraints imposed by the Internet environment, Java gives the programmer, full control.
Finally, Java is to Internet programming where C was to system programming.

Java Virtual Machine (JVM)

Beyond the language, there is the Java virtual machine. The Java virtual machine is an important element of the Java technology. The virtual machine can be embedded within a web browser or an operating system. Once a piece of Java code is loaded onto a machine, it is verified. As part of the loading process, a class loader is invoked and does byte code verification makes sure that the code that's has been generated by the compiler will not corrupt the machine that it's loaded on. Byte code verification takes place at the end of the compilation process to make sure that is all accurate and correct. So byte code verification is integral to the compiling and executing of Java code.



V. SERVLETS

The Java web server is JavaSoft's own web Server. The Java web server is just a part of a larger framework, intended to provide you not just with a web server, but also with tools. To build customized network servers for any Internet or Intranet client/server system. Servlets are to a web server, how applets are to the browser.

About Servlets: Servlets provide a Java-based solution used to address the problems currently associated with doing server-side programming, including inextensible scripting solutions, platform-specific APIs, and incomplete interfaces. Servlets are objects that conform to a specific interface that can be plugged into a Java-based server. Servlets are to the server-side what applets are to the client-side - object byte codes that can be dynamically loaded off the net. They differ from applets in that they are faceless objects (without graphics or a GUI component). They serve as platform independent, dynamically loadable, pluggable helper byte code objects on the server side that can be used to dynamically extend server-side functionality.

For example, an HTTP Servlets can be used to generate dynamic HTML content. When you use Servlets to do dynamic content you get the following advantages:

- They're faster and cleaner than CGI scripts
- They use a standard API (the Servlets API)
- They provide all the advantages of Java (run on a variety of servers without needing to be rewritten).

Attractiveness of Servlets

There are many features of Servlets that make them easy and attractive to use. These include:

Easily configured using the GUI-based Admin tool
Can be loaded and invoked from a local disk or remotely across the network.

Can be linked together, or chained, so that one Servlets can call another Servlets, or several Servlets in sequence.

Can be called dynamically from within HTML pages, using server-side include tags.

Are secure - even when downloading across the network, the Servlets security model and Servlets sandbox protect your system from unfriendly behavior.

Advantages of the Servlet API

One of the great advantages of the Servlet API is protocol independence. It assumes nothing about:

The protocol being used to transmit on the net

How it is loaded?

The server environment it will be running in
These qualities are important, because it allows the Servlet API to be embedded in many different kinds of servers. There are other advantages to the Servlet API as well. These include:

- It's extensible - you can inherit all your functionality from the base classes made available to you.
- It's simple, small, and easy to use.

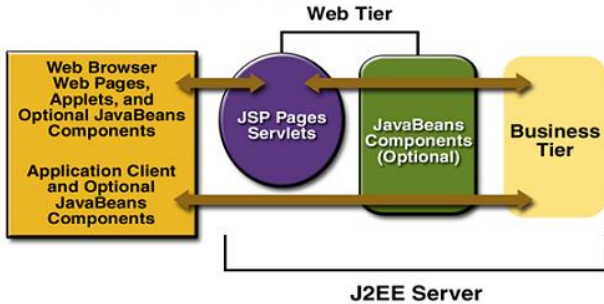
Features of Servlets:

- Servlets are persistent. Servlet are loaded only by the web server and can maintain services between requests.
- Servlets are fast. Since Servlets only need to be loaded once, they offer much better performance over their CGI counterparts.
- Servlets are platform independent.
- Servlets are extensible. Java is a robust, object-oriented

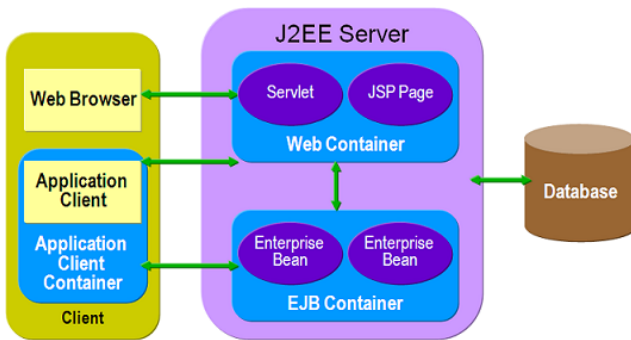
programming language, which easily can be extended to suit your needs

- Servlets are secure.
- Servlets can be used with a variety of clients.

- Web components
 - Servlets or JSP pages
 - JavaBeans (optional)



Java application servers



A Java Server Page (JSP) is a servlet from Java that executes in a Web container—the Java equivalent of CGI scripts. JSPs are a way to create HTML pages by embedding references to the server logic within the page.

VI. SCOPE FOR FUTURE ENHANCEMENTS

It is not possible to develop a system that makes all the requirements of the user. User requirements keep changing as the system is being used. Some of the future enhancements that can be done to this system are:

- As the technology emerges, it is possible to upgrade the system and can be adaptable to desired environment.
- Because it is based on object-oriented design, any further changes can be easily adaptable.
- Based on the future security issues, security can be improved using emerging technologies like single sign-on.
- Customer service module can be added
- Customer premium payment alert service through automatic SMS can be added

VII. CONCLUSION

The **RUNNING ROOMS** is a railway project which aims “To allocate the beds for the loco Pilots(LP’s), Assistant Loco Pilots(ALP’s) and Guards in the running room of all divisions. It is also used to display the allocated beds of different sections through online”, using J2EE technology. This application software has been computed successfully and was also tested successfully by taking “test cases”. It is user friendly, and has required options, which can be

utilized by the user to perform the desired operations. The software is developed using Java as front end and Oracle as back end in Windows environment. The goals that are achieved by the software are-

- ✓ Instant access.
- ✓ Improved productivity.
- ✓ Optimum utilization of resources.
- ✓ Efficient management of records.
- ✓ Simplification of the operations.
- ✓ Less processing time and getting required information.
- ✓ User friendly.
- ✓ Portable and flexible for further enhancement.

REFERENCES

1. Core Java™ 2 Volume I Fundamentals 7th Edition-Cay S. Hortsman
2. Pearson Education Sun Microsystems Gary Cornell
3. Core Java™ 2 Volume II Advanced -Cay S. Hortsman
4. Pearson Education Sun Microsystems Gary Cornell
5. Head First Servlets & JSP- Eric Freeman
6. O'Reilly SPD Elisabeth Freeman
7. The Book of JavaScript 2nd Edition-Thau
8. Effective Java Programming Language Guide-Joshua Bloch
9. Pearson Education Sun Microsystems
10. Java Database Best Practices - George Reese
11. O'Reilly SPD