

A
PROJECT REPORT
ON
“RAILWAY TICKET RESERVATION SYSTEM”



2011-12

Submitted to:

MR. VIJAY MOHAN SHIRMAL

Assitant Professor(CSE Deptt.)

Submitted by:

VINAY KUMAR MADHUKAR

madhukarkumar7@gmail.com

B-TECH IV SEM.

CS-B, Batch 2

A
Jagannath Gupta Institute of Engineering and Technology
Plot no. IP-2&3,Phase IV,Sitapura Industrial Area,
Opp.Chokhi Dhani,Jaipur

SYSTEM REQUIREMENT SPECIFICATION
ON
“RAILWAY TICKET RESERVATION SYSTEM”



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RICHHPAL KUMAWAT

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PREFACE

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Opp.Chokhi Dhani,Jaipur

Over the years, the Railways have been developing computerized applications for various functions. The Passenger Reservation System, Unreserved Ticketing System and Freight Operations Information System are three Standardized applications that have been implemented over all zonal railways. In addition, considering that the framework of rules and regulations is Common for the entire Railway network, Railway Board in 1997 had Constituted System Development Teams at select zonal railways for Developing major applications as pilot projects for subsequent adoption in Other zonal railways, so that uniform standardized systems become available For all zonal railways. Some of such applications are Material Management Information System, Pay Roll and Independent Modules and Advanced Financial and Railway Expenditure Management System. Zonal railways were Also allowed to develop and implement applications locally to manage Different functions. Some of these applications have been reviewed in this Report.

ACKNOWLEDGEMENT

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I am also extremely great full to my brother Rohit Kumar to help me to represent my report.

TITLE: **TICKET RESERVATION SYSTEM ON RAILWAY**

Jagannath Gupta Institute of Engineering and Technology
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Opp.Chokhi Dhani,Jaipur

AUTHER: 1. VINAY KUMAR MADHUKAR
2. RICHHPAL KUMAWAT

AFFLATION: JAGANNATH GUPTA INSISTUTE OF ENGINEERING
AND TECHNOLOGY.

ADDRESS: JAGANNATH GUPTA INSTITUTE OF ENGINEERING
AND TECHNOLOGY, PLOT NO. IP-2&3, PHASE IV,
SITAPURA INDUSTRIAL AREA OPP. CHOKHI DHANI,
JAIPUR

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1. INTRODUCTION:

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1.1 PROJECT INTRODUCTION:

This is a project based on train reservation. The program helps us to enter, display or alter the details of different trains. Moreover & most importantly the program helps us to reserve or cancel a train ticket. The program also helps us to know the present status of a reserved ticket, i.e. whether the ticket is confirmed or not. It includes various function programs to do the above mentioned tasks.

1.2 PURPOSE OF THE DOCUMENTATION:

- Describe the use, operation, maintenance, or design of software or hardware through the use of manuals, listings, diagrams, and
- Other hard- or soft-copy written and graphic materials.
- Assign responsibilities and establish authority for business processes and practices (pertains mostly to policies and procedures).
- Standardize business practices.
- Reduce/eliminate fraud, waste, and abuse.
- Comply with federal, state, and local regulations.
- Comply with customer requirements.
- Comply with contractual requirements.
- Train new employees.

1.3 SCOPE OF DOCUMENTATION:

- Freight Revenue enhancement
- Passenger Revenue enhancement.
- Improved & optimized service.

1.4 OVERVIEW:

1. PRODUCT PERSPECTIVE:

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It enables us to maintain the railway train details like their timings, number of seat available and reservation billing and cancelling the tickets.

- **USER INTERFACE:**

Keyboard and Mouse

- **HARDWARE INTERFACE:**

Printer Normal PC

- **SOFTWARE INTERFACE:**

MS WORD

C OR C++

- **OPERATING ENVIRONMENT:**

The OS types are:

Windows 7

Windows XP

2. PRODUCT FUNCTIONS:

It tells the short note about the product.

- **TRAIN DETAILS:**

Customers may view the train timing at a date their name and number of tickets.

- **RESERVATION:**

After checking the number of seats available the customers reserve the tickets.

- **BILLING:**

After reserving the required amount of tickets, the customer paid the amount.

- **CANCELLATION:**

If the customers want to cancel the ticket, then half of the amount paid by the customer will be refunded to him.

- **USER CHARACTERISTICS:**

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Knowledgeable user

No voice user

Expert user

- **PERFORMANCE REQUIREMENTS:**

It is available during all 24 hours. Variety of compartments based on comfort:

AC First Class

AC Sleeper

First Class

Sleeper class

- **TYPES OF CONCERNS & COMPLEXITIES:**

Types of quotas

Types of trains

Types of classes

Types of concessions

Types of bogies

- **SOFTWARE SYSTEM ATTRIBUTES:**

Reliable

Available

Secure

- **DOCUMENT APPROVAL:**

The bill passed on any proposals related to railway management needs approval of Ministry of railway department.

1.3 BUSINESS CONTEXT:

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- Single screen, rich Internet application.
- Login not required for checking availability, only for booking, and can be done after booking.
- Station code lookup while the user types the name.
- Train availability – select multiple trains, and click once to get availability in all.
- Single date field, automatic format conversion.
- In line contextual help available.
- Visual effects to show the progress of the process.
- Single spot for advertisement – can rotate.
- Can change any parameter at any time, and the remaining will update automatically e.g. Change In date, will automatically check availability for selected train
- Payment options – one chosen by default, others available on request.
- Advertisements can still be delivered, you can even deliver contextual ads as the user plans their travel. Other pages of the site can also be integrated.

2. GENERAL DESCRIPTION:

2.1 PRODUCT FUNCTIONS:

It tells the short note about the product.

- **TRAIN DETAILS:**

Customers may view the train timing at a date their name and number of tickets. For Checking Train Details take the Train No or Train Name Form the user, and check it is valid or not. If Not then display appropriate message to user else display the Train No, Train Name, Source, Destination, Arrival Time, and Departual Time.

- **RESERVATION:**

After checking the number of seats available the customers reserve the tickets.

- **BILLING:**

After reserving the required amount of tickets, the customer paid the amount.

- **CANCELLATION:**

If the customers want to cancel the ticket, then half of the amount paid by the customer will be refunded to him. For Canceling Reservation OR Booking, it necessary that before 10days from journey date passenger can cancel ticket.

For Cancel Ticket take the PNR No from the User/Passenger, check PNR No is valid or not. If not valid then display appropriate message to user else display the details of that PNR No and ask sure user want to cancel ticket if yes then cancel the reservation of that PNR No.

2.2 USER PROBLEM STATEMENT:

- Reservations can be done through any Indian Railway Reservation counter.
- One can also opt for online booking from anywhere.
- In case, the ticket has the both coach and berth number, it is regarded as “confirmed”.
- In case, AS RAC is written on the ticket, it shows that one can enter the coach, but will be granted only sitting.
- In case, the ticket is waitlisted, one cannot enter the reserved coaches.
- Reservations can be cancelled even after the departure of train. In case of confirmed reservation, one would receive a refund of 50% of what has been paid. Regarding a waitlisted ticket, one would receive the whole amount on cancellation in advance.
- Reservations made for sight-seeing trips or pilgrimages are permissible in all classes with a condition that the journey starts and ends at the same station

2.3 USER OBJECTIVE:

ONLINE BOOKING: With the help of this people can book their tickets online through internet, sitting in their home by a single click of mouse. Using their credit cards people

can easily get their tickets done within minutes. There are certain charges for online booking as well.

COUNTER BOOKING: This is the oldest method of booking the tickets. The reservation counters are there at railway department from where people can get the tickets to their respective destinations.

- If you wish to know the route and the timings click on “Show Route”. If you want to know the availability of seats/berths, click on “Show Availability”.
- To get the fare, click on “Get Fare button. The fare appearing is for a single adult Passenger excluding the service charges charged by IRCTC and by the Bank(Credit Card/Direct Debit).
- To book tickets, click on Book Ticket button.
- If you wish to select other train, click on “Select Other Train” button.

3. SYSTEM ANALYSIS:

This system is basically concerned with the reservation and cancellation of railway tickets to the passengers. The need of this system arose because as is the known fact that India has the largest railway network in the whole of the world and to handle it manually is quite a tough job. By computerizing it, we will be able to overcome many of its limitations and will be able to make it more efficient. The handling of data and records for such a vast system is a very complex task if done manually but it can be made much easier if the system is computerized.

To be more specific, our system is limited in such a way that a train starting from a particular source will have a single destination.

The basic functions being performed by our system are reservation and cancellation. These functions will be handled with the help of following sub functions: -

- It reserves and cancels seats for the passenger.
- It contains information about the trains.
- It contains information about the passenger.
- It contains the details of reservation fees, any concessions etc.
- It makes entries for reservation, waiting, cancelled tickets.
- It will update for uptime and downtime trains.

3.1 FUNCTIONAL REQUIREMENTS:

Functional requirement of ticket reservations are:

- **PRODUCT FUNCTIONS:**

It tells the short note about the product.

- **TRAIN DETAILS:**

Customers may view the train timing at a date their name and number of tickets.

- **RESERVATION:**

After checking the number of seats available the customers reserve the tickets.

- **BILLING:**

After reserving the required amount of tickets, the customer paid the amount.

- **CANCELLATION:**

If the customers want to cancel the ticket, then half of the amount paid by the customer will be refunded to him.

3.1.2 SYSTEM REQUIREMENT:

- The passenger has a prior knowledge of the reservation and ticketing system.

- The passenger arrives at the railway ticket counter and interacts with the
- counter clerk first through an enquiry and then follows the process of form
- Filling, tendering, payment and collecting the tickets.
- Passenger accepts the ticket or leaves the counter.
- Passenger seeks information on fare, train timings and availability of tickets.
- Passenger can have single ticket or multiple tickets.
- Journey begins on a day and will be over with one break in between.
- Passenger is identified by name, age, sex and address.
- Trains are identified by name and number.
- No receipt is issued for money transacted.
- Output of the system is ticket(s) with details.
- The process is triggered through a form filled by the passenger detailing the
- Requirements of tickets, train, date, etc.
- A form is used for each train. If the journey requires use of multiple trains, Separate forms are used for each train.

3.1.3 STABILITY AND SPEED:

- System must be stable and fulfill all the requirements of the user.
- Systems have to work efficiently and speedily and must enable all software components which are used in the system.

3.2 FEASIBILITY STUDY:

An initial investigation in a proposal that determines whether an alternative system is feasible. A proposal summarizing the thinking of the analyst is presented to the user for review. When approved, the proposal initiates feasibility study that describes and evaluates candidate systems and provides for the selection of best system that meets system performance requirements.

To do a feasibility study, we need to consider the economic, technical factors in system development. First a project team is formed. The team develops system flowcharts that identify the characteristics of candidate systems, evaluate the performance of each system, weigh system performance and cost data and select the best candidate system for the job. The study culminates in a final report to the management.

By the end of this chapter you should know:

- The steps in defining system performance.
- What key considerations are involved in feasibility analysis?
- How to conduct a feasibility study?

FEASIBILITY CONSIDERATIONS:

Three key considerations are involved in the feasibility analysis:

- Economic feasibility
- Technical feasibility
- Behavioral feasibility

TESTING AND DEBUGGING:

TESTING: Testing is the process of exercising software with the intent of finding errors and ultimately correcting them. The following testing techniques have been used to make this project free of errors.

Content Review: The whole content of the project has been reviewed thoroughly to uncover typographical errors, grammatical error and ambiguous sentences.

Navigation Errors: Different users were allowed to navigate through the project to uncover the navigation errors. The views of the user regarding the navigation flexibility and user friendliness were taken into account and implemented in the project.

Unit Testing: Focuses on individual software units, groups of related units.

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- Unit – smallest testable piece of software.
- A unit can be compiled /assembled / linked/loaded; and put under a test harness.
- Unit testing done to show that the unit does not satisfy the application and or its implemented software does not match the intended designed structure.

Integration Testing: Focuses on combining units to evaluate the interaction among them:

- Integration is the process of aggregating components to create larger components.
- Integration testing done to show that even though components were individually satisfactory, the combination is incorrect and inconsistent.

System Testing: Focuses on a complete integrated system to evaluate compliance with specified requirements (test characteristics that are only present when entire system is run)

- A system is a big component.
- System testing is aimed at revealing bugs that cannot be attributed to a component as such, to inconsistencies between components or planned interactions between components.
- Concern: issues, behaviors that can only be exposed by testing the entire integrated system (e.g., performance, security, recovery)
- Each form encapsulates (labels, texts, grid etc.). Hence in case of project in V.B. form are the basic units. Each form is tested thoroughly in term of calculation, display etc.

Regression Testing: Each time a new form is added to the project the whole project is tested thoroughly to rectify any side effects. That might have occurred due to the addition of the new form. Thus regression testing has been performed.

Debugging: Debugging is a consequence of successful testing. That is when a test case uncovers an error, debugging is the process that results in the removal of errors. There are mainly two types of debugging.

Backtracking: Backtracking is a fairly common debugging approach that can be used successfully in small programs. Beginning at the site where a symptom has been uncovered, the source code is traced backward until the site of the cause is found.

Brute Forcing: This is the most common category of debugging which involves loading the source code with write statements and tracking line by line execution to isolate possible errors.

3.2.1 OPERATIONAL ENVIRONMENT:

Operations:

- Any Reservation counter from 8 am to 8 pm.
- Prior to 60 days of Journey.
- One form for 6 persons only.
- Reserved ticket done through pre defined Logic.
- To save time & queues Agent is others guides

3.2.2 TECHNICAL:

If you believe that the requirement is substantially met but in a way that appears to be different from the descriptive statement, please explain the difference.

- If the requirement is not provided as part of the base system but you propose to deliver it as a customization, please describe the customization required and include costs associated within the customization in your proposals cost schedule.
- If you take exception to a requirement, please state the exception, its reason, and propose an alternative approach and solution.

3.2.3 ECONOMIC FEASIBILITY:

The System must be economically beneficially and user friendly.

4. SYSTEM DESIGNING:

4.1 SCOPE:

This system is basically concerned with the reservation and cancellation of railway tickets to the passengers. The need of this system arose because as is the known fact that India has the largest railway network in the whole of the world and to handle it manually is quite a tough job. By computerizing it, we will be able to overcome many of its limitations and will be able to make it more efficient. The handling of data and records for such a vast system is a very complex task if done manually but it can be made much easier if the system is computerized.

4.2 DATABASE DESIGN:

To be more specific, our system is limited in such a way that a train starting from a particular source will have a single destination.

The basic functions being performed by our system are reservation and cancellation. These functions will be handled with the help of following sub functions:

- It reserves and cancels seats for the passenger.
- It contains information about the trains.
- It contains information about the passenger.
- It contains the details of reservation fees, any concessions etc.
- It makes entries for reservation, waiting, cancelled tickets.
- It will update for uptime and downtime trains.

4.3 DATA FLOW DIAGRAM (DFD):

Railway Ticket Reservation System

Assume that domain analysis is complete and DAD is ready for reference. The analyst also has a fair knowledge of the system and the system environment. For the sake of convenience and to reduce complexity at this stage in OOA, we are ignoring certain conditions, constraints and features that the real system may have.

For example, we are not considering cancellation of tickets as a requirement. We assume all passengers irrespective of their type (senior citizen, military personnel, special category passengers etc.) are the same, and therefore are charged with the same fare. We begin with the statement of requirement of the system.

System Requirement

The passenger has a prior knowledge of the reservation and ticketing system. The passenger arrives at the railway ticket counter and interacts with the counter clerk first through an enquiry and then follows the process of form filling, tendering, payment and collecting the tickets.

- Passenger accepts the ticket or leaves the counter.
- Passenger seeks information on fare, train timings and availability of tickets.
- Passenger can have single ticket or multiple tickets.
- Journey begins on a day and will be over with one break in between.
- Passenger is identified by name, age, sex and address.
- Trains are identified by name and number.
- No receipt is issued for money transacted.
- Output of the system is ticket(s) with details.
- The process is triggered through a form filled by the passenger detailing the
- Requirements of tickets, train, date, etc.

A form is used for each train. If the journey requires use of multiple trains, separate forms are used for each train.

Identify the Actors

The actors in the system are the passenger, the counter clerk and the reservation system consisting of form processing, reservation, fare computation, ticket processing, ticket printing, collection of fare amount and posting as sub-systems. The passenger is a passive user–actor who initiates the process and obtains the ticket(s), a goal of measurable value. The counter clerk is an active user–actor, who triggers the system and has the role of issuing the tickets with the responsibility of collecting the correct fare amount from the passenger, which is a measurable value. Predesigned and deployed ticket reservation system at the back end is a system actor–user

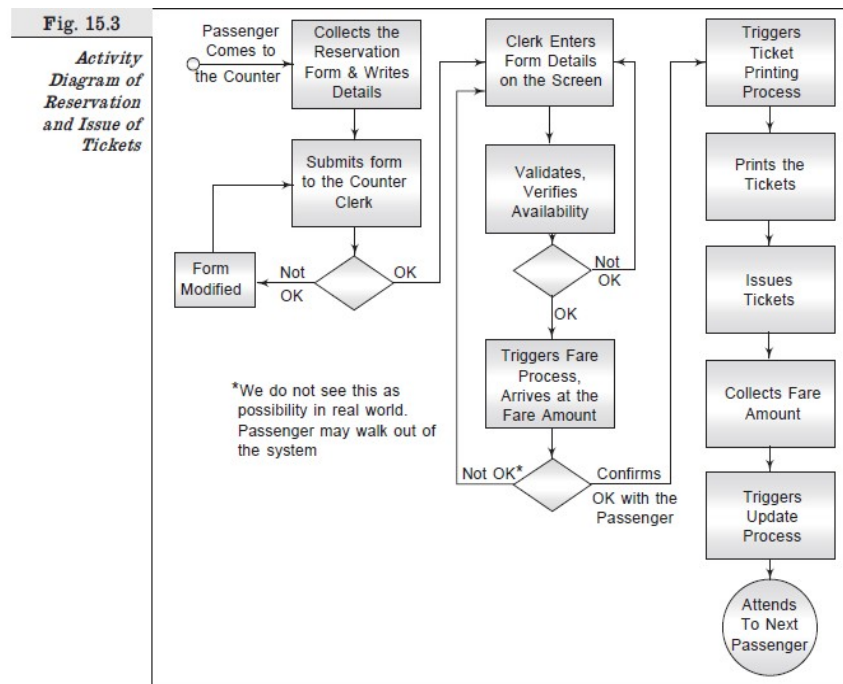
to ensure that ticket processing is done correctly and different system statuses are updated on issuing of tickets. This actor has an active role and responsibility at the back end.

Develop Business Process Model –Reservation and Issue of Tickets

Based on the system observation by the analyst, a high-level activity diagram is drawn modeling the process of reservation and issue of tickets to the passenger.

The activity diagram brings everybody concerned with the system on the ground to a common understanding of the system as it functions.

We use this activity diagram of the process to develop use cases, which together achieves the goal of issuing the ticket.



Identify and Develop Use Cases:

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In the ticket reservation systems, users are the passenger, the counter clerk and the Reservation and Ticketing System (R&T System). Take each user and identify the roles played, which would lead us to identify the roles played, which, in turn, would lead us to an identification of use case. Table shows the result of the process of identifying the use cases.

The system has three users, eight roles and eleven use cases. To illustrate the process of identifying the use cases, let us take the passenger (a user of the system). A passenger as a user may play one or more of three roles. The roles are

- Enquiring about the availability of tickets on particular dates to a destination and the fare per ticket. The role is enquiring.

<i>Users–Roles–Use Cases.</i>	<i>User</i>	<i>Role</i>	<i>Use case</i>
	• Passenger	• Enquiry	• Enquire ticket availability and other details.
		• Reservation and ticketing	• Reserve seats and berths, tickets
		• Cancellation	• Cancel tickets
	• Counter clerk	• Form data entry	• Enter Reservation Requisition Form
		• Requisition processor	• Process requisition for booking
		• Ticket processor	• Process ticket to print
		• Data manager	• Submits ticket data for updation
	• Reservation and ticketing system	• System server	• Process reservation data, process ticketing process cancellation
			• Update the status by date, train, etc.

- Reserving the ticket(s) on a particular train on particular date for a destination by requisitioning through a reservation form .The role is reserving and booking tickets.
- Cancelling the tickets after issuing and payment .The role is cancelling.

As explained in the case of passenger, the roles are use cases. Similarly, one can probe into the roles and use cases for counter clerk and reservation and ticketing system.

Draw Interaction Diagrams

Interaction diagrams are used to show the interactions between user/actor and the system. Use case is a scenario that develops through interaction. Let us model different scenarios through interaction diagrams:

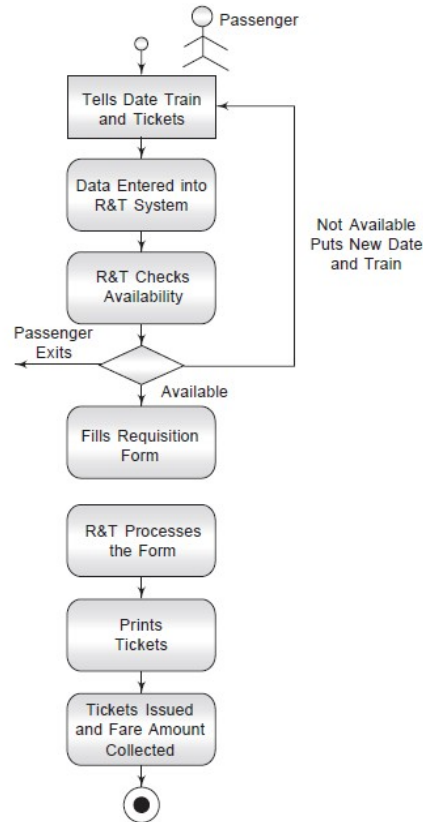
Use Case: enquiring on ticket availability

1. Passenger submits information about the date and train, and requirement of tickets to the counter clerk
2. Clerk checks the availability of tickets on the date and train.
3. Communicates the availability status to the passenger.
4. If OK, the passenger proceeds to book the ticket through a requisition form.
5. If not OK, the passenger changes the date or train and requests availability.
6. Steps 2 to 4 are repeated.

Figure 15.4 shows the steps in the activity diagrams of use case enquiry to issue of Tickets.

Fig. 15.4

*Enquiry to
Issue of
Tickets*



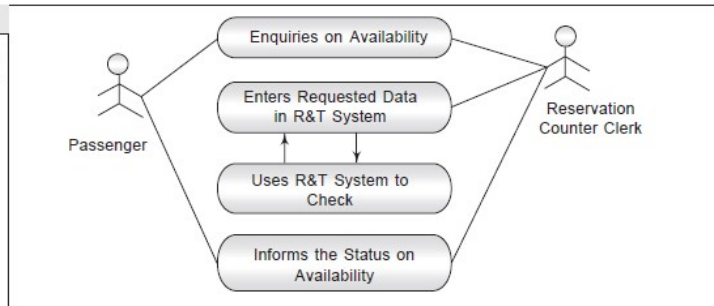
Let us draw use case scenarios in use case diagrams for actor passenger.

Use Case enquiry

Here use case goal is to convey the ticket availability status to the passenger on the requested date and train. If the status is 'available', the passenger proceeds to book the ticket or may leave the counter. If the status is 'not available', the passenger may leave the counter or seek availability for a new date or new train

Fig. 15.5

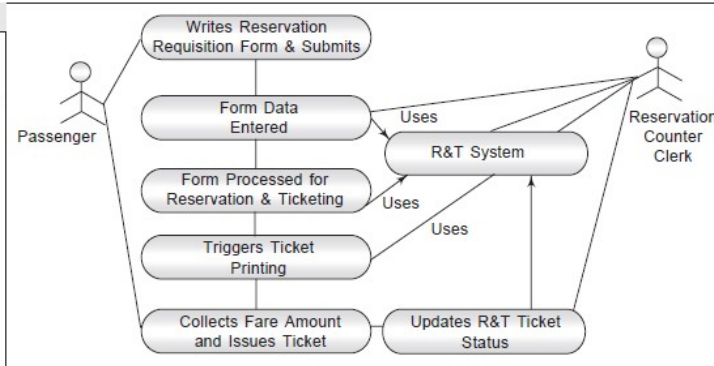
*Use Case
Enquiry*



- Use Case: reservation and ticketing: Fig. 15.6.

Fig. 15.6

*Use Case:
Reservation
and Ticketing*



Steps involved in this use case are:

- Passenger writes reservation requisition form.
- Submits to the counter clerk.
- Counter clerk calls 'Form' screen.
- Counter clerk enters form data.
- Triggers R and T processing.
- On OK processing, triggers ticket printing.
- Issues ticket to passenger.

- Update the system status.

So far we have completed two of the most common and frequently used use cases, i.e. enquiry and reservation and ticketing. The following use cases can be modeled on similar lines.

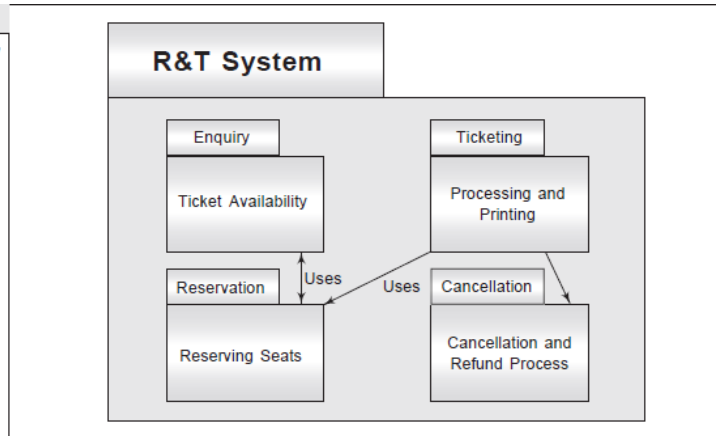
- Cancellation
- Process reservation data
- Form data entry
- Process ticketing
- Form processing
- Process cancellation
- Ticket printing
- Status updating

When the analyst has completed all use cases in the system, s/he has described and modeled the requirement of reservation and ticketing system. It is possible that in first go s/he may not be able to identify actors and hence use cases. But s/ he will come across their presence in the modeling exercise, and will then go back and analyze further to introduce more actors and use cases. OOA is an intuitive process. Use case-driven OOA up till now has given us broad system requirements in terms of use cases. The OOA model using use cases is to be packaged to model the system.

Figure 15.7 shows the packaging of use cases considered in the R and T system.

Fig. 15.7

*R and T
System
Packaging*



Realize that though there are eleven use cases, we have grouped them under four major use case groups, namely

- Enquiry
- Ticketing
- Reservation
- Cancellation

The remaining use cases are sub-use cases, or, in other words, these four use cases are further decomposed to bring clarity to main use case scenario.

How many case scenarios are necessary to represent the system and then to spell out the requirement? There are no set rules or guidelines on this point. More use cases may not necessarily bring better understanding or more clarity. A lot depends on users' and developers' level of comfort. What is definitely required is a use case for each major scenario: that is, for enquiry, reservation, ticketing and cancellation. Use cases for different scenarios arising out of smaller input variations need not be modeled. For example, cancellation could be part of a journey, reduced number of tickets and so on. Amongst five recommended processes of analysis, use case-driven analysis for ascertaining system requirement is considered best as it considers users' perspective of the system. When the system is modeled into different case scenarios it not

only goes down to the level of function and features, but also reveals relationships and behaviors amongst different system components.

Each use case scenario is an instance in the system that has clarity regarding goals and how they are to be achieved. The system can be decomposed from major use case at higher level going down to lowest level. This means that lower level use case scenarios together build the major scenario.

In use case–driven analysis, so far we have only understood in addition to domain knowledge.

System scope (enquiry, reservation, ticketing and cancellation)

- System players (users, actors)
- Major functions and processes based as use case scenarios.
- Some idea on packaging system components for deployment.
- System requirements at functional and process level.

In short, so far in OOA, we have reached to some extent a situation in which the requirement analysis made so far can be put into a formal RDD document. We still have not reached the specifications level. This is possible when we go further, identifying classes, their relationship, attributes and methods. Use case–driven analysis, displayed in use case models, is a basis for moving into the step of identifying classes and designing classes.

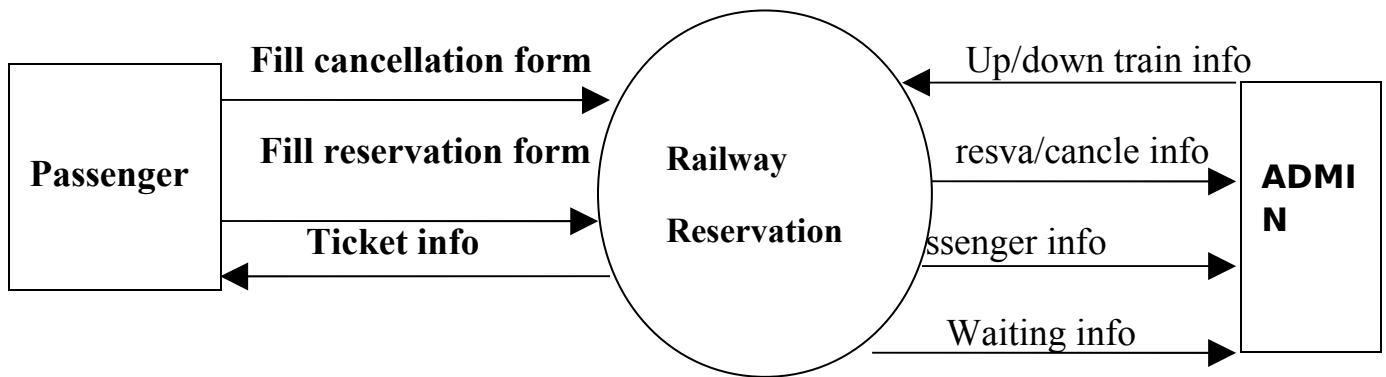
DATA FLOW DIAGRAMS:

The data flow diagram is a graphical representation that depicts information flow and the transforms that are applied as data moves from input to output. The DFD may be used to represent a system or software at any level of abstraction. In fact DFD may be partitioned into levels that represent increasing information flow and functional detail.

The level 0 DFD or a context model represents the entire software element as a single bubble with input and output data indicated by incoming and outgoing arrows, respectively.

In level 0 diagram shown below, the passenger fills either the reservation or cancellation form as input. He gets the ticket as the output and the report is sent to the administration.

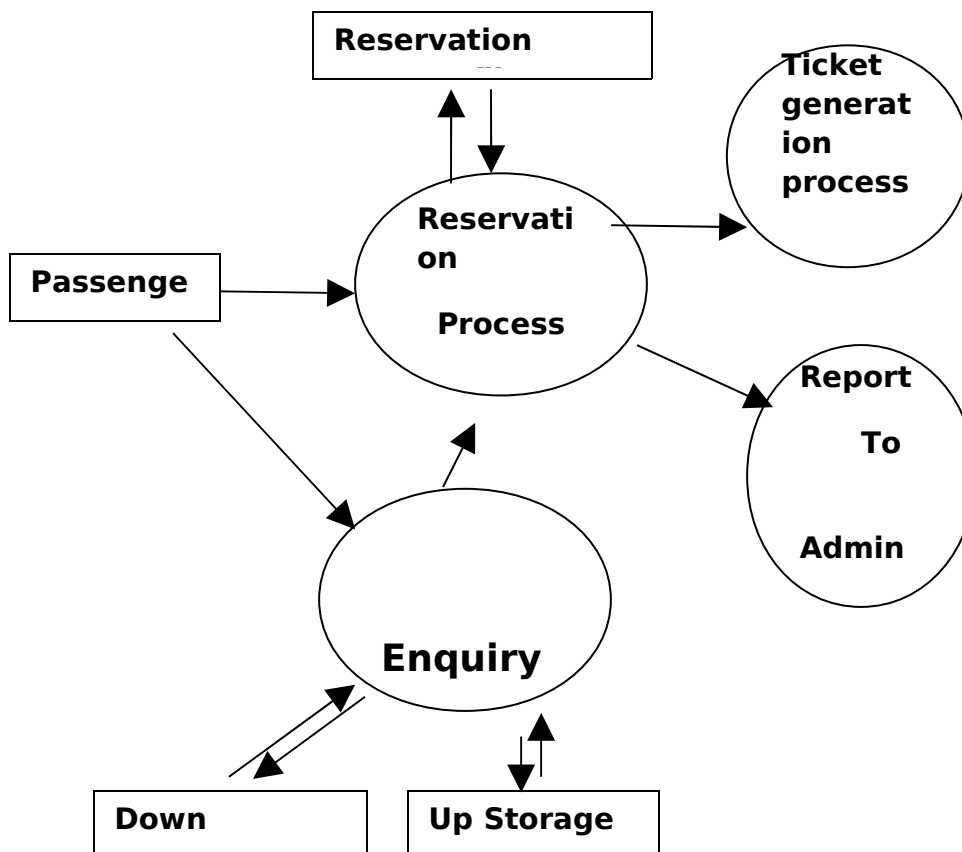
Level 1 DFD or Context Free Diagram



Level – 2 data flow diagram:

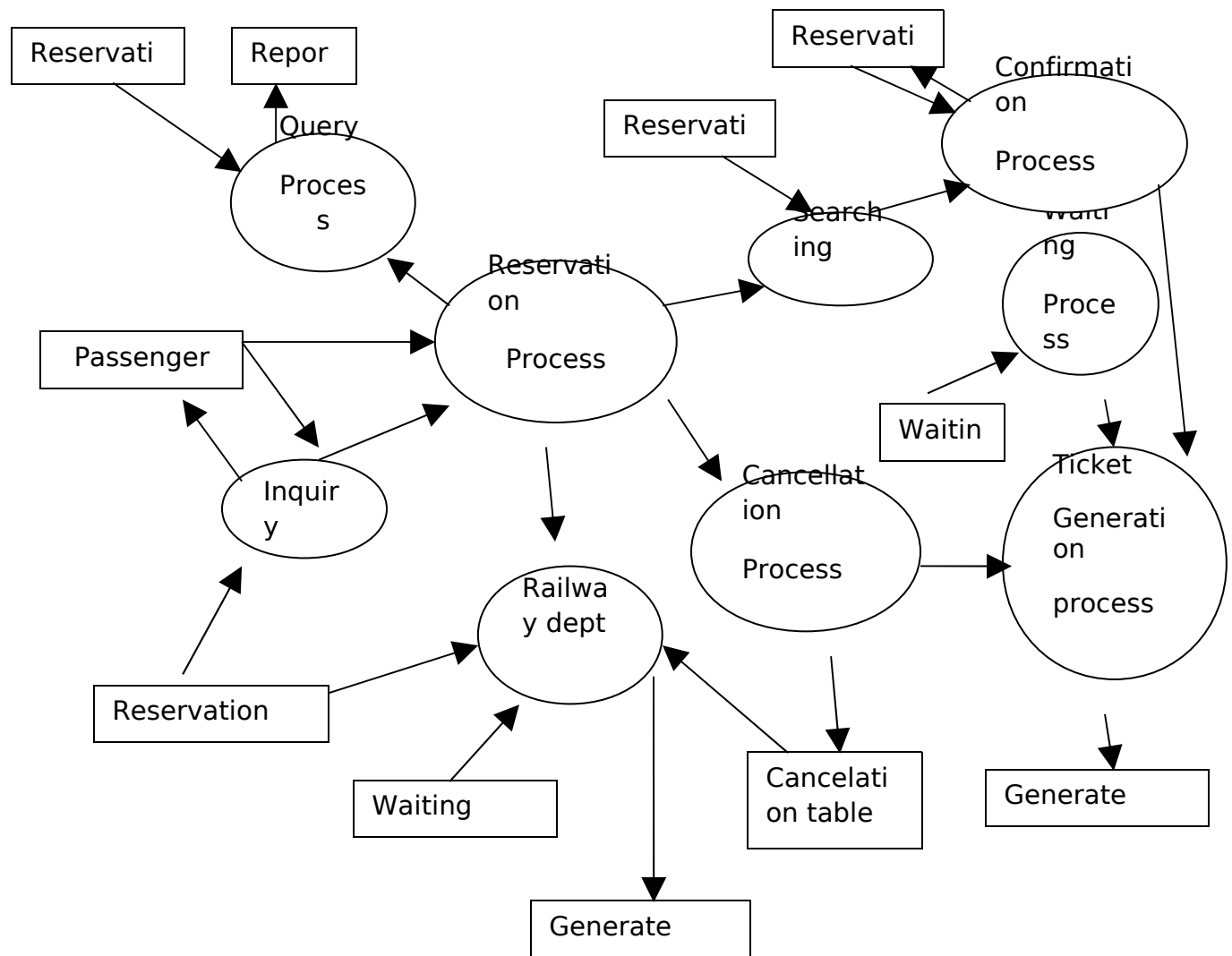
A level 1 DFD is the further refinement of level 0 DFD showing greater details and functionalities. In this, the single bubble of level 0 DFD is refined further. Each of the processes depicted at level 1 is a sub function of the overall system depicted in the context model.

As shown in the DFD above, the passenger either enquires about the trains or goes directly for the reservation or the cancellation processes as a result of which he gets the ticket generated. The reports are then sent to the administration.



Level – 3 data flow diagram:-

The level 2 DFD is the further refinement of the level 1 DFD. As shown in the DFD above the passenger has many options like he can directly go to the reservation counter or can first inquire and then go to the reservation counter or he can just inquire and return back. If the passenger wants reservation then the seats are checked for availability and if the seats are available the confirmation ticket is generated otherwise he is asked for waiting and waiting ticket is generated if he wants. If the user wants tickets to be cancelled he is given the cancellation ticket and the reports of all the transactions are sent to the administrator.



Level 2 DFD

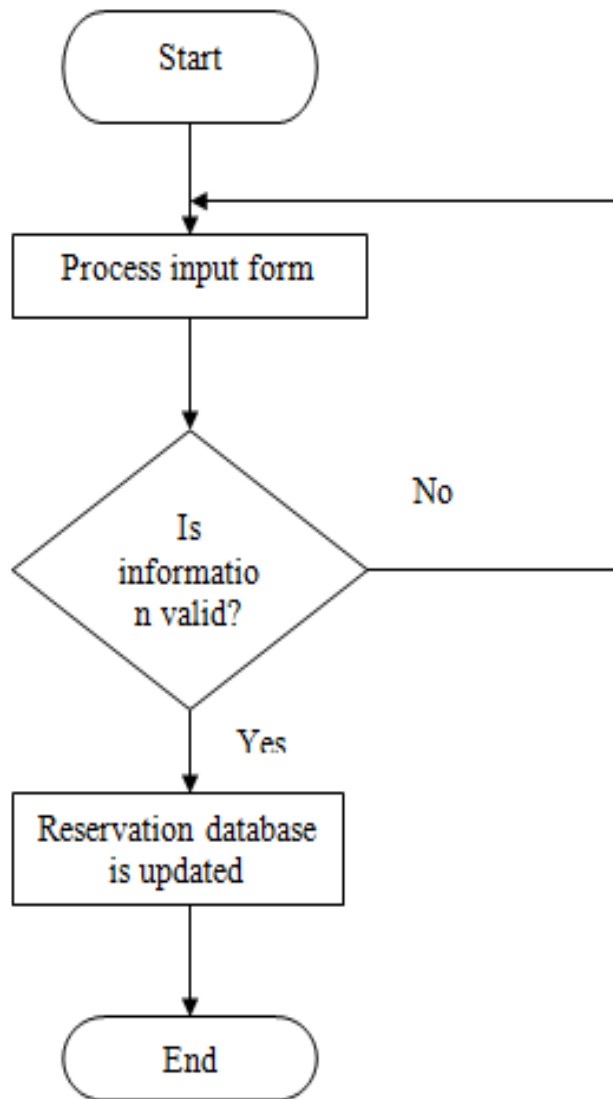
DESCRIPTION OF FLOW CHART: The program flowchart shows how the system proceeds from the input form to the output form of the system. It explains how the system is actually processed step by step. It represents the flow of control as the system is processed.

There are three types of program flow chart:

1. Input flow chart: This flowchart depicts the basic input operations in the system. In railway reservation system, first of all the password is checked then if the password is valid then we process the input form if the data is valid then the entries are updated in the data base otherwise the form is refilled.

2. Output flow chart: This flowchart depicts the basic output operations in the system. The user is required to enter the criteria for output. If it is for the reservation then the availability if seats is checked. If the seats are available then the confirmed ticket is generated otherwise the user is asked for waiting and if he wants then waiting ticket is generated. If the user wants the seat to be cancelled it is done and the cancelled ticket is generated for the user. The information about all the above transactions is then transferred to the related databases.

3. Report flow chart: This flowchart depicts the basic operations for the generation of reports. If the entries from the processed database are valid the concerned reports are generated otherwise the process will have to be repeated.



INPUT FLOW CHART

4.4 ENTITY RELATIONSHIP DIAGRAM:

Entity relationship diagram expresses the overall logical structure of a database graphically. It shows the relationship between different entities. The entities can have composite, multivolume or derived attributes. The entities and their attributes are:

Passenger

- Name
- First name
- Middle name
- Last name
- Gender
- Address
- House no.
- Street
- City
- Age
- Phone no.

Form

- Form no.

Ticket

- Ticket no.
- Waiting
- Confirmed
- Cancelled

Reservation counter

Administrator

Train

- Train no

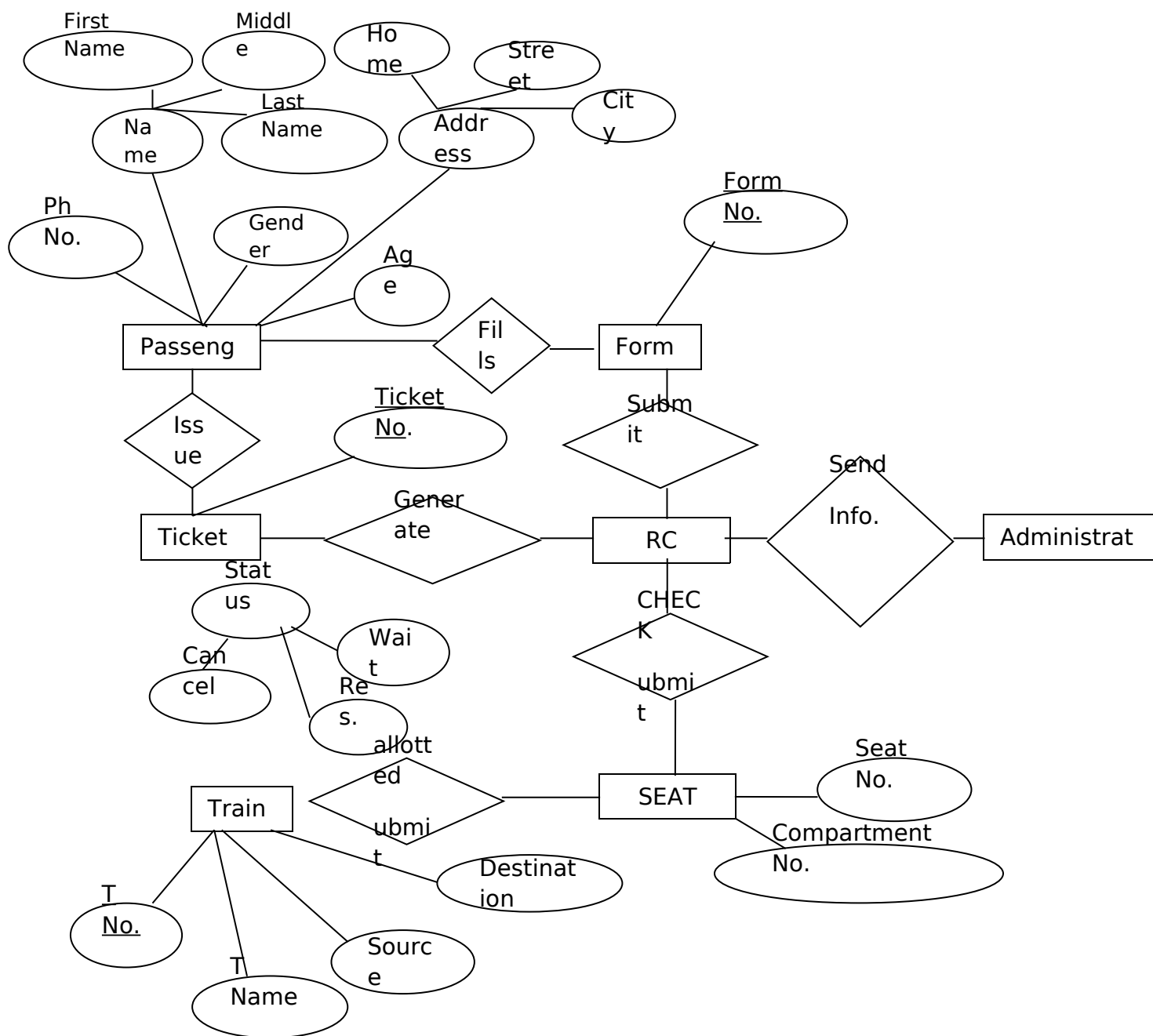
- Train name
- Source
- Destination

Seat

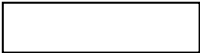
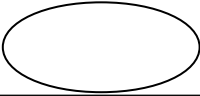
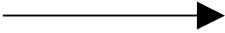
- Seat no.
- Compartment no.

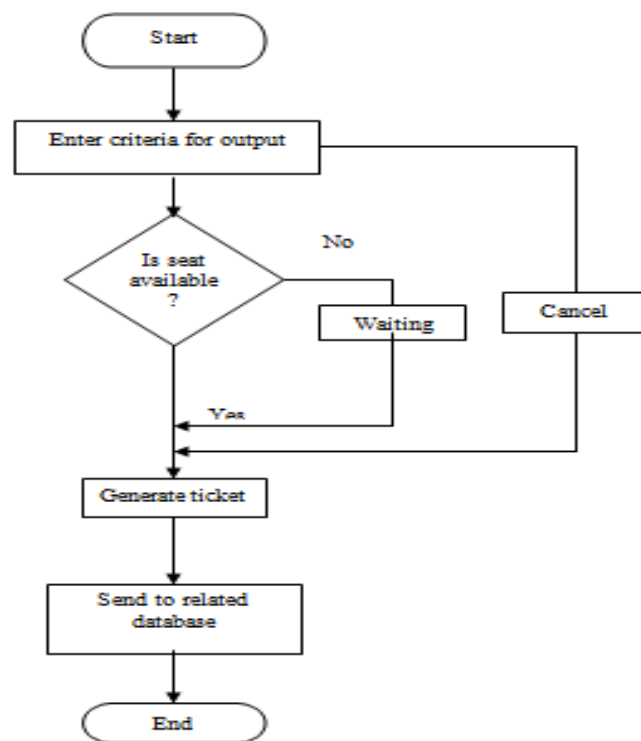
The relationships between different entities are: -

- Fill: The passenger fills the form.
- Submit: The form is submitted to the reservation counter.
- Check: The reservation counter checks the seats.
- Generate: Reservation counter generates the ticket.
- Issue: Reservation counter issues ticket to the passenger.
- Send info: The reservation counter sends information to the administrator.
- Allotted: The seat is allotted in the train.

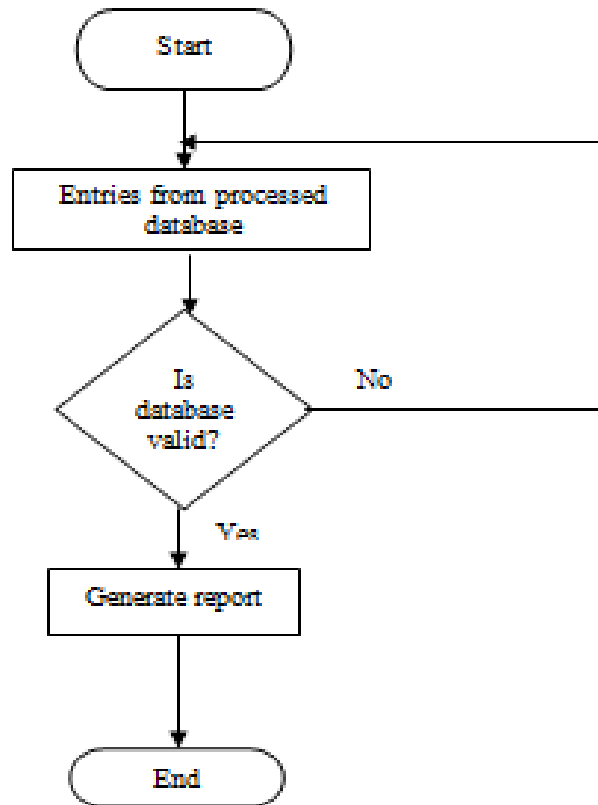


ENTITY RELATIONSHIP DIAGRAM

SYMBOL	MEANING
	ENTITY
	PROCESS
	DATA FLOW



OUTPUT FLOWCHART



REPORT FLOWCHART

4.5 MODULE DESCRIPTION:

- Fill: The passenger fills the form.
- Submit: The form is submitted to the reservation counter.
- Check: The reservation counter checks the seats.
- Generate: Reservation counter generates the ticket.
- Issue: Reservation counter issues ticket to the passenger.

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- Send info: The reservation counter sends information to the administrator.
- Allotted: The seat is allotted in the train.

5. INTERFACE REQUIREMENTS:

5.1 GRAPHICAL USER INTERFACE (GUI):

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This is used to describe a user friendly environment which uses graphical images (such as icons) instead of a command line to interact with the computer, GUIs have made computers more user friendly and more accessible to any user no matter what experience they may have, a typical GUI is the Windows A operating system.

A GUI uses a combination of technologies and devices to provide a platform the user can interact with, for the tasks of gathering and producing information.

A series of elements conforming a visual language have evolved to represent information stored in computers. This makes it easier for people with few computer skills to work with and use computer software. The most common combination of such elements in GUIs is the WIMP ("window, icon, menu, and pointing device") paradigm, especially in personal computers.

The WIMP style of interaction uses a physical input device to control the position of a cursor and presents information organized in windows and represented with icons. Available commands are compiled together in menus, and actions are performed making gestures with the pointing device. A window manager facilitates the interactions between windows, applications, and the windowing system. The windowing system handles hardware devices such as pointing devices and graphics hardware, as well as the positioning of the cursor.

In personal computers all these elements are modeled through a desktop metaphor, to produce a simulation called a desktop environment in which the display represents a desktop, upon which documents and folders of documents can be placed. Window managers and other software combine to simulate the desktop environment with varying degrees of realism

- Users use terminals to access the server
- Passengers and travel agents use terminals to reserve the tickets and to get information about the available seats on particular trains.

- Railroad administration may use terminals to see the reports generated by the database software.

5.2 COMMAND LINE INTERFACE:

Indian Railway's web-site www.indianrail.gov.in offers PRS enquiries on the internet Berth/Seat availability, Passenger Status, Fare, Train Schedule etc,. National Train Enquiry System (NTES) website www.trainenquiry.com gives dynamic information about the running status of any train and its expected arrival/departure at any given station.

Mobile telephone based SMS enquiry service. A new mobile phone Based facility for rail users' viz., Country wide extension of Universal Rail Enquiry number

5.3 HARDWARE INTERFACE:

Specify the logical characteristics of each interface between the software product and the hardware components of the system. Include such matters as what devices are to be supported, how they are to be supported, and protocols.

Printer

Normal PC

CPU – INTEL CORE 2DUO E7300

RAM – 1GB (MIN)

HARD DISK – 160GB

OPERATING SYSTEM – WINDOWS XP WITH SERVICE PACK 3 (CHT)

5.4 SOFTWARE INTERFACE:

Specify the use of other required software products (for example, a data management system, an operating system, or a mathematical package), and interfaces with other application systems.

Front end -> Visual Basic

Back end -> MS-Access

For each required software product, the following should be provided:

- Name
- Mnemonic
- Specification Number
- Version number
- Source

For each interface:

- Discuss the purpose of the interfacing software as related to this software product.
- Define the interface in terms of message content and format. It is not necessary to detail any well-documented Interface but a reference to the document defining the interface is required.

5.5 EXTERNAL INTERFACES:

- Train Delay Alert Service.
- Booking Terminals.
- Interactive voice Response System.
- Touch Screen.
- Passengers operated Enquiry Terminals

6. PERFORMANCE REQUIREMENT:

The following sections list the performance requirements for the system.

User Requirements:

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User Requirements	Description of Requirement For Design Environment
Location(s) and Number(s) of Users	Guangzhou, Nanjing, Shanghai
Expected Growth in Number of Users	
After 1 Year	50%
After 2 Years	TBD
After 3 Years	TBD
User Expectation	
Interactivity	User expect that it provides a very easy to use graphical user interface
Reliability	For some applications, reliability must be 100% during the application session
Adaptability	Network must adapt to user additions, deletions and changes
Security	Encryption software would be used for Credit Card transactions
Cost / Funding	Less than \$250K

Application Requirements:

Since no specified service is indicated, then we have listed the applications as best efforts. This may change as we learn more about the application.

The communication package is determined to be busy in nature, with small data sizes and frequent transmissions. We can consider this application to be interactive-burst, while the database transaction-processing application is described by the CRM as transferring large amounts of data (initial estimates are 1 MB/transaction), we have listed this application as interactive-bulk.

Categorizing Applications	Best-Efforts	Application Locations
Communication	100 Kb/s	Guangzhou and Nanjing
Database Access	400 Kb/s	All Locations
Database Transaction processing	1.5 Mb/s	All Locations

Host Requirements:

	Type of Host or Equipment	Numbers and Locations
Host A	PC	Guangzhou (10), Nanjing(7), Shanghai(10)
Host B	Database Server	Shanghai
Host C	Application Server	Nanjing

It is available during all 24 hours. Offered through Mail express, super fast, Rajdhani & Shatabdi Trains. About 1520 Trains runs daily. Variety of compartments based on comfort:

AC first class.

AC sleeper.

First class.

AC three tier.

AC chair car.

Sleeper class

Ordinary chair car.

Types of concerns & complexities:

44 types of quotas.

1 types of trains.

9 types of classes.

162 types of concessions.

127 types of bogies.

7. NON – FUNCTIONAL ATTRIBUTES:

In systems engineering and requirements engineering, non-functional requirements are requirements which specify criteria that can be used to judge the operation of system, rather than specific behaviors. Non- functional requirements are often called qualities of a system. Other terms for non-functional requirements are “constraints”, ”quality attributes”, “quality goals” and “quality of service requirements” . Qualities, i.e. non-functional requirements can be divided into 2 main categories:

- Execution qualities, such as security and usability, are observable at runtime.

- Evolution qualities, such as extensibility and scalability, embody in the static structure of the software system.

The nonfunctional requirements in our projects are:-

7.1 SECURITY

Extent to which access to software or data by unauthorized people can be controlled The Railway reservation system should not compromise the customer information at any time. The user information will never be sold to other parties and will be kept secure at all times. Users will be authenticated to ensure that no unauthorized users gain access to private information.

7.2 RELIABILITY

This system must be highly robust. amount of computing resources and code required to perform function extent to which program performs with required precision

- **Correctness** - extent to which program satisfies specifications, fulfills user's mission objectives
- **Efficiency** - Flexibility - effort needed to modify operational program
- **Interoperability** - effort needed to couple one system with another
- **Testability** - effort needed to test to ensure performs as intended

7.3 REUSEABILITY

This requirement is present, as this system will interact with user.

- Extent to which it can be reused in another application
- Effort required to learn, operate, prepare input, interpret output

7.4 PORTABILITY

The Railway reservation system will be developed using HTML and Java so that it can be accessed from any type of system using just a regular web browser. It will also be available to users that have web access on their cellular phones. The system will be tested on all types of hardware before being released to ensure that it is compliant with this requirement.

7.5 RESOURCE UTILIZATION:

The Railway reservation system will be developed so that it uses all type of functions and fulfill all the requirements of the system it uses the class hierarchy and pre inbuilt library functions which is completely utilized in the system designing and coding.

7.6 STABILITY AND SPEED EFFIENCY

It should be fast enough to produce the output The RRS system will be considered correct when the CRM approves the prototype presented and agrees that all the functions they require are implemented as stated in the Software Requirements Specification.

7.7 MAINTAINABILITY

Effort required to locate and fix an error during operation

Time: The project should be completed within the stipulated time period

Cost: The cost involved in marketing the project should be less.

8. SECURITY:

From security point of view, authentication will be done by password checking. If correct password has been entered by the user, the user will get further access to the system, otherwise he will have to re-enter the password. The facility to change the password has also been provided but for that the user will have to first enter the old password. The password can be four characters long.

8.1 DESCRIPTION:

SOFTWARE DISCRIPTION:

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Microsoft Windows: Microsoft Windows is a graphical user interface. It uses graphics to organize the users' workplace. Users can select and execute programs with the help of a mouse. The program that runs from within Windows also has a graphical user interface; for example MS Excel, MS Word etc.

Windows provides a broad range of graphical functions for drawing lines and geometric shapes and changing color. It also provides library functions for accessing screen, printers, keyboard, mouse and functions for working with various other types of objects like menus, bitmaps, icons etc. These libraries are a part of operating system

The system-defined functions that an application can call are provided by an interface known as the Application Programming Interface, or API. It is the interface between an application and Windows environment

Every Windows environment has its unique API. The API that supports Windows95, 98, 2000, XP are 32 bits API that is, all the functions supported by the API can work with 32 bits of information. The API of Windows 2000, XP has some special features for file security and support for multiple processors. This collection of working functions is maintained in files stored in the SYSTEM32 directory in the hard disk drive. This is created when the Windows is installed

The three primary files are:

GDI.DLL

It is a Windows 32-bit graphics driver interface API library and is a core Windows component. It contains functions for drawing graphics, accessing hardware, displaying output etc.

USER32.DLL

It is a Windows user library used to provide support for user interface routines. It contains functions that deal with the user interface, like creating and managing Windows.

KERNEL32.DLL

It provides Windows 32-bit API support and is the core Windows component. It contains functions, which deal with critical system resources, like functions for allocating memory, accessing files etc. Windows applications are, very often large in size, larger than the amount

of physical memory installed in the system. To get around this problem, Windows only loads those modules of an application, which are needed. Using this technique, Windows also greatly reduces memory consumption

HARDWARE DISCRIPTION:

The software requires IBM compatible machines with the following recommended specification

Processor:	Pentium III/AMD or higher
RAM:	128 MB or higher
Hard drive:	20 GB or higher
Monitor:	15" SVGA color
Mouse:	Standard 3 button scroll mouse
Keyboard:	Standard 101/102 – key keyboard
Optical drive:	52X CD – ROM Drive
Removable device (Optional):	512 MB USB 2.0 pen drive

PROJECT DESCRIPTION:

Rail transport is a commonly used mode of long-distance transportation in India. Almost all rail operations in India are handled by a state-owned company, Indian Railways, under the federal Ministry of Railways. The Indian Railways issues railway tickets for the citizens, so that they can use the rail transport facility. There are many categories of classes, for example, air-conditioned class, first class, sleeper class and general class. Each has its own features. Sleeper classes used for traveling more than a day

Reservation:

For long-distance travel, reservation of a berth can be done for comfortable travel up to two months prior to the date of intended travel. Details

such as the name, age and concession (if eligible) are required and are recorded on the ticket. The ticket price usually includes the base fare which depends on the classification of the train (example super-fast surcharge if the train is classified as a super-fast), the class in which one wishes to travel and the reservation charge for overnight journeys.

Fare Calculation:

The fare is calculated on the basis of the distance (in km) and the class

- Fare in A.C class – Rs. (70% of the distance)
- Fare in first class – Rs. (60% of the distance)
- Fare in sleeper class –Rs. (50% the distance)
- Fare in general class – Rs. (40% of the distance)

The above is for persons less than 60 years of age. The senior citizens (persons of 60 years and above) can avail of a reduction of 15% in all the above classes

8.2 TECHNICAL ISSUE:

- **Data redundancy:** It means that same data fields appear in many different files and often in different formats. In manual system, it poses quite a big problem because the data has to be maintained in large volumes but in our system, this problem can be overcome by providing the condition that if the data entered is duplicate, it will not be entered, otherwise, updating will take place.
- **Difficulty in accessing the data:** In manual system, searching information is time consuming but in our system, any information can be accessed by providing the primary key.
- **Unsatisfactory security measures:** In manual system, no security measures were provided but in this system, password security has been provided. The person can access the system by providing the correct password otherwise he is denied the access.

8.3 COST AND SCHEDULE:

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- One-time (initial) costs include equipment, training, software development, consultation, site preparation
- Recurring costs include salaries, supplies, maintenance, rentals, depreciation
- Fixed and variable costs; vary with volume of workload

ESTIMATING COSTS:

How to estimate costs so early in the project?

- Decompose the system and estimate costs of components; this is easier and more accurate than directly estimating cost for the whole system
- Use historical data whenever available
- Use organization's standards for computing overhead costs (managerial/secretarial support, space, electricity, etc.)
- Personnel (for development and operations) costs are function of time, hence estimate time first

8.4 RISK:

There are many risks involved with the system.

- Unauthorized Access.
- Data Ambiguity.
- Data redundancy.
- Data Damage.

Other Risks

9. OPERATIONAL SCENARIO:

TRAIN DETAILS:

Customers may view the train timing at a date their name and number of tickets.

RESERVATION:

After checking the number of seats available the customers reserve the tickets.

BILLING:

After reserving the required amount of tickets, the customer paid the amount.

CANCELLATION:

If the customers want to cancel the ticket, then half of the amount paid by the customer will be refunded to him.

USER CHARACTERISTICS:

Knowledgeable user

No voice user

Expert user

10. CONCLUSION:

The project entitled “railway ticket system” has been developed to maintain and manage all the reservation procedures include in the generation of a railway ticket for senior and non-senior citizens. We believe that, this project will help the computer operator of Indian railways (south zone) to carry out the railway ticket reservation, to cancel tickets and to implement the newly proposed journey planner without any difficulties, if this project is implemented in Indian railways (south zone). We had tried our level best to produce the project in its present form during the course of the project work, it was found to be very user interactive and effective than the existing system. The flexible attitude of visual basic helps to maintain the “railway ticket system” more effective.

LIMITATION OF THE PROJECT:

- The most significant limitation of over project is its dependency over the server because of this when is fail then whole work is to be stopped.
- Response time of the system may vary because of variable network speed.
- Another limitation of our project is that in this software and hardware requirement is high comparison of existing system.

DIFFICULTIES ENCOUNTERED:

There were many difficulties that came in our way in the process of development of this real time project some of them are illustrated below.

- Real time transfer of the file with minimum time delay.
- Searching an efficient security package and studying its usage.
- Enabling the multi user environment and simultaneous usage of files.

FUTURE ENHANCEMENT:

- Extra and user defined security needs can be employed during request and response.
- Records of client activities can be maintained.
- Another enhancement would be to add more modules to cover all information off the system.

Rather than designing manually we have made use of computer as once that data are input it performs accurate function. There is no chance of fault or miscalculation if the data are fed correctly. Use of the computers has solved many problems, which are faced while manual calculation.

This is not the end but beginning of the versatile, efficient and outsourcing railway reservation system. This is the one which is Railway Reservation System compatible to all operating system.

By making this we project we made a small footstep towards the path of progress of platform independent railway reservation system.

11. REFERENCES:

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- 10.1.1.6.3604.PDF