CT&DT-SPSU-”ANONYMOUS”-TASK#10

INFERENCE MAPPING

Railway Ticketing Management System:-

1. Problem Definition: The Railway Ticketing Management System aims to automate the booking, cancellation and management of train tickets. The system must handle:

* Ticket reservations (both online and offline).
* Seat availability.
* Payment processing.
* User and admin interactions.
* Reports on bookings, cancellations and availability.

1. Key Entities & Components:
2. User (Passenger):

* Input: Login credentials, destination, travel date, preferred train, class of travel.
* Processes: View train schedule, check availability, book/cancel tickets, make payments.
* Outputs: Ticket confirmation/cancellation, payment receipts.

1. Admin (Railway staff):

* Inputs: Train schedules, fare structure, booking status, maintenance logs.
* Processes: Add/modify train schedules, update availability, monitor reports.
* Outputs: Reports on booking, cancellations, system updates.

1. Train Information Systems:

* Inputs: Train details (number, class, capacity), schedule.
* Processes: Availability check, schedule updates, route management.
* Outputs: Available seats, train schedules.

1. Ticket Reservation System:

* Inputs: User booking request (train number, class, date), seat availability, payment info.
* Processes: Validate availability, process booking, assign seat, fare calculation.
* Outputs: Booking confirmation, ticket details, PNR(Passenger Name Record).

1. Payment System:

* Inputs: Fare amount, user payment method (credit card, debit card, UPI, etc.).
* Processes: Validate payment, process transaction.
* Outputs: Payment confirmation, receipt.

1. Inference Mapping (Flow of Logic and Dependencies):

Step 1: User Inquiry

* Input: User inputs date, origin, destination and preferred train.
* Process:
* System checks Train Information System for the schedule.
* The seat Availability System is queried to check available seats.
* Output: Display available trains and seat classes to the user.

Step 2: Booking Request

* Input: User selects train, class, and seat preference and intiates booking.
* Process:
* Ticket Reservation System checks availability.
* Fare Calculation is done based on the route, class and any applicable discounts.
* The Payment System handles the transaction.
* Output:
* On success: Ticket confirmation (with PNR), seat assignment.
* On failure : Error message(e.g., payment failure or no available seats).

Step 3: Seat Allocation:

* Input: Successful payment and booking details.
* Process:
* Seat Availability System updates to reduce the available seats.
* Train Information System reflects the updated status of the train.
* Outputs: Updated availability for future users.

Step 4: Cancellation:

* Input: User requests cancellation using PNR.
* Process:
* Cancellation System validates the PNR, checks cancellation rules, and calculates the refund.
* Seat Availability System updates available seats if the cancellation is successful.
* Payment System processes the refund.
* Output: Cancellation confirmation and refund receipt.

Step 6: Reporting

* Input: System generates data on bookings, cancellations, seat availability and revenue.
* Process:
* Report Generation System processes data from multiple subsystems.
* Output: Detailed reports for admins on daily operations, revenue and user activity.

1. Decision Points and Inferences:

1. Booking Confirmation:

* Decision based on seat availability, payment success and user details.

2. Cancellation and Refund:

* Decision based on cancellation rules, fare type and time of cancellation.

3. Seat Availability:

\* Inference from current bookings, cancellations and train capacity.

4. Payment Success:

\* Inference from the transaction status, user payment credentials, and the amount charged.

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