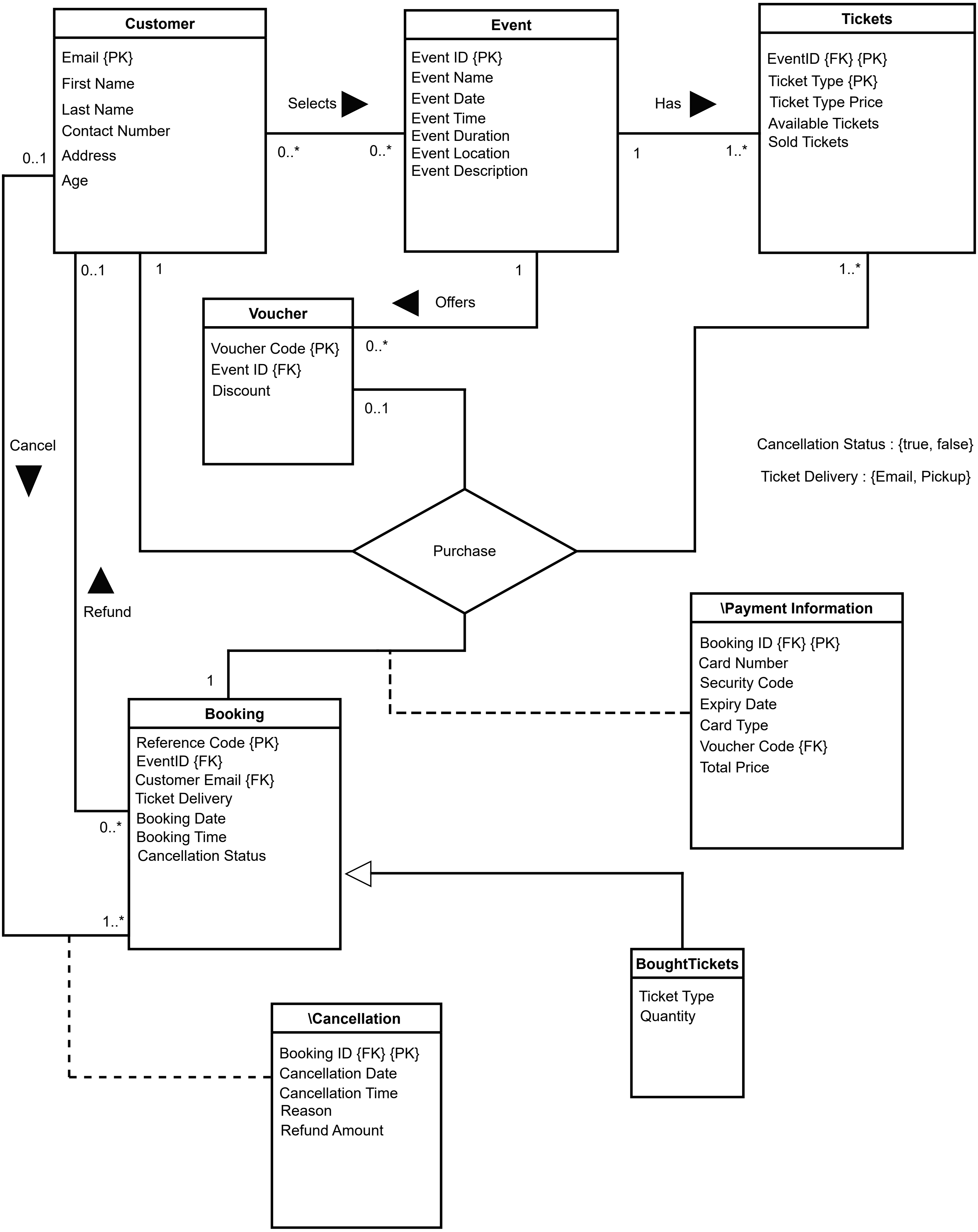
Online Ticket Booking System



Online Ticket Booking System Website ERD Report

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Introduction

This report justifies the use of entities, attributes, and relationships within the Online Ticket Booking System's Entity-Relationship Diagram (ERD). It provides a clear description of each entity's purpose, attributes, and primary keys, as well as the relationships between entities.

Entities

1 Customer

Attributes: Email (Primary Key), First Name, Last Name, Contact Number, Address, Age. When a user decides to book a ticket, they should enter the information above to register on the website and view available events. The email address is used as the primary key, although an alternate key could have been the customer's Contact Number, as it is just as unique.

2 Event

Attributes: Event ID (Primary Key), Event Name, Event Date, Event Time, Event Duration, Event Location, Event Description. Event ID is a unique number generated by the system to reference an event, simplifying data retrieval. An alternate key could have been the combination of Event Name, Event Date, Event Time, and Event Location.

3 Tickets

Attributes: Event ID (foreign key and primary key), Ticket Type (primary key), Ticket Type Price, Available Tickets, Sold Tickets. Event ID acts as a foreign key to reference the event for which the ticket is issued. Event ID and Ticket Type together form the primary key. The Tickets entity holds the number of available and sold tickets for a specific ticket type, along with its price.

4 Voucher

Attributes: Voucher Code (Primary Key), Event ID (foreign key), Discount. Voucher Code is the primary key because only one exists in the database. Event ID is a foreign key, determining which events the Voucher Code is valid for. Discount represents the percentage by which a customer can reduce the total price with a valid voucher code for a certain Event.

5 Booking

Attributes: Reference Code (primary key), Event ID (foreign key), Customer Email (foreign key), Ticket Delivery, Booking Date, Booking Time, Cancellation Status, Ticket Type, and Quantity. Reference Code is a unique code created by the system with each booking, serving as the primary key. Cancellation Status is an attribute which helps use to determine if a booking has been cancelled or not, it's value is either true or false (stored as a bit representing either 0 or 1). Event ID and Customer Email act as foreign keys. Ticket Delivery can hold values like ”Email” or ”Pickup.” Generalization is used to handle multiple tickets of different types bought by the customer (a table called Bought Tickets that holds the attributes Ticket Type and Quantity, since each booking may have multiple ticket types bought by the customer of different quantities).

Relationships

1 Customer - Event

A customer may select multiple events, and each event can be chosen by multiple customers. This represents a many-to-many relationship with optional participation on both sides.

2 Event - Ticket

Each event has multiple tickets. This is a one-to-many relationship with mandatory participation on both sides.

3 Event - Voucher

Each event can offer multiple vouchers, but each voucher is linked to one event. This represents a one-to-many relationship with mandatory participation on both the event and voucher sides.

4 Purchase (Customer - Voucher - Ticket - Booking)

This relationship involves a customer, an optional voucher, one or more tickets, and a booking. It also includes an attribute for payment information: Booking ID (foreign key and primary key), Card Number, Security Code, Expiry Date, Card Type, Total Price and Voucher Code. Cardholder information is not included as we can obtain customer details from the Booking entity using the Booking ID and Customer's Email. Furthermore, using Booking ID it's possible to obtain date and time of the transaction, since there is only one payment information for each booking BookingID is the chosen primary Key.

5 Customer - Booking

A customer may cancel one or more bookings before the event. This represents a one-to-many relationship with optional participation of customer and mandatory participation of booking. The Cancel relationship includes attributes such as Booking ID (which serves as both a foreign key and primary key , since there is one BookingID associated with each booking and each booking can be canceled only once), Cancellation Date, Cancellation Time, Reason for cancellation, and Refund Amount.

6 Booking - Customer

This relationship indicates that when a customer requests a cancellation before the event, they will receive a refund from the website. It's a many-to-one relationship with optional participation on both sides. The optional participation of the booking means that if the customer asks for a cancellation after the event they will not be refunded and correspondingly to the optional participation of the customer they may or may not be refunded.

Notes

The names of attributes within relations and the specification of primary keys and foreign keys are provided for clarification and as references for the logical data model and the database. However, To show the right way of using the foreign keys I have provided a more accurate version in the Logical Model Design (next page).
The term generalization is used for the BoughtTicket (which is a sub entity of the Booking entity), however it can also be named specialization since there is only one entity associated with booking entity via specialization/generalization.

Logical Module Design

Customer(Email, FirstName, LastName, ContactNumber, Address, Age)
Primary Key : Email

Event(EventID, EventName, EventDate, EventTime, EventDuration, EventLocation, EventDescription)
Primary Key : EventID

Tickets(EventID, TicketType, TicketTypePrice, AvailableTickets, SoldTickets)
Primary Key : EventID, TicketType
Foreign Key : EventID references Event(EventID)

Voucher(VoucherCode, EventID, Discount)
Primary Key : VoucherCode
Foreign Key : EventID references Event(EventID)

Booking(ReferenceCode, EventID, CustomerEmail, TicketDelivery, BookingDate, BookingTime, Cancellation Status)
Primary Key : ReferenceCode
Foreign Key : EventID references Event(EventID)
Foreign Key : CustomerEmail references Customer(Email)

BoughtTickets(BookingID, TicketType, Quantity)
Primary Key : BookingID
Foreign Key : BookingID references Booking(ReferenceCode)

Purchase(BookingID, CardNumber, SecurityCode, ExpiryDate, CardType, VoucherCode, TotalPrice)
Primary Key : BookingID
Foreign Key : BookingID references Booking(ReferenceCode)
Foreign Key : VoucherCode references Voucher(VoucherCode)

Cancellation(BookingID, CancellationTime, CancellationDate, Reason, RefundAmount)
Primary Key : BookingID
Foreign Key : BookingID references Booking(ReferenceCode)

Notes

In the purchase relation I should have chosen the primary keys of all the entities associated with this relation (like mentioned in the lecture notes), However I minimized the overhead and just mentioned Voucher Code and BookingID, since most of this information is available in the booking entity (such as customer Email or EventID).