

# Ticket Management System for Concerts

OOP IN C++

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# Ticket Management System for Concerts

The project centers on creating a Ticket Management System that enables the concert tickets' arrangement. It includes an upper-class "Tickets" and three subclasses "General Tickets", "Discount Tickets", and "VIP Tickets" which will be the different types of tickets to be created.

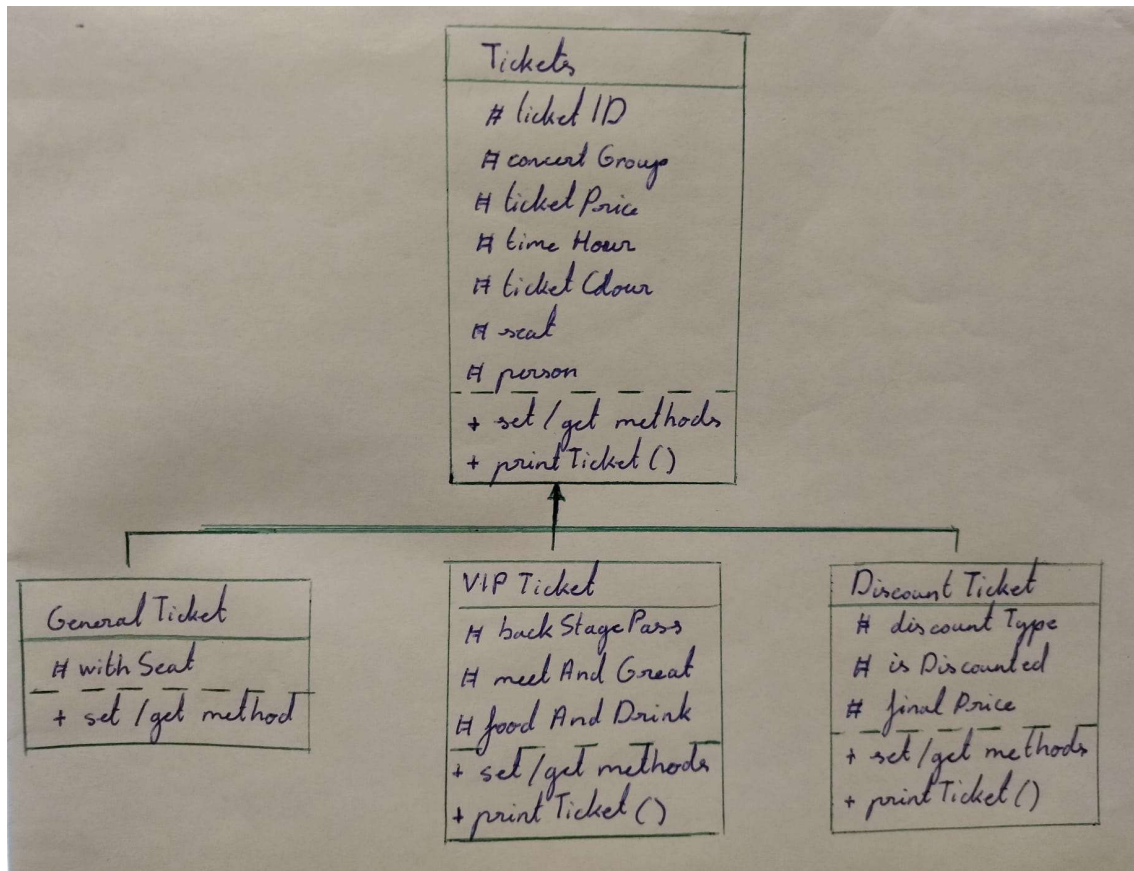
There are many ticket features such as seating options, discounts, and exclusive benefits for VIP attendees. It includes an automatic ID assignment, color validation, and pricing adjustments.

This project demonstrates the use of encapsulation, inheritance, and polymorphism to build a robust and scalable solution for managing concert tickets.

## Assumptions

1. **Object-Oriented Design:** The system uses classes and inheritance to define different ticket types.
2. **Ticket Uniqueness:** Each ticket has a unique identifier (ticketID), assigned sequentially.
3. **Custom Ticket Properties:**
  - **General Tickets:** May or may not include a seat.
  - **Discount Tickets:** Provide specific discounts based on type (e.g., "Student" or "Big family").
  - **VIP Tickets:** Include premium features like backstage passes, meet-and-greet opportunities, and food/drink options.
4. **Validation:** Certain input properties like ticket color are validated to ensure only specific values are accepted.
5. **Encapsulation:** All properties of tickets are encapsulated, with setters and getters controlling their behavior.
6. **No Ticket Overlap:** Seating capacity (j variable) decreases only for tickets requiring seats. With the use of variable i, assures a unique ticket ID for each ticket.

## Block Diagram



## Description of Operation

### Ticket Creation

- Inputs are collected for properties like concertGroup, timeHour, ticketPrice, and so on.

```
Please enter the concert group: El canto del loco
Please enter the ticket price: 200
Please enter the time and date of the concert: 20:00, 03/03/2025
Please enter the ticket color (Red, Blue, Green, Yellow or Purple):
```

- Each ticket type uses constructors to initialize values and validate where necessary.

```
GeneralTicket gt2 (0, "", 0, "", "", 0, "", false);

gt2.setTicketID();

string concertGroup;
cout << "Please enter the concert group: ";
getline(cin >> ws, concertGroup);
gt2.setConcertGroup(concertGroup);

int ticketPrice;
cout << "Please enter the ticket price: ";
cin >> ticketPrice;
gt2.setTicketPrice(ticketPrice);
```

### Dynamic Behavior:

- General tickets verify seat availability and display messages when seating is unavailable.

```
Please enter if the ticket includes a seat (1 for yes, 0 for no): 1
Ticket ID: 1
Concert Group: El canto del loco
Ticket Price: 200
Time and Date: 20:00, 03/03/2025
Ticket Color: Blue
Seat: 99
Person: Gloria
```

```
Please enter if the ticket includes a seat (1 for yes, 0 for no): 0
This ticket does not include a seat
Ticket ID: 1
Concert Group: El canto del loco
Ticket Price: 200
Time and Date: 20:00, 03/03/2025
Ticket Color: Blue
Seat: 0
Person: Gloria
```

- The ticket color must be one of the included ones. If not, Invalid color message.

```
Please enter the ticket color (Red, Blue, Green, Yellow or Purple): Pink
Invalid color
Please enter a valid color: Blue
```

- Discount tickets compute the adjusted price based on the discount type.

```
Please enter if the ticket includes backstage Pass (1 for yes, 0 for no): 1
Please enter if the ticket includes meet and greet (1 for yes, 0 for no): 0
Please enter if the ticket includes food and drink (1 for yes, 0 for no): 1
Ticket ID: 3
Concert Group: Extremoduro
Ticket Price: 400
Time Hour: 19:00, 06/02/2025
Ticket Color: Green
Seat: 99
Person: Rodrigo
Back Stage Pass: 1
Meet And Greet: 0
Food And Drink: 1
```

- VIP tickets add a premium layer with extra features.

```
Please enter the discount type (Big family, Student or Handicapped): Love
No discount available for this ticket
```

```
Please enter the discount type (Big family, Student or Handicapped): Student
Ticket ID: 5
Concert Group: One Direction
Ticket Price: 400
Time Hour: 14:00, 08/01/2026
Ticket Color: Purple
Seat: 97
Person: Pepe Luis
Discount Type: Student
Is Discounted: 30%
Final Price: 280
```

### Final Output:

- Each ticket type prints details about itself using the printTicket() method.
- The outputs differ depending on ticket type and customizations.

Link to GitHub's Repository: <https://github.com/Pokoyokjk/Tickets>