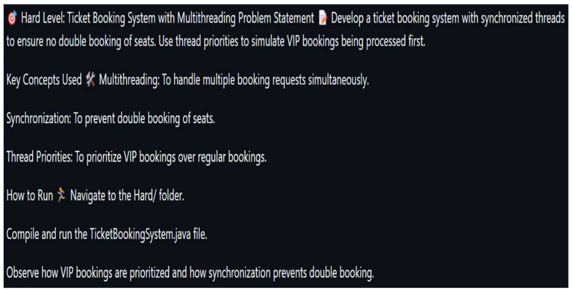
Assignment (Hard):



🎯 Hard Level: Ticket Booking System with Multithreading Problem Statement 📝 Develop a ticket booking system with synchronized threads to ensure no double booking of seats. Use thread priorities to simulate VIP bookings being processed first.

Key Concepts Used 🛠️ Multithreading: To handle multiple booking requests simultaneously.

Synchronization: To prevent double booking of seats.

Thread Priorities: To prioritize VIP bookings over regular bookings.

How to Run 🏃 Navigate to the Hard/ folder.

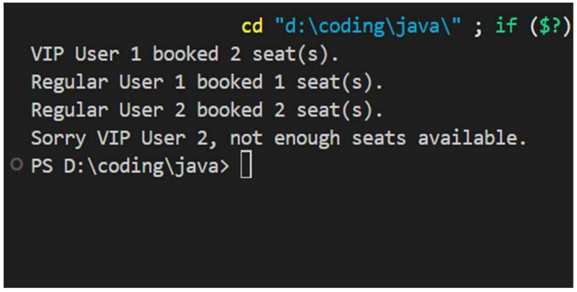
Compile and run the TicketBookingSystem.java file.

Observe how VIP bookings are prioritized and how synchronization prevents double booking.

Code:

```
import java.util.*;

class TicketBookingSystem {
    private int totalSeats = 5;

    synchronized void bookSeat(String name, int seats) {
        if (seats <= totalSeats) {
            System.out.println(name + " booked " + seats + "
seat(s).");
            totalSeats -= seats;
        } else {
            System.out.println("Sorry " + name + ", not enough seats
available.");
        }
    }
}

class BookingThread extends Thread {
    TicketBookingSystem system;
    String name;
    int seats;

    BookingThread(TicketBookingSystem system, String name, int
seats, int priority) {
        this.system = system;
        this.name = name;
        this.seats = seats;
        setPriority(priority);
    }

    public void run() {
        system.bookSeat(name, seats);
    }
}
public class TicketBooking {
    public static void main(String[] args) {
        TicketBookingSystem system = new TicketBookingSystem();

        BookingThread t1 = new BookingThread(system, "VIP User
1", 2, Thread.MAX_PRIORITY);
        BookingThread t2 = new BookingThread(system, "Regular
User 1", 1, Thread.NORM_PRIORITY);
        BookingThread t3 = new BookingThread(system, "VIP User
2", 1, Thread.MAX_PRIORITY);
        BookingThread t4 = new BookingThread(system, "Regular
User 2", 2, Thread.NORM_PRIORITY);

        t1.start();
        t2.start();
        t3.start();
        t4.start();
    }
}
```

Output:



```
                    cd "d:\coding\java\" ; if ($?)
 VIP User 1 booked 2 seat(s).
 Regular User 1 booked 1 seat(s).
 Regular User 2 booked 2 seat(s).
 Sorry VIP User 2, not enough seats available.
○ PS D:\coding\java> ▯
```