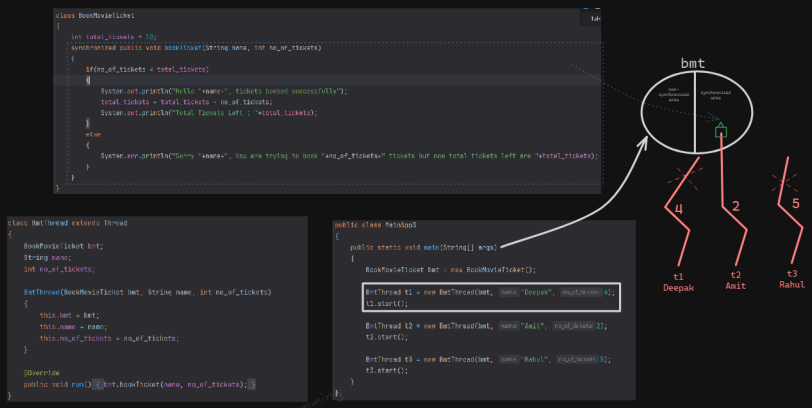
Synchronization

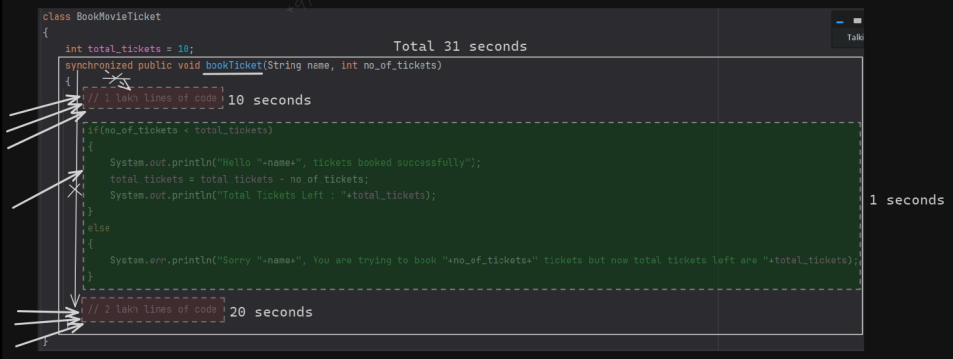
⇒ Whenever we run multiple threads simultaneously :-
  → then output can be changed in every execution
  → then data inconsistency problem can occur
  → then threads can collide

⇒ Synchronization is the process by which we can control the multiple threads execution.

⇒ How to achieve synchronization :-
  1. Process Synchronization (not in java)
  2. Thread Synchronization
    2.1 Mutual Exclusive
      a. By "synchronized method"
      b. By "synchronized block"
      c. By "static synchronization"
    2.2 Cooperation (Inter-Thread Communication)
      a. By using methods : wait(), notify() and notifuAll()



⇒ Disadvantages of Synchronization :-
  1. Application becomes slow because every thread is executed one by one



⇒ Basics of Synchronization
1. What is synchronization in Java?
2. Why is synchronization needed in multithreaded applications?
3. What problems can occur if synchronization is not used in multithreading?
4. What is a race condition? How does synchronization prevent it?
5. What are the disadvantages of using synchronization?

⇒ Achieving Synchronization
6. How can we achieve synchronization in Java?
7. What is the difference between synchronized methods and synchronized blocks?
8. Which is better: synchronized method or synchronized block? Why?
9. Can synchronization be applied to constructors? Why or why not?
10. Can a thread enter a synchronized method of one object while another thread executes a synchronized method of a different object?

⇒ Synchronized Method
11. What is a synchronized method in Java?
12. How do you declare a synchronized method?
13. When a thread is executing a synchronized method, what happens if another thread tries to access it?
14. Does synchronization on a non-static method lock the whole class or just one object?
15. Can two threads execute two different synchronized methods of the same object simultaneously?

⇒ Synchronized Block
16. What is a synchronized block in Java?
17. Why would you use a synchronized block instead of a synchronized method?
18. How do you define a synchronized block?
19. What is the scope of the lock in a synchronized block?
20. Can we use any object as a lock in a synchronized block?

⇒ Static Synchronization
21. What is static synchronization in Java?
22. How is a static synchronized method different from a non-static synchronized method?
23. What kind of lock is used in static synchronization?
24. Can two threads access two different static synchronized methods of the same class simultaneously?
25. Why might we use static synchronization in real-world applications?