Binary Search Session for the New Batch (21 Jan 2025)

Dear Students,
Welcome to today's session! The topic for this session is **Binary Search**, one of computer science's most fundamental and essential algorithms.

Session Details:
- **Date:** 21 January 2025
- **Duration:** 3 hours

Agenda for the Session:
1. Understanding the concept and working of Binary Search.
2. Solving real-world problems using Binary Search.
3. Practicing problems of varying difficulty levels on LeetCode.

Binary Search Practice Problems:
1. **Binary Search**
   - Problem ID: **704**
   - Link: [Binary Search](#)
2. **Search Insert Position**
   - Problem ID: **35**
   - Link: [Search Insert Position](#)
3. **First Bad Version**
   - Problem ID: **278**
   - Link: [First Bad Version](#)
4. **Find Minimum in Rotated Sorted Array**
   - Problem ID: **153**
   - Link: [Find Minimum in Rotated Sorted Array](#)
5. **Search in Rotated Sorted Array**
   - Problem ID: **33**
   - Link: [Search in Rotated Sorted Array](#)
6. **Find Peak Element**
   - Problem ID: **162**
   - Link: [Find Peak Element](#)
7. **Find the Duplicate Number**
   - Problem ID: **287**
   - Link: [Find the Duplicate Number](#)
8. **Median of Two Sorted Arrays**
   - Problem ID: **4**
   - Link: [Median of Two Sorted Arrays](#)
9. **Kth Smallest Element in a Sorted Matrix**
   - Problem ID: **378**
   - Link: [Kth Smallest Element in a Sorted Matrix](#)
10. **Capacity to Ship Packages Within D Days**
    - Problem ID: **1011**
    - Link: [Capacity to Ship Packages Within D Days](#)

Binary Search on Answer Problems:

1. **Minimum Speed to Arrive on Time**
   - Problem ID: **1870**
   - Link: [Minimum Speed to Arrive on Time](#)
   - Description: Find the minimum speed required to arrive at a destination within a given time.
2. **Minimum Number of Days to Make m Bouquets**
   - Problem ID: **1482**
   - Link: [Minimum Number of Days to Make m Bouquets](#)

- o Description: Determine the minimum number of days needed to make m bouquets given blooming conditions.
3. **Magnetic Force Between Two Balls**
   - o Problem ID: **1552**
   - o Link: [Magnetic Force Between Two Balls](#)
   - o Description: Maximize the minimum magnetic force between two balls placed in a line.
4. **Koko Eating Bananas**
   - o Problem ID: **875**
   - o Link: [Koko Eating Bananas](#)
   - o Description: Find the minimum eating speed for Koko to finish eating all bananas within a given number of hours.
5. **Capacity to Ship Packages Within D Days**
   - o Problem ID: **1011**
   - o Link: [Capacity to Ship Packages Within D Days](#)
   - o Description: Determine the minimum capacity of a ship to transport packages within D days

Instructions:
- **Step 1:** Start with the easier problems like **Binary Search** and **Search Insert Position** to build your foundation.
- **Step 2:** Progress to medium-level problems to enhance your problem-solving skills.
- **Step 3:** Attempt harder problems like **Median of Two Sorted Arrays** and so on towards the end.