give

1. Binary Search …..
2. Count Vowels and Consonants in a String……. Still one pending
3. Fibonacci Series …………
4. Largest Element ……
5. Merge Sorted Arrays …..
6. Palindrome Check …………..
7. Prime Check …..
8. Reverse String ….
9. Second Largest ….
10. Sum Of Digits …..
11. Factorial ……
12. Armstrong
13. Generate Random Number between given range
14. Print pattern using \* and numbers
15. Compare two Objects
16. Create an Object
17. Calculate frequency of characters in a String
18. Replace a sub-string in a String
19. Count Consonants in a String
20. Remove duplicates from a String
21. Find duplicate elements in an array
22. Demonstrate inheritance with method overriding
23. Handle exception using try-catch-finally
24. Use HashMap to count frequency of charcters/words
25. Sort an Array List using Collections
26. Implement interface and use polymorphism
27. Swap two numbers without using a temporary variable
28. Count frequency of each word in a sentence
29. First non-repeated character in a String
30. Bubble Sort
31. Check if a number is perfect
32. Find lcm and gcd of two numbers

**1. Number-Based Programs (10)**

*Focus: Loops, Conditions, Operators*

| **No.** | **Program Description** |
| --- | --- |
| 1 | Check if a number is **Prime** |
| 2 | Generate **Fibonacci Series** |
| 3 | Check if a number is a **Palindrome** |
| 4 | Check if a number is an **Armstrong Number** |
| 5 | Calculate **Factorial** using loop and recursion |
| 6 | Find **Sum of Digits** |
| 7 | Swap two numbers without using a temporary variable |
| 8 | Find **LCM and GCD** of two numbers |
| 9 | Check if a number is **Perfect** |
| 10 | Generate a **Random Number** between a given range |

**🔤 2. String-Based Programs (10)**

*Focus: String Manipulation, char[], HashMap*

| **No.** | **Program Description** |
| --- | --- |
| 11 | **Reverse a String** |
| 12 | Check if a String is a **Palindrome** |
| 13 | **Count Vowels and Consonants** in a String |
| 14 | **Replace** a substring in a String |
| 15 | **Remove duplicates** from a String |
| 16 | Find the **First non-repeated character** in a String |
| 17 | **Check if two Strings are Anagrams** |
| 18 | **Count frequency of each character** in a String |
| 19 | **Count frequency of each word** in a sentence |
| 20 | **Compare two Strings** using equals() and compareTo() |

**🧮 3. Array & Search/Sort Programs (6)**

*Focus: Arrays, Search, Sort*

| **No.** | **Program Description** |
| --- | --- |
| 21 | Find **Largest element** in an array |
| 22 | Find **Second largest** element in an array |
| 23 | **Merge two sorted arrays** |
| 24 | Perform **Binary Search** |
| 25 | **Bubble Sort** an array |
| 26 | Find **Duplicate elements** in an array |

**🧱 4. Object-Oriented Programming (OOP) Programs (4)**

*Focus: Classes, Inheritance, Interface, Polymorphism*

| **No.** | **Program Description** |
| --- | --- |
| 27 | **Create an Object** and access fields/methods |
| 28 | **Compare two Objects** using equals() |
| 29 | **Demonstrate Inheritance** with method overriding |
| 30 | **Implement Interface** and show Polymorphism  Navigate into the folder using terminal and open gitbash there and tyoe code . it will take into vsd  toString() returns String representation of an Object.  Map.Entry<Character,Integer> entry: charCount.entrySet();  entrySet() gives a set of all key-value pairs. -it is a method in map interface  Map.Entry<K,V> is a static inner interface inside the Map interface.  It represents one key-value pair from a map.  Anagrams: These are two words or phrases that contain the same characters in the same frequency, just arranged in a different order.  Same letters  Same count of each letter  Order can be different  Usually case sensitive and ignore spaces (for phrases)  replaceAll([\\s](file:///\\s),””) [\\s](file:///\\s) is a regex pattern “\s” – invalid in Java(needs escaping)  [\\s](file:///\\s) valid(java String for regex \s)  Split(“\\s+”) – splits by one or more spaces  wordcount.put(…)updates frequency  equals() checks for exact match  compareTo() – checks for lexicographical (dictionary) order |