1. Create one employee class and in that class create instance variable, local variable and static variable.

```
public class Employee {

   static String companyName = "TechCompany";
   String name;
   double salary;
   public Employee(String name, double salary) {
      this.name = name;
      this.salary = salary;
   }
   public void showDetails() {
      String message = "Employee: " + name + ", Salary: " + salary + ", Company: " +
companyName;
      System.out.println(message);
   }

   public static void main(String[] args) {

      Employee emp1 = new Employee("Ajay", 50000);
      Employee emp2 = new Employee("vinay", 60000);

      System.out.println(emp1.name);
      System.out.println(emp2.salary);
      System.out.println(Employee.companyName);
      emp1.showDetails();
      emp2.showDetails();
   }
}
```

Output:

```
Ajay
60000.0
TechCompany
Employee: Ajay, Salary: 50000.0, Company: TechCompany
Employee: vinay, Salary: 60000.0, Company: TechCompany
```

2. Create addition of two numbers using variables

```
public class AddTwoNumbers {
   public static void main(String[] args) {
      int num1 = 10;
      int num2 = 20;

      int sum = num1 + num2;
      System.out.println("The sum of " + num1 + " and " + num2 + " is: " + sum);
   }
}
```

Output: The sum of 10 and 20 is: 30

3. Swap two numbers using third variable

```
public class SwapNumbers {
   public static void main(String[] args) {
      int a = 5;
      int b = 10;

      System.out.println("Before swapping: a = " + a + ", b = " + b);

      int temp = a;
      a = b;
      b = temp;

      System.out.println("After swapping: a = " + a + ", b = " + b);
   }
}
```

Output:
Before swapping: a = 5, b = 10
After swapping: a = 10, b = 5

4. Calculate area of rectangle

```
public class RectangleArea {
   public static void main(String[] args) {
      double length = 8.5;
      double width = 4.2;

      double area = length * width;

      System.out.println("Length: " + length);
      System.out.println("Width: " + width);
      System.out.println("Area of Rectangle: " + area);
   }
}
```

Output:
Length: 8.5
Width: 4.2
Area of Rectangle: 35.7

5. Calculate simple interest

```
public class SimpleInterest {
   public static void main(String[] args) {
      double principal = 10000;
      double rate = 5;
      double time = 2;

      double simpleInterest = (principal * rate * time) / 100;

      System.out.println("Principal: " + principal);
      System.out.println("Rate of Interest: " + rate + "%");
```

```
        System.out.println("Time (years): " + time);
        System.out.println("Simple Interest: " + simpleInterest);
    }
}
```

Output:
Principal: 10000.0
Rate of Interest: 5.0%
Time (years): 2.0
Simple Interest: 1000.0

6. Count number of vowels in a string(input=”Programming”, output=3 Vowels)

```
public class CountVowels {
    public static void main(String[] args) {
        String input = "Programming";
        int vowelCount = 0;


        input = input.toLowerCase();

        for (int i = 0; i < input.length(); i++) {
            char ch = input.charAt(i);
            if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {
                vowelCount++;
            }
        }

        System.out.println(vowelCount + " Vowels");
    }
}
```

Output:
3 Vowels

7. Replace all Spaces with Hyphens for a string in java

```
public class ReplaceSpaces {
    public static void main(String[] args) {
        String input = "Java is fun to learn";

        String result = input.replace(" ", "-");

        System.out.println("Original String: " + input);
        System.out.println("Modified String: " + result);
    }
}
```

Output:
Original String: Java is fun to learn
Modified String: Java-is-fun-to-learn

8. Check if a string is Palindrome

```
public class PalindromeCheck {
   public static void main(String[] args) {
      String input = "madam";
      input = input.toLowerCase();

      String reversed = new StringBuilder(input).reverse().toString();

      if (input.equals(reversed)) {
         System.out.println("The string is a Palindrome.");
      } else {
         System.out.println("The string is NOT a Palindrome.");
      }
   }
}
```

Output: The string is a Palindrome.

9. .Count words in a Sentence

```
public class WordCount {
   public static void main(String[] args) {
      String sentence = "Java is fun to learn";


      String[] words = sentence.trim().split("\\s+");

      int wordCount = words.length;

      System.out.println("Sentence: " + sentence);
      System.out.println("Number of words: " + wordCount);
   }
}
```

Output:
Sentence: Java is fun to learn
Number of words: 5

10. Check if String starts with “j” and end with “a” . eg. “java”

```
public class StartEndCheck {
   public static void main(String[] args) {
      String input = "java";
      input = input.toLowerCase();

      if (input.startsWith("j") && input.endsWith("a")) {
         System.out.println("The string starts with 'j' and ends with 'a'.");
      } else {
         System.out.println("The string does NOT start with 'j' and end with 'a'.");
      }
   }
}
```

Output: The string starts with 'j' and ends with 'a'.

11. Split a sentence into words

```
public class SplitSentence {
   public static void main(String[] args) {
      String sentence = "Java is fun to learn";
      String[] words = sentence.split(" ");

      System.out.println("The words are:");
      for (String word : words) {
         System.out.println(word);
      }
   }
}
```

Output:
The words are:
Java
is
fun
to
learn

12. Write a program to find the frequency of each character in a string

```
import java.util.HashMap;
import java.util.Map;
import java.util.Scanner;

public class CharFrequency {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter a string: ");
      String text = scanner.nextLine();
      Map<Character, Integer> frequency = new HashMap<>();
      for (char c : text.toCharArray()) {
         if (frequency.containsKey(c)) {
            frequency.put(c, frequency.get(c) + 1);
         } else {
            frequency.put(c, 1);
         }
      }
      System.out.println("\nCharacter frequencies:");
      for (Map.Entry<Character, Integer> entry : frequency.entrySet()) {
         System.out.println("'" + entry.getKey() + "': " + entry.getValue());
      }

      scanner.close();
   }
```

```
}
```
Output:
```
Enter a string: Hello World
Character frequencies:
'H': 1
'e': 1
'l': 3
'o': 2
' ': 1
'W': 1
'r': 1
'd': 1
```

13. Write a program to remove all white Spaces from string

```
import java.util.Scanner;

public class RemoveSpaces {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String text = scanner.nextLine();
        String noSpaces = text.replaceAll("\\s+", "");
        System.out.println("String without spaces: " + noSpaces);

        scanner.close();
    }
}
```
Output:
```
Enter a string:  Hello   World   !
String without spaces: HelloWorld!
```

14. Write a Program to count digits, letters, spaces and Special characters

```
import java.util.Scanner;

public class CountCharacters {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String text = scanner.nextLine();
        int letters = 0, digits = 0, spaces = 0, specialChars = 0;
        for (char c : text.toCharArray()) {
            if (Character.isLetter(c)) {
                letters++;
            } else if (Character.isDigit(c)) {
                digits++;
            } else if (Character.isWhitespace(c)) {
                spaces++;
            } else {
```

```
            specialChars++;
          }
        }
        System.out.println("Letters: " + letters);
        System.out.println("Digits: " + digits);
        System.out.println("Spaces: " + spaces);
        System.out.println("Special characters: " + specialChars);

        scanner.close();
    }
}
```

Output:

```
Enter a string: Hello 123! How are you?
Letters: 14
Digits: 3
Spaces: 4
Special characters: 2
```

15. Write a program to sort characters of a String Alphabetically

```
import java.util.Arrays;
import java.util.Scanner;

public class SortStringCharacters {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String text = scanner.nextLine();
        char[] chars = text.toCharArray();
        Arrays.sort(chars);
        String sorted = new String(chars);
        System.out.println("Sorted characters: " + sorted);

        scanner.close();
    }
}
```

Output:

```
Enter a string: hello world
Sorted characters:  dehlllloorw
```

16. Write a program to find the sum of all elements in an integer array

```
import java.util.Scanner;

public class ArraySum {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();
```

```
        int[] arr = new int[n];
        int sum = 0;
        System.out.println("Enter " + n + " integers:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
            sum += arr[i];
        }
        System.out.println("Sum of all elements: " + sum);

        scanner.close();
    }
}
```

Output:

```
Enter the number of elements: 5
Enter 5 integers:
10
20
30
40
50
Sum of all elements: 150
```

17. Write a program to count even and odd numbers from an array

```
import java.util.Scanner;

public class CountEvenOdd {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();

        int[] arr = new int[n];
        int evenCount = 0, oddCount = 0;
        System.out.println("Enter " + n + " integers:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
            if (arr[i] % 2 == 0) {
                evenCount++;
            } else {
                oddCount++;
            }
        }
        System.out.println("Number of even elements: " + evenCount);
        System.out.println("Number of odd elements: " + oddCount);

        scanner.close();
    }
}
```

Output:
Enter the number of elements: 6
Enter 6 integers:
1
2
3
4
5
6
Number of even elements: 3
Number of odd elements: 3

18. find maximum and minimum elements from an array.

```
import java.util.Scanner;

public class MaxMinArray {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter the number of elements: ");
      int n = scanner.nextInt();

      int[] arr = new int[n];
      System.out.println("Enter " + n + " integers:");
      for (int i = 0; i < n; i++) {
         arr[i] = scanner.nextInt();
      }
      int max = arr[0];
      int min = arr[0];
      for (int i = 1; i < n; i++) {
         if (arr[i] > max) {
            max = arr[i];
         }
         if (arr[i] < min) {
            min = arr[i];
         }
      }
      System.out.println("Maximum element: " + max);
      System.out.println("Minimum element: " + min);

      scanner.close();
   }
}
```

Output:
Enter the number of elements: 5
Enter 5 integers:
10
3

45
2
30
Maximum element: 45
Minimum element: 2

19. write a program to find out second highest element from an array

```
import java.util.Scanner;

public class SecondHighest {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter the number of elements: ");
      int n = scanner.nextInt();

      if (n < 2) {
         System.out.println("Array must have at least 2 elements.");
         return;
      }

      int[] arr = new int[n];

      System.out.println("Enter " + n + " integers:");
      for (int i = 0; i < n; i++) {
         arr[i] = scanner.nextInt();
      }
      int highest = Integer.MIN_VALUE;
      int secondHighest = Integer.MIN_VALUE;
      for (int num : arr) {
         if (num > highest) {
            secondHighest = highest;
            highest = num;
         } else if (num > secondHighest && num != highest) {
            secondHighest = num;
         }
      }

      if (secondHighest == Integer.MIN_VALUE) {
         System.out.println("No second highest element (all elements may be equal).");
      } else {
         System.out.println("Second highest element: " + secondHighest);
      }

      scanner.close();
   }
}
```

Output:
Enter the number of elements: 5
Enter 5 integers:
10
45
30
20
50
Second highest element: 45

20. write a program to search for a number entered by the user in an array

```
import java.util.Scanner;

public class SearchInArray {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter the number of elements: ");
      int n = scanner.nextInt();

      int[] arr = new int[n];
      System.out.println("Enter " + n + " integers:");
      for (int i = 0; i < n; i++) {
         arr[i] = scanner.nextInt();
      }
      System.out.print("Enter the number to search: ");
      int target = scanner.nextInt();
      boolean found = false;
      int position = -1;
      for (int i = 0; i < n; i++) {
         if (arr[i] == target) {
            found = true;
            position = i;
            break;
         }
      }
      if (found) {
         System.out.println(target + " found at position (index): " + position);
      } else {
         System.out.println(target + " not found in the array.");
      }

      scanner.close();
   }
}
```

Output:
Enter the number of elements: 5
Enter 5 integers:

10
20
30
40
50
Enter the number to search: 30
30 found at position (index): 2

21. write a program to print an array in reverse order

```
import java.util.Scanner;

public class ReverseArray {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

      System.out.print("Enter the number of elements: ");
      int n = scanner.nextInt();

      int[] arr = new int[n];
      System.out.println("Enter " + n + " integers:");
      for (int i = 0; i < n; i++) {
         arr[i] = scanner.nextInt();
      }
      System.out.println("Array in reverse order:");
      for (int i = n - 1; i >= 0; i--) {
         System.out.print(arr[i] + " ");
      }

      scanner.close();
   }
}
```

Output:
Enter the number of elements: 5
Enter 5 integers:
10
20
30
40
50
Array in reverse order:
50 40 30 20 10

22. remove duplicate elements from an array

```
import java.util.Arrays;
import java.util.Scanner;

public class RemoveDuplicates {
```

```
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();

        int[] arr = new int[n];
        System.out.println("Enter " + n + " integers:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
        }
        Arrays.sort(arr);
        int[] temp = new int[n];
        int j = 0;
        for (int i = 0; i < n - 1; i++) {
            if (arr[i] != arr[i + 1]) {
                temp[j++] = arr[i];
            }
        }
        temp[j++] = arr[n - 1];
        System.out.println("Array after removing duplicates:");
        for (int i = 0; i < j; i++) {
            System.out.print(temp[i] + " ");
        }

        scanner.close();
    }
}
```

Output:

```
Enter the number of elements: 7
Enter 7 integers:
4
5
2
4
2
8
5
Array after removing duplicates:
2 4 5 8
```

23. copy all elements from one array to another

```
import java.util.Scanner;

public class CopyArray {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();
```

```
        int[] original = new int[n];
        int[] copy = new int[n];
        System.out.println("Enter " + n + " integers:");
        for (int i = 0; i < n; i++) {
            original[i] = scanner.nextInt();
        }
        for (int i = 0; i < n; i++) {
            copy[i] = original[i];
        }
        System.out.println("Copied array elements:");
        for (int num : copy) {
            System.out.print(num + " ");
        }

        scanner.close();
    }
}
```

Output:

```
Enter the number of elements: 5
Enter 5 integers:
10
20
30
40
50
Copied array elements:
10 20 30 40 50
```

24. Sort an array in ascending order

```
import java.util.Arrays;
import java.util.Scanner;

public class SortArrayAscending {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();

        int[] arr = new int[n];
        System.out.println("Enter " + n + " integers:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
        }
        Arrays.sort(arr);
        System.out.println("Array in ascending order:");
        for (int num : arr) {
            System.out.print(num + " ");
```

```
        }

        scanner.close();
    }
}
```

Output:

```
Enter the number of elements: 6
Enter 6 integers:
50
10
40
20
30
60
Array in ascending order:
10 20 30 40 50 60
```

25. print only prime numbers from array

```
import java.util.Scanner;

public class PrimeNumbersFromArray {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();

        int[] arr = new int[n];
        System.out.println("Enter " + n + " integers:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
        }

        System.out.println("Prime numbers in the array:");
        for (int num : arr) {
            if (isPrime(num)) {
                System.out.print(num + " ");
            }
        }

        scanner.close();
    }
    private static boolean isPrime(int num) {
        if (num <= 1) return false;
        if (num == 2) return true;
        if (num % 2 == 0) return false;

        for (int i = 3; i <= Math.sqrt(num); i += 2) {
            if (num % i == 0) return false;
```

```
        }
        return true;
    }
}
```

Output:

```
Enter the number of elements: 6
Enter 6 integers:
2
4
5
9
11
15
Prime numbers in the array:
2 5 11
```

26. find out frequency of each element

```
import java.util.HashMap;
import java.util.Map;
import java.util.Scanner;

public class FrequencyOfElements {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of elements: ");
        int n = scanner.nextInt();

        int[] arr = new int[n];
        System.out.println("Enter " + n + " integers:");
        for (int i = 0; i < n; i++) {
            arr[i] = scanner.nextInt();
        }
        Map<Integer, Integer> frequencyMap = new HashMap<>();
        for (int num : arr) {
            frequencyMap.put(num, frequencyMap.getOrDefault(num, 0) + 1);
        }
        System.out.println("Frequency of each element:");
        for (Map.Entry<Integer, Integer> entry : frequencyMap.entrySet()) {
            System.out.println(entry.getKey() + " occurs " + entry.getValue() + " time(s)");
        }

        scanner.close();
    }
}
```

Output:

```
Enter the number of elements: 7
Enter 7 integers:
4
```

5
4
2
5
8
4
Frequency of each element:
2 occurs 1 time(s)
4 occurs 3 time(s)
5 occurs 2 time(s)
8 occurs 1 time(s)

27. merge two arrays and sort them

```
import java.util.Arrays;
import java.util.Scanner;

public class MergeAndSortArrays {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter the number of elements in first array: ");
      int n1 = scanner.nextInt();
      int[] arr1 = new int[n1];
      System.out.println("Enter " + n1 + " integers for first array:");
      for (int i = 0; i < n1; i++) {
         arr1[i] = scanner.nextInt();
      }
      System.out.print("Enter the number of elements in second array: ");
      int n2 = scanner.nextInt();
      int[] arr2 = new int[n2];
      System.out.println("Enter " + n2 + " integers for second array:");
      for (int i = 0; i < n2; i++) {
         arr2[i] = scanner.nextInt();
      }
      int[] merged = new int[n1 + n2];
      System.arraycopy(arr1, 0, merged, 0, n1);
      System.arraycopy(arr2, 0, merged, n1, n2);
      Arrays.sort(merged);
      System.out.println("Merged and sorted array:");
      for (int num : merged) {
         System.out.print(num + " ");
      }

      scanner.close();
   }
}
```

Output:
Enter the number of elements in first array: 3
Enter 3 integers for first array:

5 1 9
Enter the number of elements in second array: 4
Enter 4 integers for second array:
8 2 7 3
Merged and sorted array:
1 2 3 5 7 8 9

28. segregate even and odd numbers

```
import java.util.Scanner;

public class SegregateEvenOdd {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter the number of elements: ");
      int n = scanner.nextInt();

      int[] arr = new int[n];
      System.out.println("Enter " + n + " integers:");
      for (int i = 0; i < n; i++) {
         arr[i] = scanner.nextInt();
      }
      int[] segregated = new int[n];
      int index = 0;
      for (int num : arr) {
         if (num % 2 == 0) {
            segregated[index++] = num;
         }
      }
      for (int num : arr) {
         if (num % 2 != 0) {
            segregated[index++] = num;
         }
      }
      System.out.println("Array after segregating even and odd numbers:");
      for (int num : segregated) {
         System.out.print(num + " ");
      }

      scanner.close();
   }
}
```

Output:
Enter the number of elements: 7
Enter 7 integers:
12 17 70 15 22 65 21
Array after segregating even and odd numbers:
12 70 22 17 15 65 21