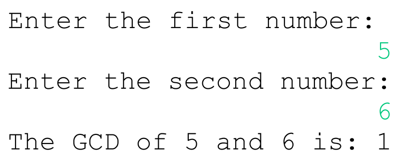
1. Write a Java Program to find GCD of two given numbers.

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

        System.out.println("Enter the first number:");
        int number1 = scanner.nextInt();

        System.out.println("Enter the second number:");
        int number2 = scanner.nextInt();

        int gcd = findGCD(number1, number2);
        System.out.println("The GCD of " + number1 + " and " + number2 + " is: " + gcd);

        scanner.close();
    }


    public static int findGCD(int a, int b) {
        while (b != 0) {
            int temp = b;
            b = a % b;
            a = temp;
        }
        return a;
    }
}
```

Output:

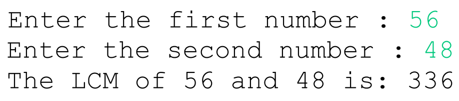


```
Enter the first number:
                       5
Enter the second number:
                       6
The GCD of 5 and 6 is: 1
```

2. Write a java program to LCM of TWO given number.

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

        System.out.println("Enter the first number:");
        int number1 = scanner.nextInt();

        System.out.println("Enter the second number:");
        int number2 = scanner.nextInt();

        int lcm = findLCM(number1, number2);
        System.out.println("The LCM of " + number1 + " and " + number2 + " is: " + lcm);

        scanner.close();
    }


    public static int findLCM(int a, int b) {


        return (a * b) / findGCD(a, b);
    }


    public static int findGCD(int a, int b) {
        while (b != 0) {
            int temp = b;
            b = a % b;
            a = temp;
        }
        return a;
    }
}
```

Output:

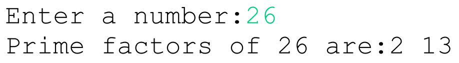


```
Enter the first number : 56
Enter the second number : 48
The LCM of 56 and 48 is: 336
```

3. Write a Java Program to print all the Prime Factorsof the Given Number.

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

        System.out.println("Enter a number:");
        int number = scanner.nextInt();

        System.out.println("Prime factors of " + number + " are:");
        primeFactors(number);

        scanner.close();
    }


    public static void printPrimeFactors(int n) {

        while (n % 2 == 0) {
            System.out.print(2 + " ");
            n /= 2;
        }


        for (int i = 3; i * i <= n; i += 2) {

            while (n % i == 0) {
                System.out.print(i + " ");
                n /= i;
            }
        }

        if (n > 2) {
            System.out.print(n);
        }
    }
}
```

Output:



```
Enter a number:26
Prime factors of 26 are:2 13
```

4.Check whether the Given Numberis a Palindrome or NOT.

```
public class isPlalindrome {

  •         public static void main(String[] args) {
  •             Scanner scanner = new Scanner(System.in);
  •
  •             System.out.println("Enter a number:");
  •             int number = scanner.nextInt();
  •
  •           if (isPalindrome(number)) {
  •               System.out.println(number + " is a palindrome.");
  •           } else {
  •               System.out.println(number + " is not a palindrome.");
  •           }
  •
  •           scanner.close();
  •       }
  •
  •
  •       public static boolean isPalindrome(int n) {
  •           int originalNumber = n;
  •           int reversedNumber = 0;
  •
  •           while (n != 0) {
  •               int digit = n % 10;
  •               reversedNumber = reversedNumber * 10 + digit;
  •               n /= 10;
  •           }
  •
  •           return originalNumber == reversedNumber;
  •       }
  •   }
```

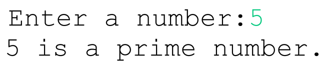
Output:

```
              Enter a number:151
        151 is a palindrome.
```

5. Write a Java Program to check whether the Given Number is Prime Number or NOT.

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

        System.out.println("Enter a number:");
        int number = scanner.nextInt();

        if (isPrime(number)) {
            System.out.println(number + " is a prime number.");
        } else {
            System.out.println(number + " is not a prime number.");
        }

        scanner.close();
    }


    public static boolean isPrime(int n) {
        if (n <= 1) {
            return false;
        }


        for (int i = 2; i <= Math.sqrt(n); i++) {
            if (n % i == 0) {
                return false;
            }
        }

        return true;
    }
}
```

Output:

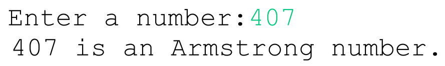


```
Enter a number:5
5 is a prime number.
```

6. Write a Java Program to check whether the given number is Armstrong Numberor NOT.

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

        System.out.println("Enter a number:");
        int number = scanner.nextInt();

        if (isArmstrongNumber(number)) {
            System.out.println(number + " is an Armstrong number.");
        } else {
            System.out.println(number + " is not an Armstrong number.");
        }
        scanner.close();
    }


    public static boolean isArmstrongNumber(int n) {
        int originalNumber = n;
        int sum = 0;
        int numberOfDigits = countDigits(n);

        while (n > 0) {
            int digit = n % 10;
            sum += Math.pow(digit, numberOfDigits);
            n /= 10;
        }

        return originalNumber == sum;
    }


    public static int countDigits(int n) {
        int count = 0;
        while (n > 0) {
            count++;
            n /= 10;
        }
        return count;
    }
}
```

Output:



```
Enter a number:407
407 is an Armstrong number.
```

7. Write a Java Program to check whether the given number is Perfect Numberor NOT.

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

        System.out.println("Enter a number:");
        int number = scanner.nextInt();

        if (isPerfectNumber(number)) {
            System.out.println(number + " is a perfect number.");
        } else {
            System.out.println(number + " is not a perfect number.");
        }

        scanner.close();
    }


    public static boolean isPerfectNumber(int n) {
        int sum = 0;


        for (int i = 1; i <= n / 2; i++) {
            if (n % i == 0) {
                sum += i;
            }
        }


        return sum == n;
    }
}
```

```
Output: Enter a number:
            10
        10 is not a perfect number.
```

8. Write a Java Program to check whether the given numbers are Amicable Numbersor NOT.

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

        System.out.println("Enter the first number:");
        int number1 = scanner.nextInt();

        System.out.println("Enter the second number:");
        int number2 = scanner.nextInt();

        if (areAmicableNumbers(number1, number2)) {
            System.out.println(number1 + " and " + number2 + " are Amicable numbers.");
        } else {
         System.out.println(number1 + " and " + number2 + " are not Amicable numbers.");
      }

      scanner.close();
   }


   public static boolean areAmicableNumbers(int num1, int num2) {
      return (sumOfProperDivisors(num1) == num2) && (sumOfProperDivisors(num2) ==
num1);
   }


   public static int sumOfProperDivisors(int n) {
      int sum = 1;

      for (int i = 2; i <= Math.sqrt(n); i++) {
         if (n % i == 0) {
            sum += i;
            if (i != n / i) {
               sum += n / i;
            }
         }
      }

      return sum;
   }
}
```

Output:

```
Enter the first number : 220

Enter the second number : 284

220 and 284 are Amicable numbers.
```

9. Write a Java Program to check whether the given number is Ramanujam's Numberor NOT.

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

      System.out.println("Enter a number:");
      int number = scanner.nextInt();
```

```
        if (isRamanujanNumber(number)) {
            System.out.println(number + " is a Ramanujan number.");
        } else {
            System.out.println(number + " is not a Ramanujan number.");
        }

        scanner.close();
    }


    public static boolean isRamanujanNumber(int n) {
        int count = 0;


        for (int i = 1; i * i * i < n; i++) {
            for (int j = i + 1; i * i * i + j * j * j <= n; j++) {
                if (i * i * i + j * j * j == n) {
                    count++;
                }
            }
        }


        return count >= 2;
    }
}
```

Output:

```
       Enter a number:
1729
1729 is a Ramanujan number.
```

10. Write a Java Program check whether the given number is Automorphic Numberor NOT.

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

        System.out.println("Enter a number:");
        int number = scanner.nextInt();

        if (isAutomorphicNumber(number)) {
```

```java
            System.out.println(number + " is an Automorphic number.");
        } else {
            System.out.println(number + " is not an Automorphic number.");
        }

        scanner.close();
    }


    public static boolean isAutomorphicNumber(int n) {
        int square = n * n;


        while (n > 0) {
            if (n % 10 != square % 10) {
                return false;
            }
            n /= 10;
            square /= 10;
        }

        return true;
    }
}
```

Output:

```
        Enter a number 625
625 is an Automorphic number.
```