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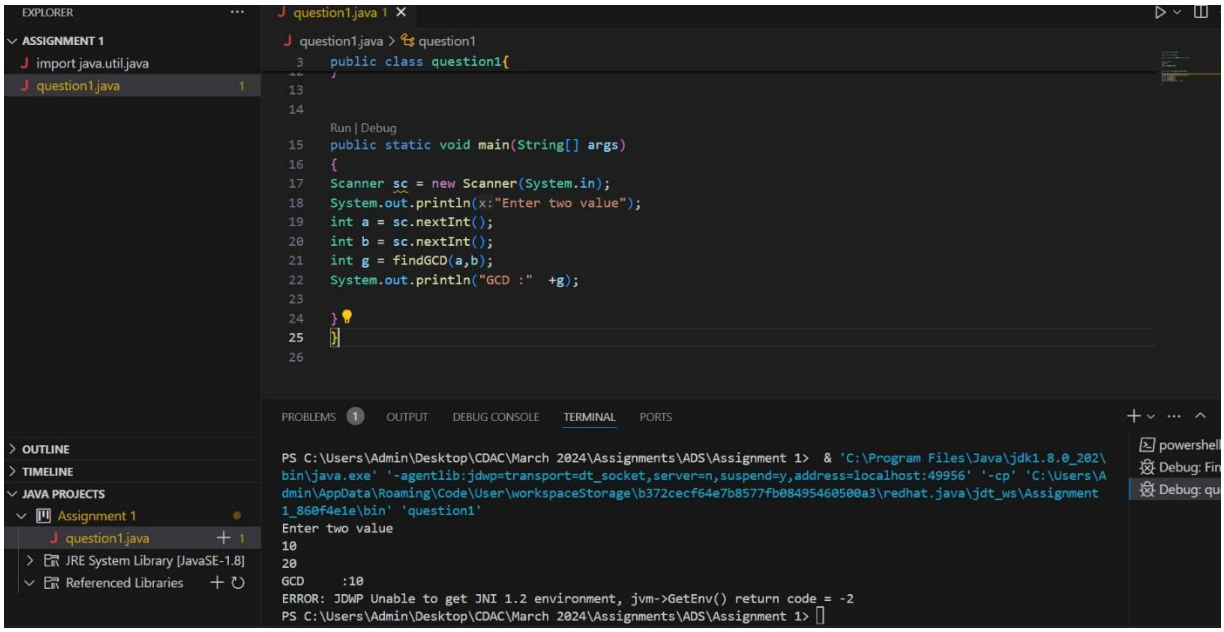
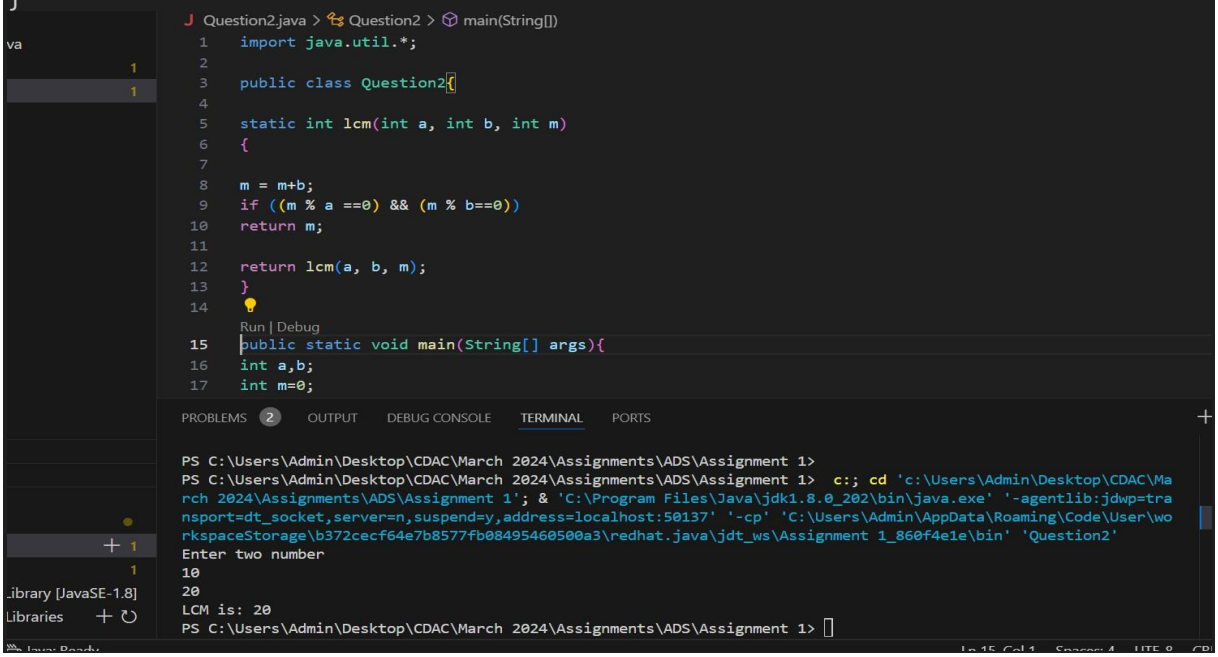
Question 1: Write a Java Program to find GCD of two given numbers.

```java
import java.util.Scanner;

public class question1{

private static int findGCD (int a, int b)
{

if( a  % b ==0)
return b;
else
return findGCD(b,a%b);
}


public static void main(String[] args)
{
Scanner sc = new Scanner(System.in);
System.out.println("Enter two value");
int a = sc.nextInt();
int b = sc.nextInt();
int g = findGCD(a,b);
System.out.println("GCD :"  +g);

}
}
```



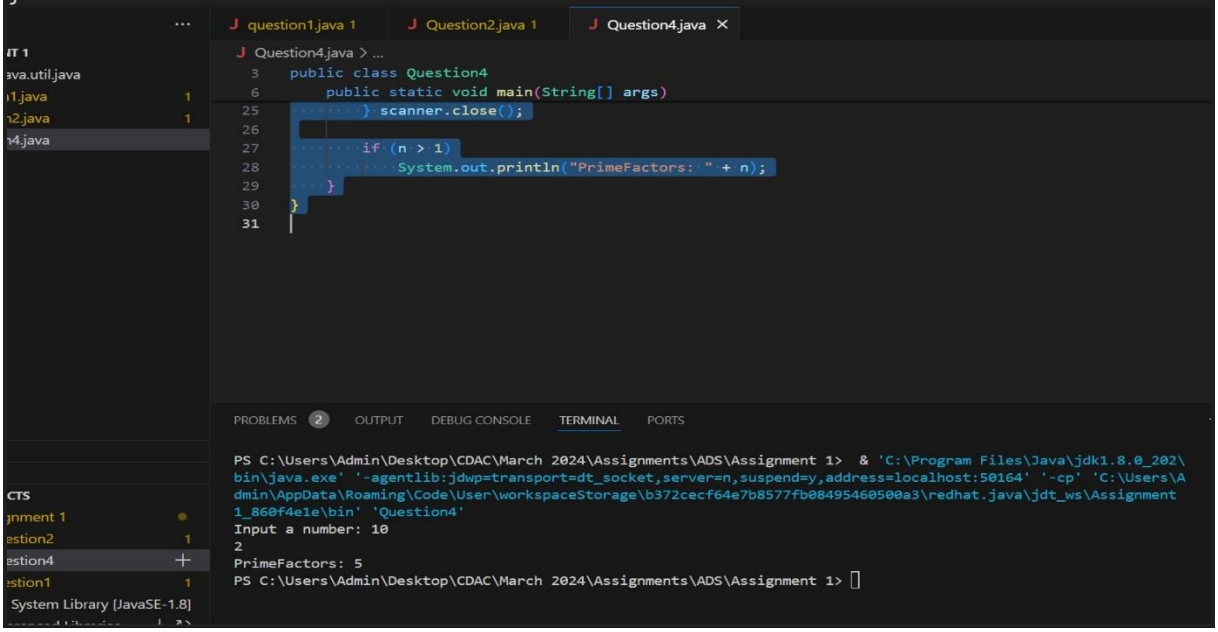
Question 2: Write a java program to LCM of TWO given number.

```java
import java.util.*;

public class Question2{

static int lcm(int a, int b, int m)
{

m = m+b;
if ((m % a ==0) && (m % b==0))
return m;

return lcm(a, b, m);
}

public static void main(String[] args){
int a,b;
int m=0;
Scanner sc = new Scanner(System.in);
System.out.println("Enter two number");
 a = sc.nextInt();
 b= sc.nextInt();
int j= lcm (a, b, m);
System.out.println("LCM is: " + j);

}



}
```



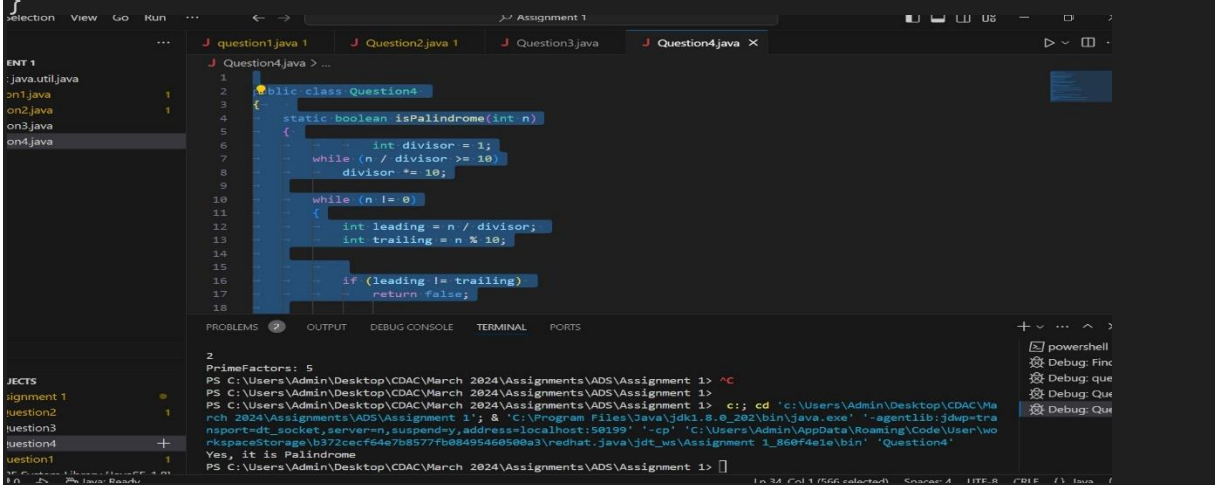
Question 3: Write a Java Program to print all the Prime Factorsof the Given Number.

```java
import java.util.Scanner;

public class Question4
 {
    @SuppressWarnings("resource")
    public static void main(String[] args)
    {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Input a number: ");
        int n = scanner.nextInt();

        if (n <= 0) {
            System.out.println("Please enter a positive number.");
            return;


        }

        for (int i = 2; i * i <= n; i++) {
            while (n % i == 0) {
                System.out.println(i);
                n /= i;
            }

        } scanner.close();

        if (n > 1)
            System.out.println("PrimeFactors: " + n);
    }
}
```



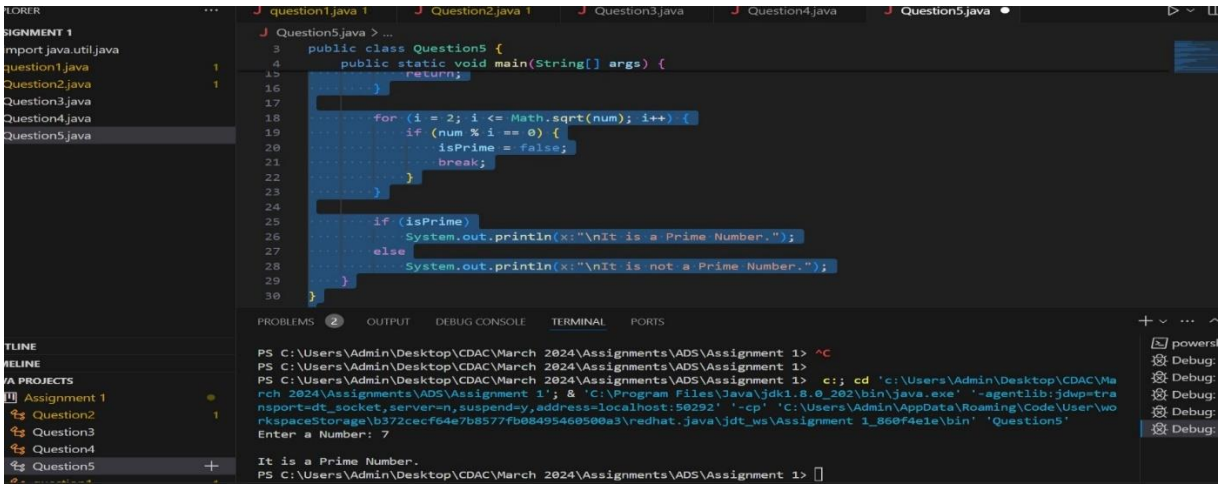
Question 4: Check whether the Given Numberis a Palindrome or NOT.

```java
public class Question4
{
    static boolean isPalindrome(int n)
    {
                int divisor = 1;
        while (n / divisor >= 10)
            divisor *= 10;

        while (n != 0)
        {
            int leading = n / divisor;
            int trailing = n % 10;


            if (leading != trailing)
                return false;

                        n = (n % divisor) / 10;

                        divisor = divisor / 100;
        }
        return true;
    }

        public static void main(String args[])
    {
        if(isPalindrome(1001))
            System.out.println("Yes, it is Palindrome");
        else
            System.out.println("No, not Palindrome");
    }
}
```



Question5: Write a Java Program to check whether the Given Number is Prime Number or NOT.

```java
import java.util.Scanner;

public class Question5 {
    public static void main(String[] args) {
        int num, i;
        boolean isPrime = true;

        try (Scanner s = new Scanner(System.in)) {
            System.out.print("Enter a Number: ");
            num = s.nextInt();
        }

        if (num <= 1) {
            System.out.println("\nIt is not a Prime Number.");
            return;
        }

        for (i = 2; i <= Math.sqrt(num); i++) {
            if (num % i == 0) {
                isPrime = false;
                break;
            }
        }

        if (isPrime)
            System.out.println("\nIt is a Prime Number.");
        else
            System.out.println("\nIt is not a Prime Number.");
    }
}
```



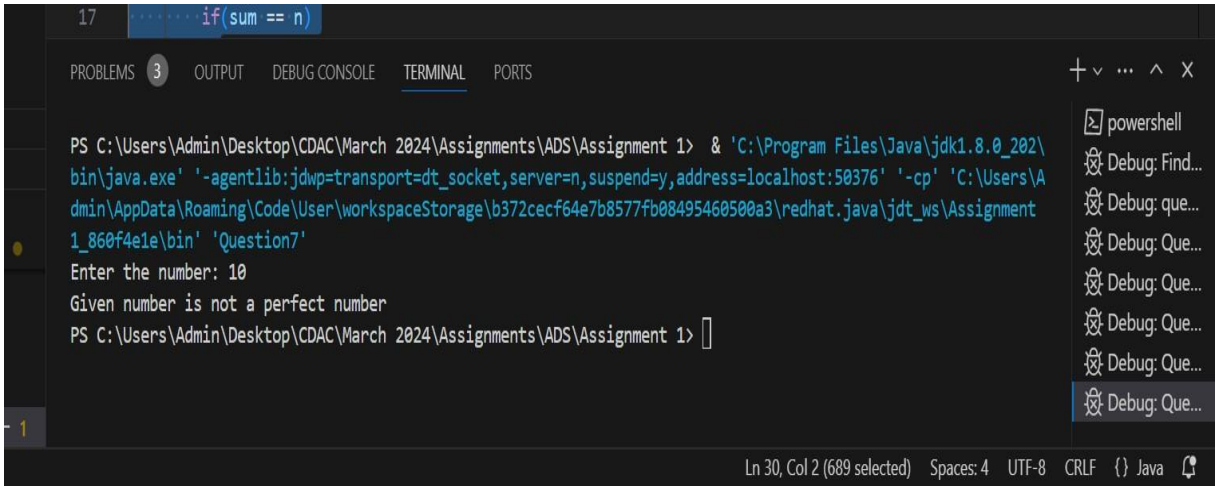
Question6: . Write a Java Program to check whether the given number is Armstrong Number or NOT.

```java
import java.util.Scanner;

public class Question6 {

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

        // Prompt the user for input
        System.out.print("Enter a number to check if it's an Armstrong number:
");
        int num = sc.nextInt();

        // Calculate the sum of cubes of digits
        int sum = 0;
        int originalNumber = num;
        while (num > 0) {
            int digit = num % 10;
            sum += digit * digit * digit;
            num /= 10;
        }

        // Check if the original number is equal to the calculated sum
        if (sum == originalNumber) {
            System.out.println(originalNumber + " is an Armstrong number.");
        } else {
            System.out.println(originalNumber + " is not an Armstrong
number.");
        }

        sc.close();
    }
}
```

```
29      }
30  }
PROBLEMS 2   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1> ^C
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>  c:; cd 'c:\Users\Admin\Desktop\CDAC\Ma
rch 2024\Assignments\ADS\Assignment 1'; & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=tra
nsport=dt_socket,server=n,suspend=y,address=localhost:50292' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\wo
rkspaceStorage\b372cecf64e7b8577fb08495460500a3\redhat.java\jdt_ws\Assignment 1_860f4e1e\bin' 'Question5'
Enter a Number: 7

It is a Prime Number.
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>
```

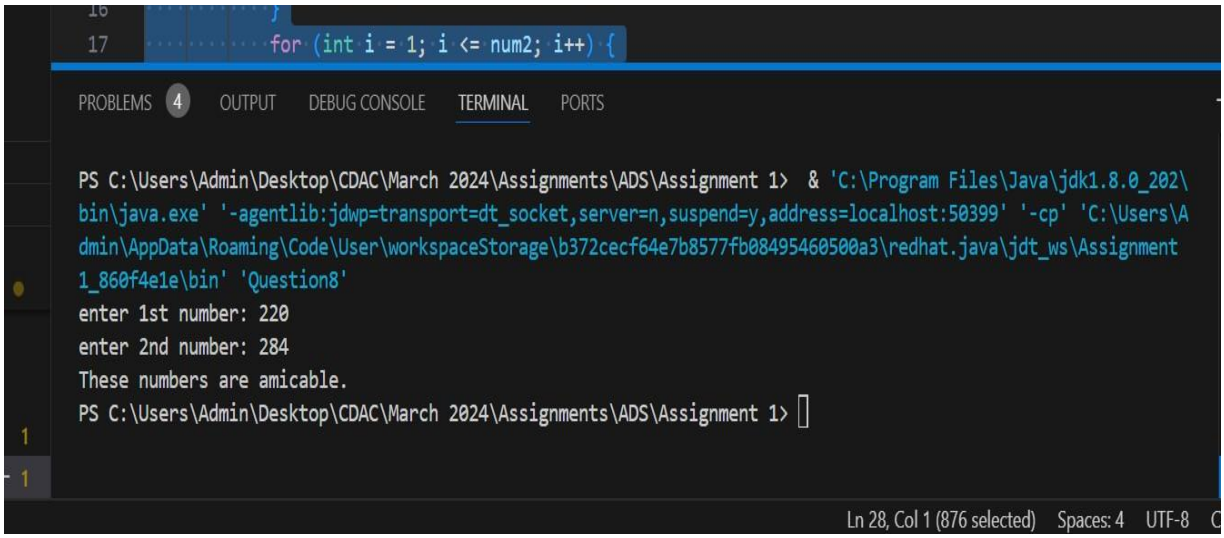
Question7: Write a Java Program to check whether the given number is Perfect Number or NOT.

```java
import java.util.Scanner;

public class Question7
{
    public static void main(String[] args)
    {
        int n, sum = 0;
        Scanner s = new Scanner(System.in);
        System.out.print("Enter the number: ");
        n = s.nextInt();
        for(int i = 1; i < n; i++)
        {
            if(n % i == 0)
            {
                sum = sum + i;
            }
        }
        if(sum == n)
        {
            System.out.println("Given number is a perfect number");
        }
        else
        {
            System.out.println("Given number is not a perfect number");
        }
    }
    int divisor(int x)
    {
       return x;
    }
}
```



Question8: Write a Java Program to check whether the given numbers are Amicable Numbers or NOT.

```java
import java.util.Scanner;

public class Question8
    {
      public static void main(String args[])
      {
            Scanner in = new Scanner(System.in);
            System.out.print("enter 1st number: ");
            int num1 = in.nextInt();
            System.out.print("enter 2nd number: ");
            int num2 = in.nextInt();
            int sum_num1 = 0, sum_num2 = 0;
            for (int i = 1; i <= num1; i++) {
                if (num1 % i == 0)
                    sum_num1 += i;
            }
            for (int i = 1; i <= num2; i++) {
                if (num2 % i == 0)
                    sum_num2 += i;
            }
            if (sum_num1 == sum_num2)
                System.out.println("These numbers are amicable.");
            else
                System.out.println("These numbers are not amicable.");

    }
}
```



Question9: Write a Java Program to check whether the given number is Ramanujam's Number or NOT.

```java
import java.util.Scanner;

public class Question9 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter an integer: ");
        int N = scanner.nextInt();

        for (int a = 1; a <= N; a++) {
            int a3 = a * a * a;
            if (a3 > N) break;

            for (int b = a; b <= N; b++) {
                int b3 = b * b * b;
                if (a3 + b3 > N) break;

                for (int c = a + 1; c <= N; c++) {
                    int c3 = c * c * c;
                    if (c3 > a3 + b3) break;

                    for (int d = c; d <= N; d++) {
                        int d3 = d * d * d;
                        if (c3 + d3 > a3 + b3) break;

                        if (c3 + d3 == a3 + b3) {
                            System.out.println((a3 + b3) + " = " + a + "^3 + "
+ b + "^3 = " + c + "^3 + " + d + "^3");
                        }
                    }
                }
            }
        }

        scanner.close();
    }
}
```

```
PROBLEMS 4  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1> ^C
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>  c:; cd 'c:\Users\Admin\Desktop\CDAC\Ma
rch 2024\Assignments\ADS\Assignment 1'; & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=tra
nsport=dt_socket,server=n,suspend=y,address=localhost:50423' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\wo
rkspaceStorage\b372cecf64e7b8577fb08495460500a3\redhat.java\jdt_ws\Assignment 1_860f4e1e\bin' 'Question9'
Enter an integer: 1783
1729 = 1^3 + 12^3 = 9^3 + 10^3
```

Question10: Write a Java Program check whether the given number is Automorphic Number or NOT.

```java
import java.util.*;

public class Question10 {

    static boolean isAutomorphic(int n)
     {
        int sq = n* n;

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

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = scanner.nextInt();

        if (isAutomorphic(num))
            System.out.println(num + " is automorphic number.");
        else
            System.out.println(num + "  is not an automorphic number.");
    }
}
```

```
PROBLEMS 5  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>  c:; cd 'c:\Users\Admin\Desktop\CDAC\Ma
rch 2024\Assignments\ADS\Assignment 1'; & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=tra
nsport=dt_socket,server=n,suspend=y,address=localhost:50457' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\wo
rkspaceStorage\b372cecf64e7b8577fb08495460500a3\redhat.java\jdt_ws\Assignment 1_860f4e1e\bin' 'Question10'
Enter a number: 23
23  is not an automorphic number.
ERROR: JDWP Unable to get JNI 1.2 environment, jvm->GetEnv() return code = -2
JDWP exit error AGENT_ERROR_NO_JNI_ENV(183):  [util.c:840]
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>

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```