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

```
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);

}
}
```

```
J question1.java 1 X
J question1.java > question1
3 public class question1{
13
14
Run | Debug
15 public static void main(String[] args)
16 {
17 Scanner sc = new Scanner(System.in);
18 System.out.println(x:"Enter two value");
19 int a = sc.nextInt();
20 int b = sc.nextInt();
21 int g = findGCD(a,b);
22 System.out.println("GCD : " +g);
23
24 }
25
26

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1> & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:49956' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\b372cecf64e7b8577fb0849546050a3\redhat.java\jdt_ws\Assignment 1_860f4e1e\bin' 'question1'
Enter two value
10
20
GCD :10
ERROR: JDWP Unable to get JNI 1.2 environment, jvm->GetEnv() return code = -2
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>
```

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

```
import java.util.*;

public class Question2{

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

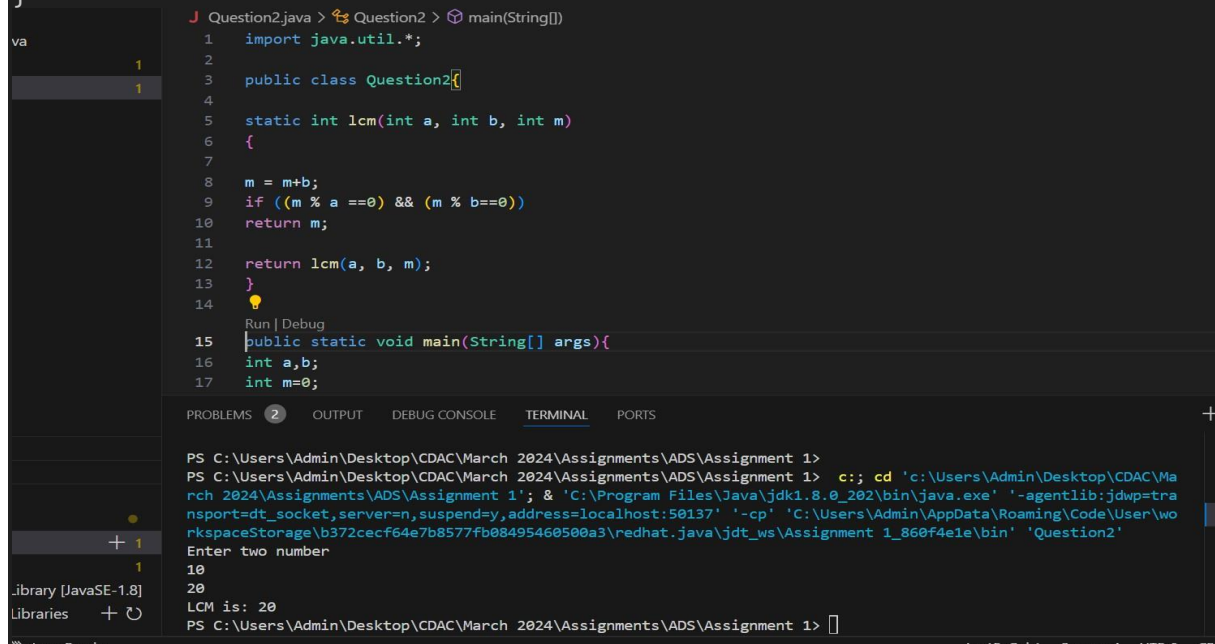
m = m+b;
if ((m % a ==0) && (m % b==0))
return m;

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);

}

}
```



The screenshot shows an IDE with the following components:

- Editor:** Displays the Java code for `Question2.java`. The code is as follows:

```
1 import java.util.*;
2
3 public class Question2{
4
5 static int lcm(int a, int b, int m)
6 {
7
8 m = m+b;
9 if ((m % a ==0) && (m % b==0))
10 return m;
11
12 return lcm(a, b, m);
13 }
14
15 public static void main(String[] args){
16 int a,b;
17 int m=0;
```
- Run/Debug:** A button labeled "Run | Debug" is visible below the code editor.
- Terminal:** Shows the command prompt output:

```
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\March 2024\Assignments\ADS\Assignment 1'; & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:50137' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\b372cecf64e7b8577fb0849546050a3\redhat.java\jdt_ws\Assignment_1_860f4e1e\bin' 'Question2'
Enter two number
10
20
LCM is: 20
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>
```
- Problems:** A tab labeled "PROBLEMS" with a count of 2 is visible.
- Output:** A tab labeled "OUTPUT" is visible.
- Debug Console:** A tab labeled "DEBUG CONSOLE" is visible.
- Terminal:** A tab labeled "TERMINAL" is visible.
- Ports:** A tab labeled "PORTS" is visible.

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

```
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);
    }
}
```

The screenshot shows an IDE with a project named "ADS" and a file named "Question4.java". The code is as follows:

```
3 public class Question4
6 public static void main(String[] args)
25 {
26     scanner.close();
27 }
28 if (n > 1)
29     System.out.println("PrimeFactors: " + n);
30 }
31
```

The terminal output shows the program running, prompting for input, and displaying the prime factors of 10, which are 2 and 5.

```
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1> & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:50164' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\b372cecf64e7b8577fb08495460500a3\redhat.java\jdt_ws\Assignment 1_860f4e1e\bin' 'Question4'
Input a number: 10
2
PrimeFactors: 5
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>
```

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

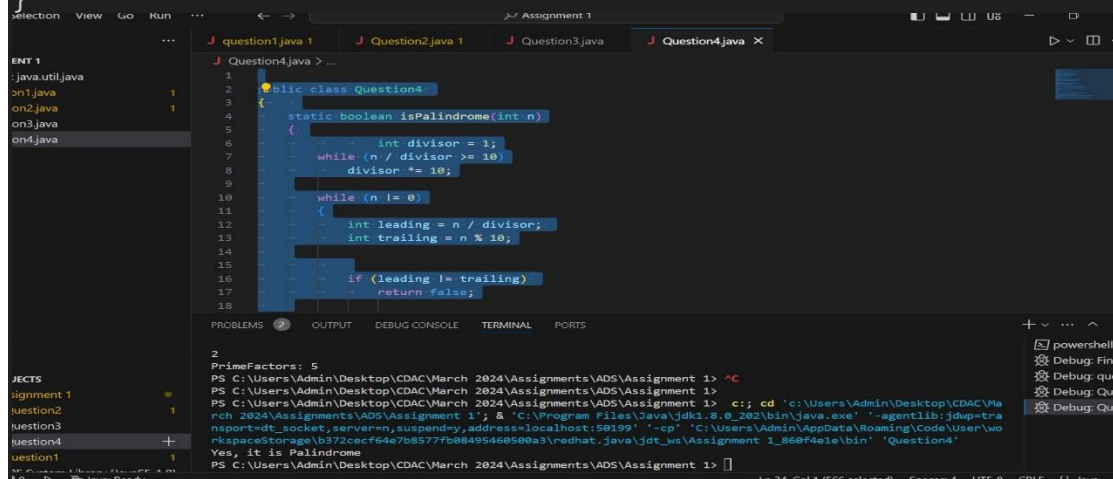
```
public class Question4
{
    static boolean isPalindrome(int n)
    {
        int divisor = 1;
        while (n / divisor >= 10)
            divisor *= 10;

        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.

```
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.");
    }
}
```

The screenshot shows an IDE with a project named 'ASSIGNMENT 1' containing files 'Question1.java' through 'Question5.java'. The 'Question5.java' file is open, displaying the same Java code as shown in the previous block. Below the code editor, the 'TERMINAL' tab is active, showing the command prompt execution. The user enters the number 7, and the program outputs 'It is a Prime Number.'.

```
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\March 2024\Assignments\ADS\Assignment 1'; & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:50292' "-cp" 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\b372cecf64e7b8577fb86495460500a3\redhat.java\jdt_ws\Assignment_1_86of4e1e\bin' "Question5"
Enter a Number: 7
It is a Prime Number.
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>
```

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

```
import java.util.Scanner;

public class Question6 {

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

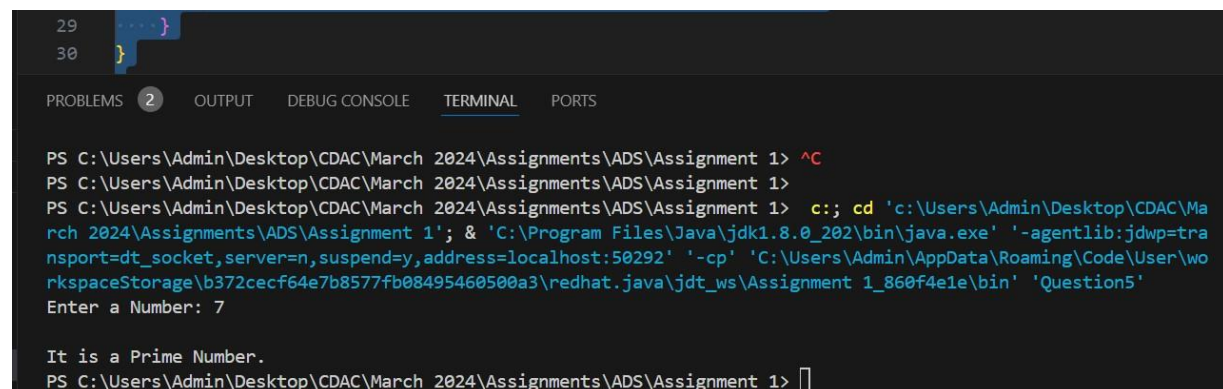
        // Prompt the user for input
        System.out.print("Enter a number to check if it's an Armstrong number:");

        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

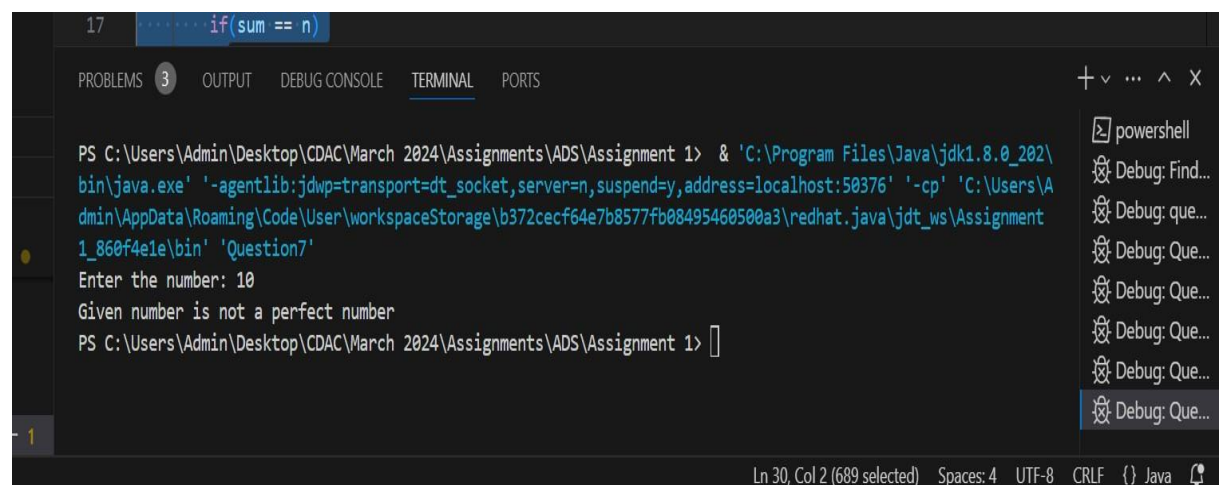
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1> ^C
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1> c::; cd 'c:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1'; & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:50292' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\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.

```
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;
    }
}
```



```
17 ..... if(sum == n)

PROBLEMS 3 OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1> & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:50376' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\b372cecf64e7b8577fb08495460500a3\redhat.java\jdt_ws\Assignment 1_860f4e1e\bin' 'Question7'
Enter the number: 10
Given number is not a perfect number
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1>

+ v ... ^ x
powershell
Debug: Find...
Debug: que...
Debug: Que...
Debug: Que...
Debug: Que...
Debug: Que...
Debug: Que...
Debug: Que...
```

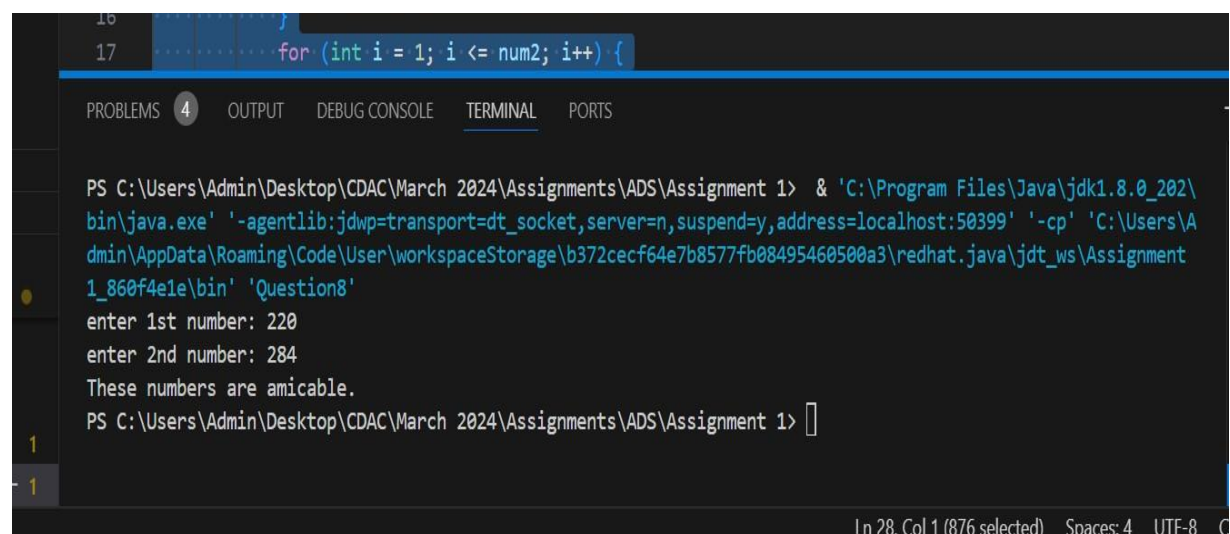
Ln 30, Col 2 (689 selected) Spaces: 4 UTF-8 CRLF {} Java



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

```
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.");
    }
}
```



```
16 ..... }
17 ..... for (int i = 1; i <= num2; i++) {

PROBLEMS 4 OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1> & 'C:\Program Files\Java\jdk1.8.0_202\
bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:50399' '-cp' 'C:\Users\A
dmin\AppData\Roaming\Code\User\workspaceStorage\b372cecf64e7b8577fb08495460500a3\redhat.java\jdt_ws\Assignment
1_860f4e1e\bin' 'Question8'
enter 1st number: 220
enter 2nd number: 284
These numbers are amicable.
PS C:\Users\Admin\Desktop\CDAC\March 2024\Assignments\ADS\Assignment 1> 
```

Ln 28, Col 1 (876 selected) Spaces: 4 UTF-8



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

```
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\March 2024\Assignments\ADS\Assignment 1'; & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:50423' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspaceStorage\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.

```
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\March 2024\Assignments\ADS\Assignment 1'; & 'C:\Program Files\Java\jdk1.8.0_202\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:50457' '-cp' 'C:\Users\Admin\AppData\Roaming\Code\User\workspacesStorage\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> 
```

Ln 24, Col 65 Spaces: 4 UTF-8 C