

Question - 1

```
import java.util.Scanner;

public class ArmStrong {

    public static boolean isArmstrong(int number) {
        int originalNumber = number;
        int sum = 0;
        int digits = String.valueOf(number).length();

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

        return sum == originalNumber;
    }

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

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

        boolean result = isArmstrong(number);

        System.out.println("Is " + number + " an Armstrong number? " + result);
    }
}
```

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19045.4717]
(c) Microsoft Corporation. All rights reserved.

C:\Users\hpn>cd desktop
C:\Users\hpn\Desktop>cd Logic
C:\Users\hpn\Desktop\Logic>nul> javac Armstrong.java
Access is denied.
C:\Users\hpn\Desktop\Logic> javac Armstrong.java
C:\Users\hpn\Desktop\Logic>java ArmStrong
Enter a number: 153
Is 153 an Armstrong number? true
C:\Users\hpn\Desktop\Logic>java ArmStrong
Enter a number: 121
Is 121 an Armstrong number? false
C:\Users\hpn\Desktop\Logic>
```

Question -2

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

```
public class Prime {
```

```
    public static boolean isPrime(int number) {
```

```
        if (number <= 1) {
            return false;
        }
```

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

```
        return true;
    }
```

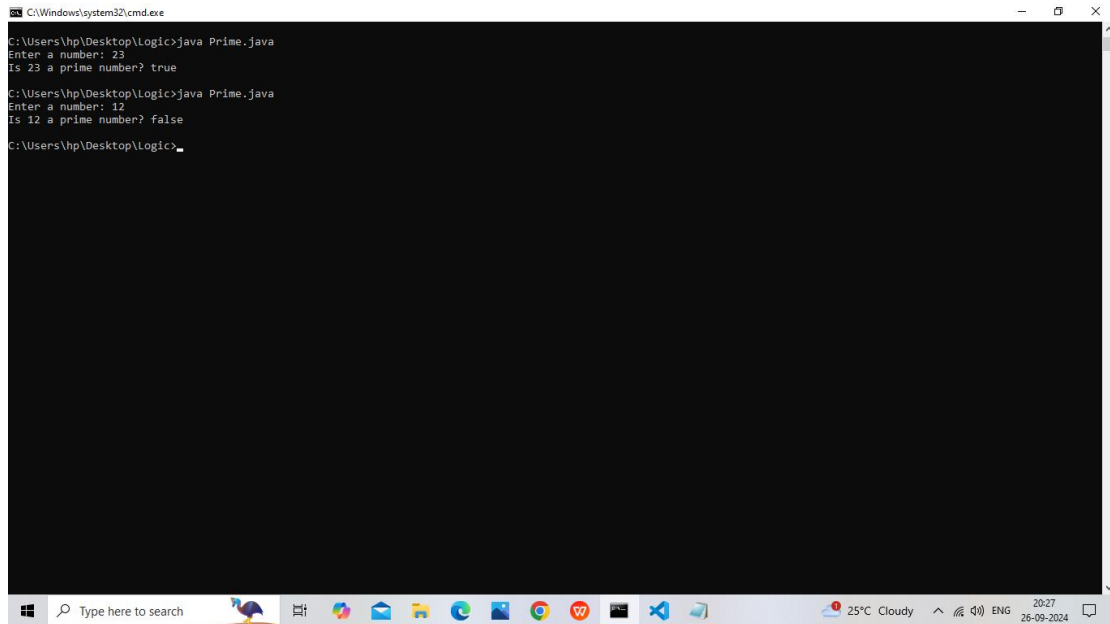
```
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
```

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

```
        boolean result = isPrime(number);
```

```
        System.out.println("Is " + number + " a prime number? " + result);
```

```
}  
}
```



```
C:\Windows\system32\cmd.exe  
C:\Users\hnp\Desktop\Logic>java Prime.java  
Enter a number: 23  
Is 23 a prime number? true  
C:\Users\hnp\Desktop\Logic>java Prime.java  
Enter a number: 12  
Is 12 a prime number? false  
C:\Users\hnp\Desktop\Logic>
```

Question - 3

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

```
public class Factorial {
```

```
    public static long factorial(int number) {  
        long result = 1;
```

```
        for (int i = 2; i <= number; i++) {  
            result *= i;  
        }
```

```
        return result;  
    }
```

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

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

```
        long result = factorial(number);
```

```
        System.out.println("Factorial of " + number + " is: " + result);  
    }  
}
```

```
C:\Windows\system32\cmd.exe
Enter a number: 12
Is 12 a prime number? false

C:\Users\hpi\Desktop\Logic>javac Factorial.java

C:\Users\hpi\Desktop\Logic>java Factorial
Enter a number: 5
Factorial of 5 is: 120

C:\Users\hpi\Desktop\Logic>java Factorial
Enter a number: 4
Factorial of 4 is: 24

C:\Users\hpi\Desktop\Logic>
```

Question - 4

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

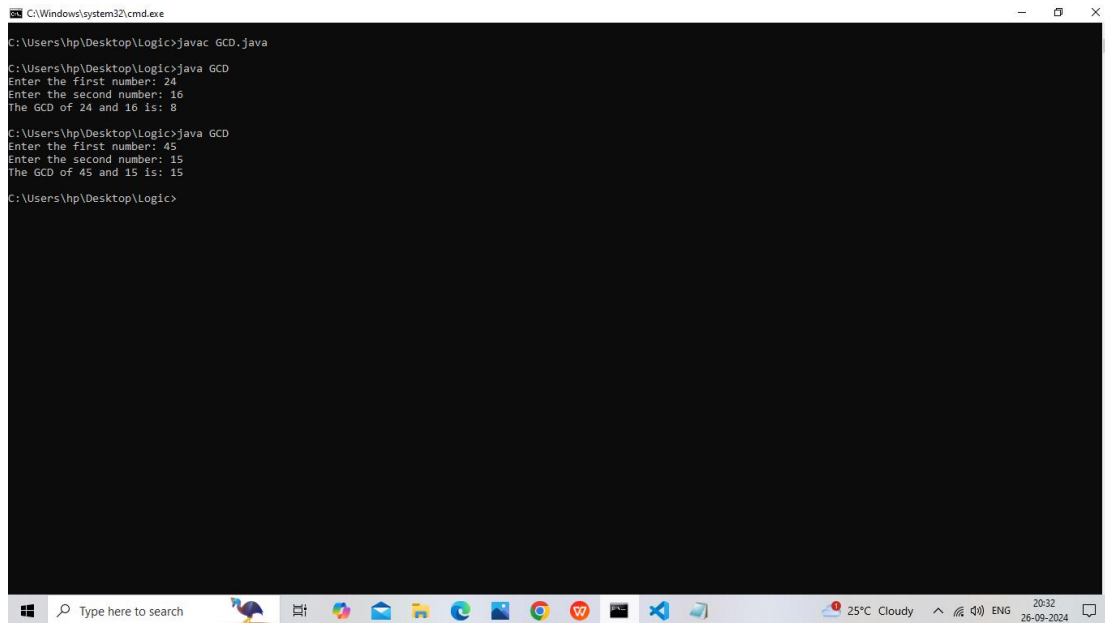
```
public class GCD {
```

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

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

```
        System.out.print("Enter the first number: ");
        int a = scanner.nextInt();
        System.out.print("Enter the second number: ");
        int b = scanner.nextInt();
```

```
        int gcd = findGCD(a, b);
        System.out.println("The GCD of " + a + " and " + b + " is: " + gcd);
    }
}
```



```
C:\Windows\system32\cmd.exe
C:\Users\hnp\Desktop\Logic>javac GCD.java
C:\Users\hnp\Desktop\Logic>java GCD
Enter the first number: 24
Enter the second number: 16
The GCD of 24 and 16 is: 8

C:\Users\hnp\Desktop\Logic>java GCD
Enter the first number: 45
Enter the second number: 15
The GCD of 45 and 15 is: 15

C:\Users\hnp\Desktop\Logic>
```

Question - 5

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

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

```
        System.out.print("Enter the number of terms in the Fibonacci series: ");
        int n = scanner.nextInt();
```

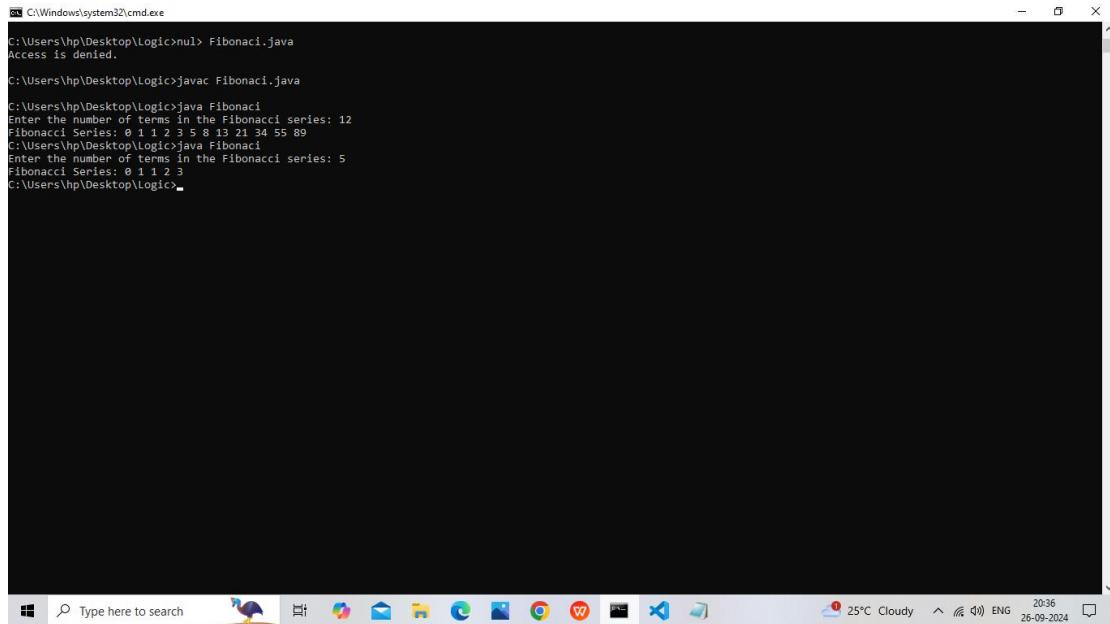
```
        if (n <= 0) {
            System.out.println("Please enter a positive integer.");
            return;
        }
```

```
        System.out.print("Fibonacci Series: ");
        printFibonacci(n);
```

```
        scanner.close();
    }
```

```
    static void printFibonacci(int n) {
        int a = 0, b = 1;
        for (int i = 1; i <= n; i++) {
            System.out.print(a + " ");
            int next = a + b;
            a = b;
            b = next;
        }
    }
```

```
}  
}
```



```
C:\Windows\system32\cmd.exe  
C:\Users\hnp\Desktop\Logic>nul> Fibonacci.java  
Access is denied.  
C:\Users\hnp\Desktop\Logic>javac Fibonacci.java  
C:\Users\hnp\Desktop\Logic>java Fibonacci  
Enter the number of terms in the Fibonacci series: 12  
Fibonacci Series: 0 1 1 2 3 5 8 13 21 34 55 89  
C:\Users\hnp\Desktop\Logic>java Fibonacci  
Enter the number of terms in the Fibonacci series: 5  
Fibonacci Series: 0 1 1 2 3  
C:\Users\hnp\Desktop\Logic>
```

Question - 6

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

```
public class SquareRoot {
```

```
    public static int integerSquareRoot(int number) {  
        if (number < 0) {  
            throw new IllegalArgumentException("Square root of negative numbers is undefined.");  
        }  
  
        if (number == 0 || number == 1) {  
            return number;  
        }  
    }
```

```
    int low = 1, high = number, result = 0;
```

```
    while (low <= high) {  
        int mid = (low + high) / 2;  
        long square = (long) mid * mid;  
        if (square == number) {  
            return mid;  
        } else if (square < number) {  
            low = mid + 1;  
            result = mid;  
        } else {  
            high = mid - 1;  
        }  
    }
```

```
    return result;  
}
```

```

    }

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

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

        int sqrt = integerSquareRoot(number);

        System.out.println("The integer square root of " + number + " is: " + sqrt);
    }
}

```

```

C:\Windows\system32\cmd.exe
'16' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\hpb\Desktop\Logic>javac SquareRoot.java

C:\Users\hpb\Desktop\Logic>java SquareRoot
Enter a number: 25
The integer square root of 25 is: 5

C:\Users\hpb\Desktop\Logic>javac SquareRoot.java

C:\Users\hpb\Desktop\Logic>java SquareRoot
Enter a number: 81
The integer square root of 81 is: 9

C:\Users\hpb\Desktop\Logic>

```

Question - 7

```

import java.util.ArrayList;
import java.util.Scanner;

public class RepeatedCharacter {

    public static ArrayList<Character> findRepeatedCharacters(String input) {
        int[] charCount = new int[256];
        ArrayList<Character> repeatedChars = new ArrayList<>();

        for (char c : input.toCharArray()) {
            charCount[c]++;
        }
    }
}

```

```

        for (int i = 0; i < 256; i++) {
            if (charCount[i] > 1) {
                repeatedChars.add((char) i);
            }
        }

        return repeatedChars;
    }

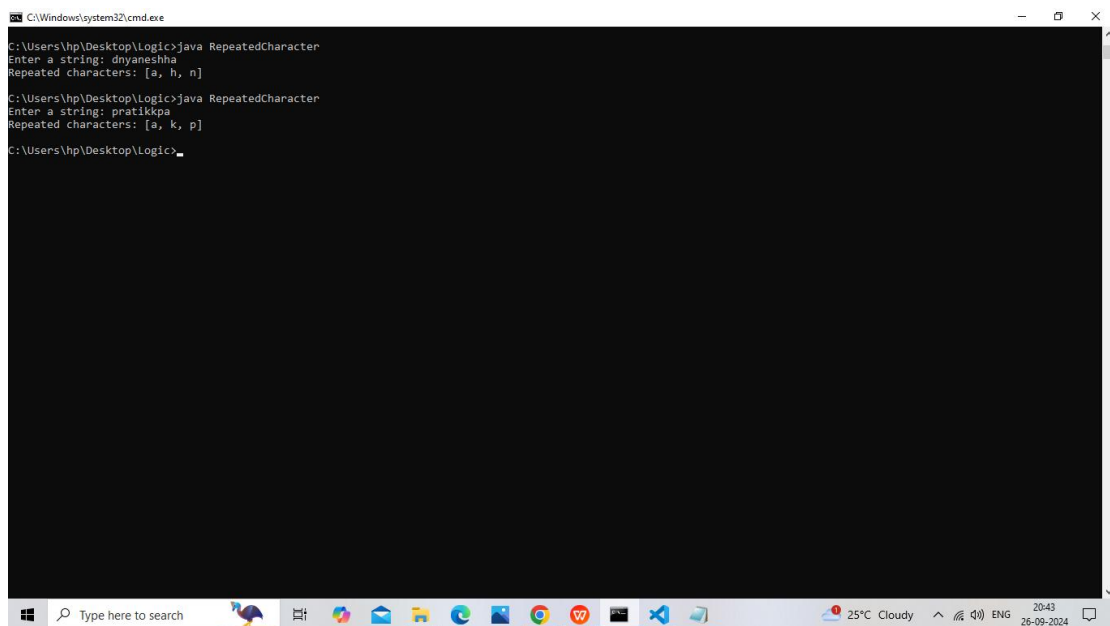
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a string: ");
        String input = scanner.nextLine();

        ArrayList<Character> repeatedChars = findRepeatedCharacters(input);

        System.out.println("Repeated characters: " + repeatedChars);
    }
}

```



```

C:\Windows\system32\cmd.exe
C:\Users\hnp\Desktop\Logic>java RepeatedCharacter
Enter a string: dnyaneshha
Repeated characters: [a, h, n]

C:\Users\hnp\Desktop\Logic>java RepeatedCharacter
Enter a string: pratikp
Repeated characters: [a, k, p]

C:\Users\hnp\Desktop\Logic>

```

Question - 8

```

import java.util.LinkedHashMap;
import java.util.Map;
import java.util.Scanner;

public class FirstNonRepeatedCharacter {

    public static Character findFirstNonRepeatedCharacter(String input) {

```



```

Map<Character, Integer> charCountMap = new LinkedHashMap<>();

for (char c : input.toCharArray()) {
    charCountMap.put(c, charCountMap.getOrDefault(c, 0) + 1);
}

for (Map.Entry<Character, Integer> entry : charCountMap.entrySet()) {
    if (entry.getValue() == 1) {
        return entry.getKey();
    }
}

return null;
}

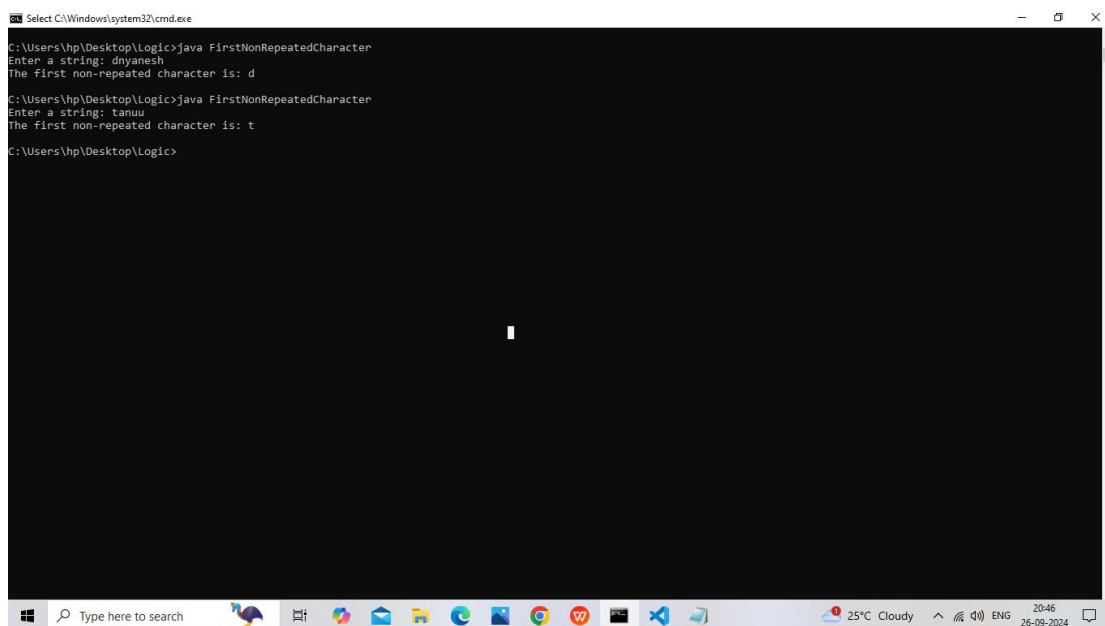
public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);

    System.out.print("Enter a string: ");
    String input = scanner.nextLine();

    Character result = findFirstNonRepeatedCharacter(input);

    if (result != null) {
        System.out.println("The first non-repeated character is: " + result);
    } else {
        System.out.println("No non-repeated character found.");
    }
}
}

```



```

C:\Users\hnp\Desktop\Logic>java FirstNonRepeatedCharacter
Enter a string: dnyanesh
The first non-repeated character is: d

C:\Users\hnp\Desktop\Logic>java FirstNonRepeatedCharacter
Enter a string: tanuu
The first non-repeated character is: t

C:\Users\hnp\Desktop\Logic>

```

Question - 9

```
import java.util.Scanner;

public class IntegerPalindrome {

    public static boolean isPalindrome(int num) {

        if (num < 0) {
            return false;
        }

        int originalNum = num;
        int reversedNum = 0;

        while (num != 0) {
            int lastDigit = num % 10;
            reversedNum = reversedNum * 10 + lastDigit;
            num /= 10;
        }

        return originalNum == reversedNum;
    }

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

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

        boolean result = isPalindrome(input);

        if (result) {
            System.out.println(input + " is a palindrome.");
        } else {
            System.out.println(input + " is not a palindrome.");
        }
    }
}
```

```
C:\Windows\system32\cmd.exe
C:\Users\hnp\Desktop\Logic>javac IntegerPalindrome.java
C:\Users\hnp\Desktop\Logic>java IntegerPalindrome
Enter an integer: 121
121 is a palindrome.
C:\Users\hnp\Desktop\Logic>java IntegerPalindrome
Enter an integer: 323
323 is a palindrome.
C:\Users\hnp\Desktop\Logic>java IntegerPalindrome
Enter an integer: 11234
11234 is not a palindrome.
C:\Users\hnp\Desktop\Logic>
```

Question - 10

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

```
public class LeapYear {
```

```
    public static boolean isLeapYear(int year) {
```

```
        if (year % 4 == 0) {
            if (year % 100 == 0) {
                return year % 400 == 0;
            }
            return true;
        }
        return false;
    }
```

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

```
        System.out.print("Enter a year: ");
        int year = scanner.nextInt();
```

```
        boolean result = isLeapYear(year);
```

```
        if (result) {
            System.out.println(year + " is a leap year.");
        } else {
            System.out.println(year + " is not a leap year.");
        }
    }
```

}

```
C:\Windows\system32\cmd.exe
11234 is not a palindrome.

C:\Users\hp\Desktop\Logic>javac LeapYear.java

C:\Users\hp\Desktop\Logic>java LeapYear
Enter a year: 2004
2004 is a leap year.

C:\Users\hp\Desktop\Logic>java LeapYear
Enter a year: 2341
2341 is not a leap year.

C:\Users\hp\Desktop\Logic>java LeapYear
Enter a year: 2024
2024 is a leap year.

C:\Users\hp\Desktop\Logic>
```

