

Task1:

```
import java.util.Scanner;

public class Task1 {

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n\n");

        System.out.print("Enter your String: ");

        String s1 = in.nextLine();

        String words[] = s1.split(" ");

        String rev = "";

        for (int i = words.length - 1; i >= 0; i--) {

            rev += words[i] + " ";

        }

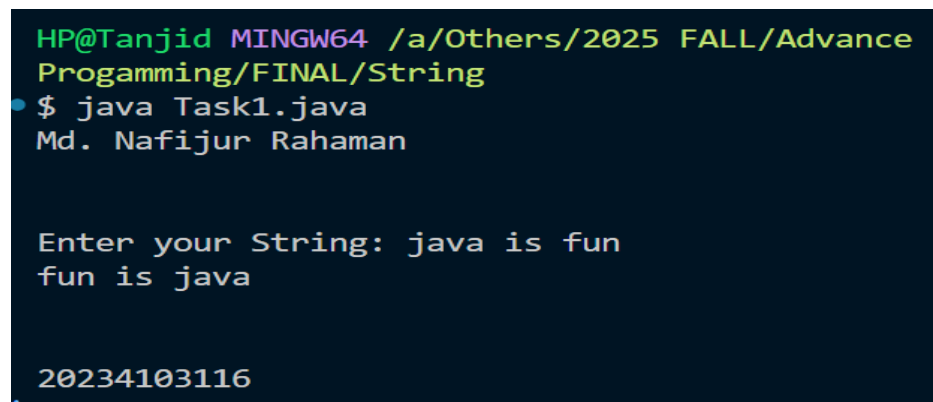
        System.out.println(rev);

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance
Progammig/FINAL/String
$ java Task1.java
Md. Nafijur Rahaman

Enter your String: java is fun
fun is java

20234103116
```

Task2:

```
import java.util.Scanner;

public class Task2 {

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter your String: ");

        String s1 = input.nextLine();

        String rev = "";

        for (int i = s1.length() - 1; i >= 0; i--) {

            rev += s1.charAt(i);

        }

        boolean isEqual = s1.equals(rev);

        if (isEqual) {

            System.out.print("Palindrome");

        } else {

            System.out.println("Not Palindrome");

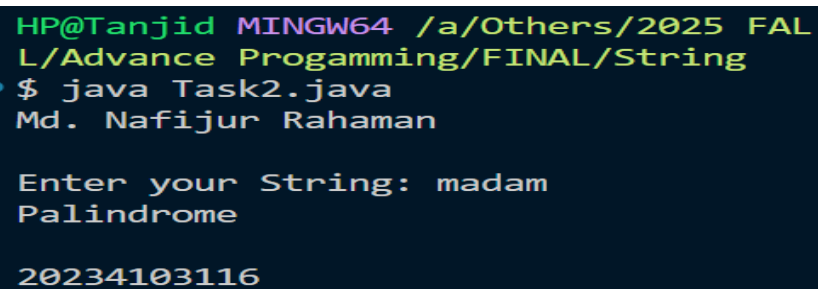
        }

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FAL
L/Advance Programming/FINAL/String
$ java Task2.java
Md. Nafijur Rahaman

Enter your String: madam
Palindrome

20234103116
```

Task3:

```
import java.util.Scanner;

public class Task3 {

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s = in.nextLine();

        String result = "" + s.charAt(0);

        for (int i = 1; i < s.length(); i++) {

            if (s.charAt(i) != s.charAt(i - 1)) {

                result += s.charAt(i);

            }

        }

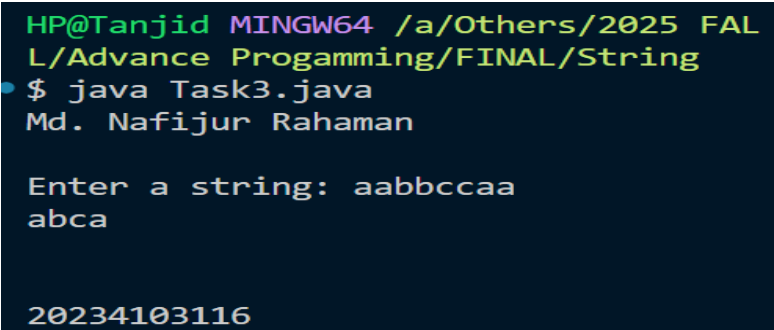
        System.out.println(result);

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FAL
L/Advance Progammig/FINAL/String
$ java Task3.java
Md. Nafijur Rahaman

Enter a string: aabbccaa
abca

20234103116
```

Task4:

```
import java.util.Scanner;

public class Task4 {

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s = in.nextLine().toLowerCase();

        int freq[] = new int[26];

        for (int i = 0; i < s.length(); i++) {

            if (s.charAt(i) >= 'a' & s.charAt(i) <= 'z') {

                freq[s.charAt(i) - 'a']++;

            }

        }

        for (int i = 0; i < 26; i++) {

            if (freq[i] > 0) {

                System.out.println((char) (i + 'a') + ": " + freq[i]);

            }

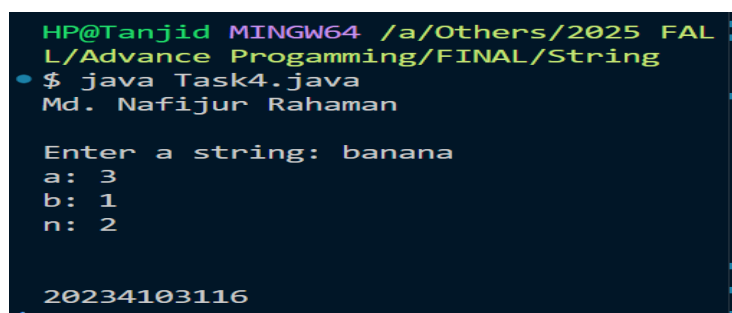
        }

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FAL
L/Advance Progammig/FINAL/String
$ java Task4.java
Md. Nafijur Rahaman

Enter a string: banana
a: 3
b: 1
n: 2

20234103116
```

Task5:

```
import java.util.Scanner;

public class Task5{

    public static int CompareTo(String s1, String s2){

        int len = Math.min(s1.length(), s2.length());

        for(int i = 0; i<len; i++){

            if(s1.charAt(i)!=s2.charAt(i)){

                return s1.charAt(i) - s2.charAt(i);

            }

        }

        return s1.length()-s2.length();

    }

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s1 = in.nextLine();

        System.out.print("Enter second string: ");

        String s2 = in.nextLine();

        int res = CompareTo(s1, s2);

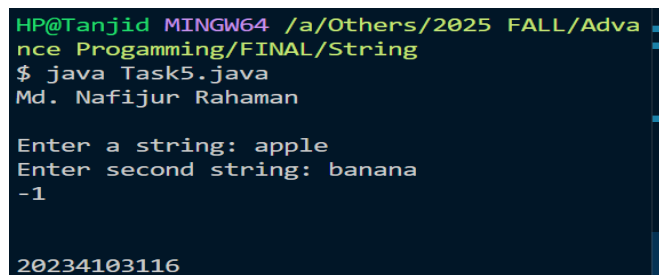
        System.out.println(res);

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Programming/FINAL/String
$ java Task5.java
Md. Nafijur Rahaman

Enter a string: apple
Enter second string: banana
-1

20234103116
```

Task6:

```
import java.util.Scanner;

public class Task6 {

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s = in.nextLine();

        int freq[] = new int[26];

        for (int i = 0; i < s.length(); i++) {

            freq[s.charAt(i) - 'a']++;

        }

        for (int i = 0; i < s.length(); i++) {

            if (freq[s.charAt(i) - 'a'] == 1) {

                System.out.println(s.charAt(i));

            }

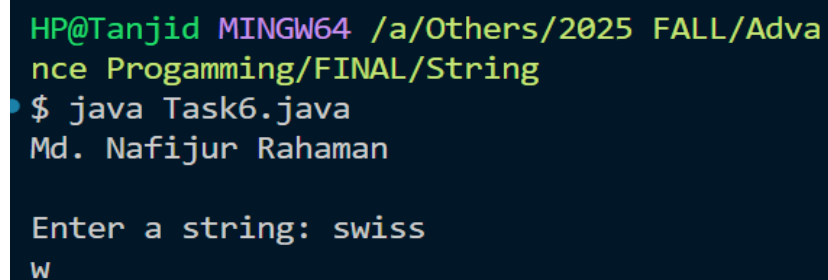
        }

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advantage Programming/FINAL/String
$ java Task6.java
Md. Nafijur Rahaman

Enter a string: swiss
w
```

Task7:

```
import java.util.Scanner;

public class Task7 {

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s = in.nextLine();

        String res = "";

        for (int i = 0; i < s.length(); i++) {

            char ch = s.charAt(i);

            if (ch >= 'A' & ch <= 'Z') {

                res += (char) (ch + 32);

            } else if (ch >= 'a' & ch <= 'z') {

                res += (char) (ch - 32);

            } else {

                res += ch;

            }

        }

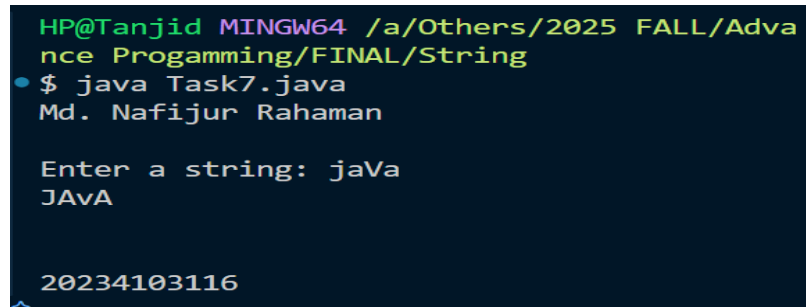
        System.out.println(res);

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Programming/FINAL/String
• $ java Task7.java
Md. Nafijur Rahaman

Enter a string: jaVa
JAVa

20234103116
```

Task8:

```
import java.util.Scanner;

public class Task8 {

    public static boolean isRotation(String s1, String s2) {

        if (s1.length() != s2.length())

            return false;

        return (s1 + s1).contains(s2);

    }

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s1 = in.nextLine();

        System.out.println("Enter second String: ");

        String s2 = in.nextLine();

        if (isRotation(s1, s2)) {

            System.out.println("true");

        } else {

            System.out.println("false");

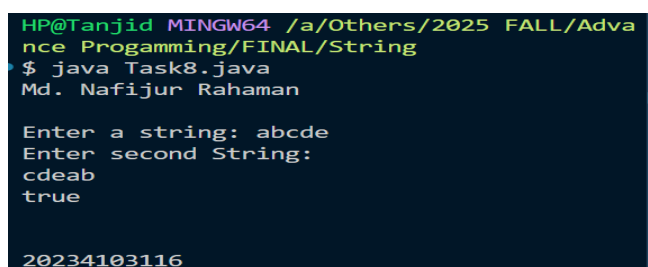
        }

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Programming/FINAL/String
$ java Task8.java
Md. Nafijur Rahaman

Enter a string: abcde
Enter second String:
cdeab
true

20234103116
```

Task9:

```
import java.util.Scanner;

public class Task9 {

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s = in.nextLine();

        String result = "";

        for (int i = 0; i < s.length(); i++) {

            char ch = s.charAt(i);

            if (ch == ' ') {

                result += "%20";

            } else {

                result += ch;

            }

        }

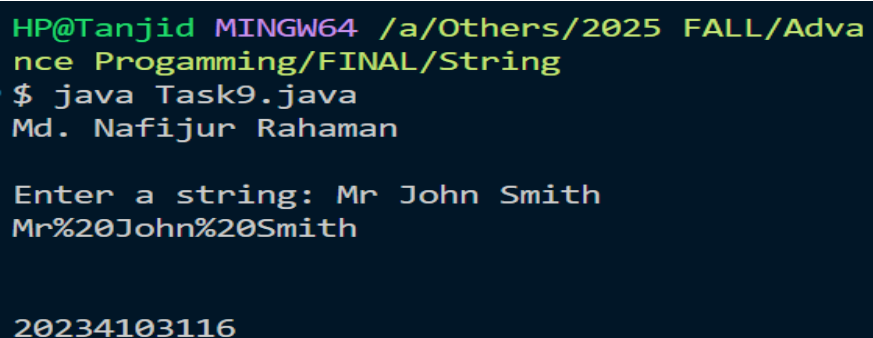
        System.out.println(result);

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Programming/FINAL/String
$ java Task9.java
Md. Nafijur Rahaman

Enter a string: Mr John Smith
Mr%20John%20Smith

20234103116
```

Task10:

```
import java.util.Scanner;

public class Task10 {

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s = in.nextLine().toLowerCase();

        int vow = 0;

        int cons = 0;

        for (int i = 0; i < s.length(); i++) {

            char ch = s.charAt(i);

            if (ch == 'a' | ch == 'e' | ch == 'i' | ch == 'o' | ch == 'u') {

                vow++;

            } else {

                cons++;

            }

        }

        System.out.println("Vowels: " + vow);

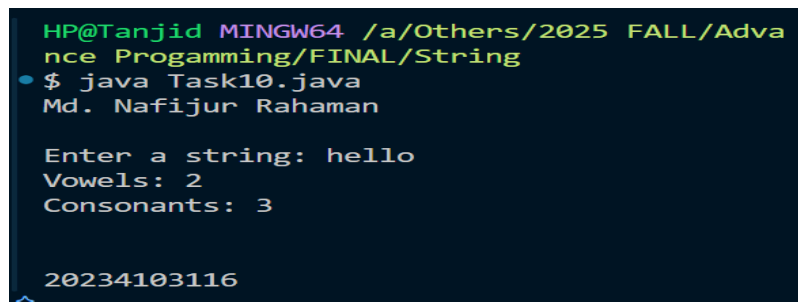
        System.out.println("Consonants: " + cons);

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advantage Programming/FINAL/String
$ java Task10.java
Md. Nafijur Rahaman

Enter a string: hello
Vowels: 2
Consonants: 3

20234103116
```

Task11:

```
import java.util.Scanner;

public class Task11 {

    public static String longestCommonPrefix(String[] arr) {

        if (arr.length == 0)

            return "";

        String prefix = arr[0];

        for (int i = 0; i < arr.length; i++) {

            while (arr[i].indexOf(prefix) != 0) {

                prefix = prefix.substring(0, prefix.length() - 1);

                if (prefix.isEmpty())

                    return "";

            }

        }

        return prefix;

    }

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.print("Enter number of strings: ");

        int n = in.nextInt();

        in.nextLine();

        String[] arr = new String[n];

        System.out.println("Enter strings:");

        for (int i = 0; i < n; i++) {

            arr[i] = in.nextLine();

        }

    }

}
```

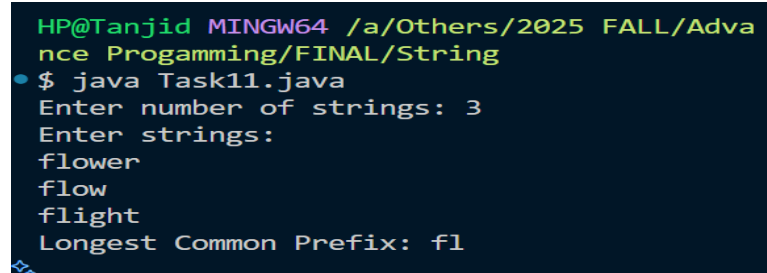
```
String prefix = longestCommonPrefix(arr);

System.out.println("Longest Common Prefix: " + prefix);

}

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Programming/FINAL/String
• $ java Task11.java
Enter number of strings: 3
Enter strings:
flower
flow
flight
Longest Common Prefix: fl
```

Task12:

```
import java.util.Scanner;

public class Task12 {

    public static int smallestUniqueSubstring(String s) {

        boolean[] seen = new boolean[256];

        int totalUnique = 0;

        for (int i = 0; i < s.length(); i++) {

            if (!seen[s.charAt(i)]) {

                seen[s.charAt(i)] = true;

                totalUnique++;

            }

        }

        int minLen = s.length();

        for (int i = 0; i < s.length(); i++) {

            boolean[] window = new boolean[256];

            int count = 0;

            for (int j = i; j < s.length(); j++) {
```

```

char ch = s.charAt(j);

if (!window[ch]) {
    window[ch] = true;

    count++;
}

if (count == totalUnique) {
    minLen = Math.min(minLen, j - i + 1);

    break;
}

}

}

return minLen;
}

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

    System.out.println("Md. Nafijur Rahaman\n");

    System.out.print("Enter a string: ");

    String s = in.nextLine();

    System.out.println("Length of smallest substring: " + smallestUniqueSubstring(s));

    System.out.println("\n\n20234103116");
}

}

```

Output:

```

HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Programming/FINAL/String
$ java Task12.java
Md. Nafijur Rahaman

Enter a string: aabcbcdabca
Length of smallest substring: 4

20234103116

```

Task13:

```
import java.util.Scanner;

public class Task13 {

    public static String Replace(String s, String oldStr, String newStr) {

        StringBuilder sb = new StringBuilder();

        int i = 0;

        while (i <= s.length() - oldStr.length()) {

            if (s.substring(i, i + oldStr.length()).equals(oldStr)) {

                sb.append(newStr);

                i += oldStr.length();

            } else {

                sb.append(s.charAt(i));

                i++;

            }

        }

        while (i < s.length()) {

            sb.append(s.charAt(i));

            i++;

        }

        return sb.toString();

    }

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s = in.nextLine();
```

```

System.out.print("Enter string to replace: ");

String oldStr = in.nextLine();

System.out.print("Enter new string: ");

String newStr = in.nextLine();

String result = Replace(s, oldStr, newStr);

System.out.println(result);

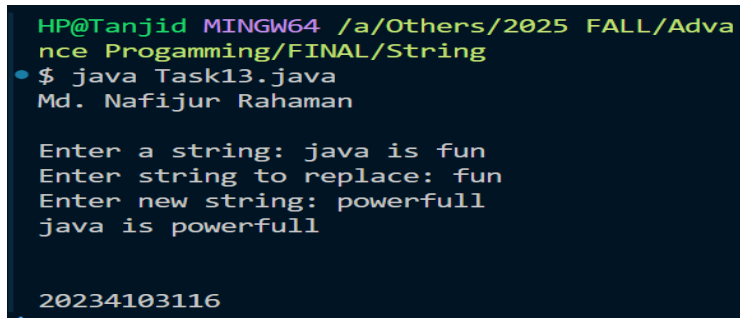
System.out.println("\n\n20234103116");

}

}

```

Output:



```

HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Progammig/FINAL/String
$ java Task13.java
Md. Nafijur Rahaman

Enter a string: java is fun
Enter string to replace: fun
Enter new string: powerfull
java is powerfull

20234103116

```

Task14:

```

import java.util.Scanner;

public class Task14 {

    public static String longestPalindrome(String s) {

        String longest = "";

        for (int i = 0; i < s.length(); i++) {
            for (int j = i; j < s.length(); j++) {

                String sub = s.substring(i, j + 1);

                if (isPalindrome(sub) && sub.length() > longest.length()) {

                    longest = sub;

                }

            }

        }

    }

}

```

```

    }

    return longest;

}

public static boolean isPalindrome(String str) {

    int left = 0, right = str.length() - 1;

    while (left < right) {

        if (str.charAt(left) != str.charAt(right))

            return false;

        left++;

        right--;

    }

    return true;

}

public static void main(String[] args) {

    Scanner in = new Scanner(System.in);

    System.out.println("Md. Nafijur Rahaman\n");

    System.out.print("Enter a string: ");

    String s = in.nextLine();

    System.out.println("Longest Palindromic Substring: " + longestPalindrome(s));

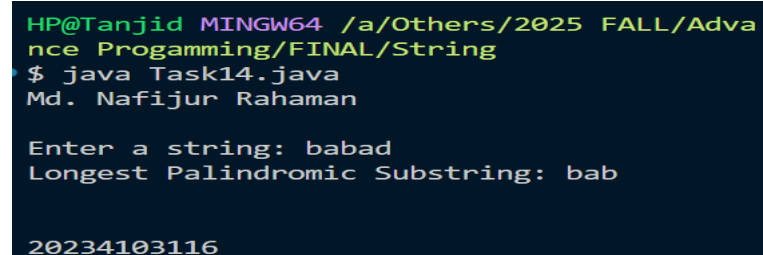
    System.out.println("\n\n20234103116");

}

}

```

Output:



```

HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Programming/FINAL/String
$ java Task14.java
Md. Nafijur Rahaman

Enter a string: babad
Longest Palindromic Substring: bab

20234103116

```

Task15:

```
import java.util.Scanner;

public class Task15 {

    public static int minInsertions(String s, int i, int j) {

        if (i >= j)

            return 0;

        if (s.charAt(i) == s.charAt(j)) {

            return minInsertions(s, i + 1, j - 1);

        } else {

            return 1 + Math.min(

                minInsertions(s, i + 1, j),

                minInsertions(s, i, j - 1));

        }

    }

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s = in.nextLine();

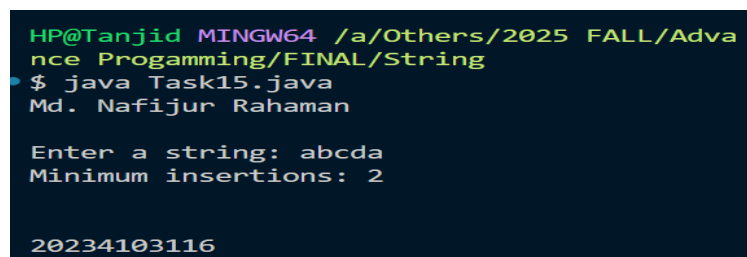
        System.out.println("Minimum insertions: " + minInsertions(s, 0, s.length() - 1));

        System.out.println("\n\n20234103116");

    }

}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advantage Programming/FINAL/String
$ java Task15.java
Md. Nafijur Rahaman

Enter a string: abcd
Minimum insertions: 2

20234103116
```

Task16:

```
import java.util.Scanner;

public class Task16 {

    public static String compress(String s) {

        if (s.length() == 0)

            return "";

        StringBuilder sb = new StringBuilder();

        int count = 1;

        for (int i = 1; i < s.length(); i++) {

            if (s.charAt(i) == s.charAt(i - 1)) {

                count++;

            } else {

                sb.append(s.charAt(i - 1)).append(count);

                count = 1;

            }

        }

        sb.append(s.charAt(s.length() - 1)).append(count);

        return sb.toString();

    }

    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);

        System.out.println("Md. Nafijur Rahaman\n");

        System.out.print("Enter a string: ");

        String s = in.nextLine();

        String result = compress(s);

        System.out.println(result);

    }

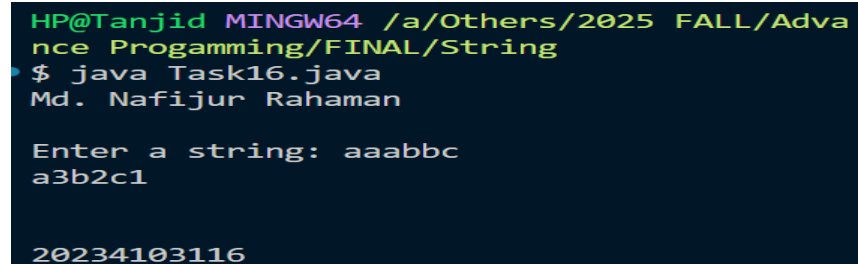
}
```

```
System.out.println("\n\n20234103116");
```

```
}
```

```
}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Progammig/FINAL/String
$ java Task16.java
Md. Nafijur Rahaman

Enter a string: aaabbc
a3b2c1

20234103116
```

Task17:

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

```
public class Task17 {
```

```
    public static String decompress(String s) {
```

```
        StringBuilder sb = new StringBuilder();
```

```
        int i = 0;
```

```
        while (i < s.length()) {
```

```
            char ch = s.charAt(i++);
```

```
            int count = 0;
```

```
            while (i < s.length() && Character.isDigit(s.charAt(i))) {
```

```
                count = count * 10 + (s.charAt(i) - '0');
```

```
                i++;
```

```
            }
```

```
            for (int j = 0; j < count; j++) {
```

```
                sb.append(ch);
```

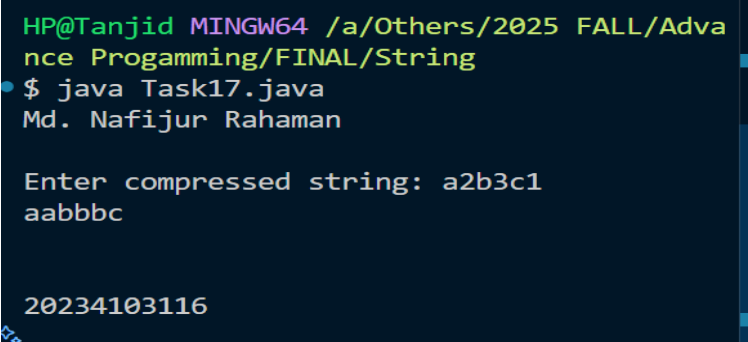
```
            }
```

```
        }
```

```
        return sb.toString();
```

```
}  
  
public static void main(String[] args) {  
  
    Scanner in = new Scanner(System.in);  
  
    System.out.println("Md. Nafijur Rahaman\n");  
  
    System.out.print("Enter compressed string: ");  
  
    String s = in.nextLine();  
  
    String result = decompress(s);  
  
    System.out.println(result);  
  
    System.out.println("\n\n20234103116");  
  
}  
  
}
```

Output:



```
HP@Tanjid MINGW64 /a/Others/2025 FALL/Advance Programming/FINAL/String  
$ java Task17.java  
Md. Nafijur Rahaman  
  
Enter compressed string: a2b3c1  
aabbbc  
  
20234103116
```