Week-1 : Java Assignment programs

Name : KODALI SHASHANK VINATAK

Reg no : RA2411028010093

Sec : V1

-----------------------------------------------------------------------------------------------------------------------------

1.Find unique characters in a string using the charAt() method and display the result

Program:

import java.util.Scanner;

public class UniqueCharacters {

    public static int getLength(String str) {

        int count = 0;

        try {

            while (true) {

                str.charAt(count);

                count++;

            }

        } catch (Exception e) {

            // end of string

        }

        return count;

    }

    public static char[] findUniqueChars(String str) {

        int len = getLength(str);

        char[] temp = new char[len];

        int uniqueCount = 0;

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

            char current = str.charAt(i);

            boolean isUnique = true;

            for (int j = 0; j < uniqueCount; j++) {

                if (temp[j] == current) {

                    isUnique = false;

                    break;

                }

            }

            if (isUnique) {

                temp[uniqueCount] = current;

                uniqueCount++;

            }

        }

        char[] uniqueChars = new char[uniqueCount];

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

            uniqueChars[i] = temp[i];

        }

        return uniqueChars;

    }

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

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

        String input = scanner.nextLine();

        char[] unique = findUniqueChars(input);

        System.out.print("Unique characters: ");

        for (char c : unique) {

            System.out.print(c + " ");

        }

        System.out.println();

        scanner.close();

    }

}

Output:

Enter a string: Welcome

Unique characters: W e l c o m

2. Write a program to find the first non-repeating character in a string and show the result

Program:

import java.util.Scanner;

public class FirstNonRepeatingChar {

    public static char firstNonRepeatingChar(String str) {

        int[] freq = new int[256];

        int len = 0;

        try {

            while (true) {

                str.charAt(len);

                len++;

            }

        } catch (Exception e) {}

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

            freq[str.charAt(i)]++;

        }

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

            if (freq[str.charAt(i)] == 1) {

                return str.charAt(i);

            }

        }

        return '\0';

    }

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

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

        String input = scanner.nextLine();

        char result = firstNonRepeatingChar(input);

        if (result == '\0') {

            System.out.println("No non-repeating character found.");

        } else {

            System.out.println("First non-repeating character: " + result);

        }

        scanner.close();

    }

}

Output:  
Enter a string: Welcome to java

First non-repeating character: W

3. Write a program to find the frequency of characters in a string using the charAt() method and display the result.

Program:

import java.util.Scanner;

public class CharFrequency {

    public static int getLength(String str) {

        int count = 0;

        try {

            while (true) {

                str.charAt(count);

                count++;

            }

        } catch (Exception e) {}

        return count;

    }

    public static String[][] charFrequency(String str) {

        int[] freq = new int[256];

        int len = getLength(str);

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

            freq[str.charAt(i)]++;

        }

        int uniqueCount = 0;

        for (int i = 0; i < 256; i++) {

            if (freq[i] > 0) uniqueCount++;

        }

        String[][] result = new String[uniqueCount][2];

        int index = 0;

        for (int i = 0; i < 256; i++) {

            if (freq[i] > 0) {

                result[index][0] = Character.toString((char) i);

                result[index][1] = String.valueOf(freq[i]);

                index++;

            }

        }

        return result;

    }

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

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

        String input = scanner.nextLine();

        String[][] frequencies = charFrequency(input);

        System.out.println("Character\tFrequency");

        for (String[] pair : frequencies) {

            System.out.println(pair[0] + "\t\t" + pair[1]);

        }

        scanner.close();

    }

}

Output:

Enter a string: Hlo Java

Character Frequency

1

H 1

J 1

a 2

l 1

o 1

v 1

4. Write a program to find the frequency of characters in a string using unique characters and

display the result

program:

//ass pro-4

import java.util.Scanner;

public class CharFrequencyUsingUnique {

    public static int getLength(String str) {

        int count = 0;

        try {

            while (true) {

                str.charAt(count);

                count++;

            }

        } catch (Exception e) {}

        return count;

    }

    public static char[] uniqueCharacters(String str) {

        int len = getLength(str);

        char[] temp = new char[len];

        int uniqueCount = 0;

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

            char current = str.charAt(i);

            boolean isUnique = true;

            for (int j = 0; j < uniqueCount; j++) {

                if (temp[j] == current) {

                    isUnique = false;

                    break;

                }

            }

            if (isUnique) {

                temp[uniqueCount] = current;

                uniqueCount++;

            }

        }

        char[] uniqueChars = new char[uniqueCount];

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

            uniqueChars[i] = temp[i];

        }

        return uniqueChars;

    }

    public static String[][] charFrequency(String str) {

        int[] freq = new int[256];

        int len = getLength(str);

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

            freq[str.charAt(i)]++;

        }

        char[] uniqueChars = uniqueCharacters(str);

        String[][] result = new String[uniqueChars.length][2];

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

            result[i][0] = Character.toString(uniqueChars[i]);

            result[i][1] = String.valueOf(freq[uniqueChars[i]]);

        }

        return result;

    }

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

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

        String input = scanner.nextLine();

        String[][] frequencies = charFrequency(input);

        System.out.println("Character\tFrequency");

        for (String[] pair : frequencies) {

            System.out.println(pair[0] + "\t\t" + pair[1]);

        }

        scanner.close();

    }

}

Output:

Enter a string: Hlo Java

Character Frequency

H 1

l 1

o 1

1

J 1

a 2

v 1

5. Write a program to check if two texts are anagrams and display the result

Program:

import java.util.Scanner;

public class AnagramChecker {

    public static int getLength(String str) {

        int count = 0;

        try {

            while (true) {

                str.charAt(count);

                count++;

            }

        } catch (Exception e) {}

        return count;

    }

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

        int len1 = getLength(s1);

        int len2 = getLength(s2);

        if (len1 != len2) return false;

        int[] freq1 = new int[256];

        int[] freq2 = new int[256];

        for (int i = 0; i < len1; i++) {

            freq1[s1.charAt(i)]++;

            freq2[s2.charAt(i)]++;

        }

        for (int i = 0; i < 256; i++) {

            if (freq1[i] != freq2[i]) return false;

        }

        return true;

    }

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter first text: ");

        String text1 = scanner.nextLine();

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

        String text2 = scanner.nextLine();

        if (areAnagrams(text1, text2)) {

            System.out.println("The texts are anagrams.");

        } else {

            System.out.println("The texts are NOT anagrams.");

        }

        scanner.close();

    }

}

Output:

Enter first text: Hlo

Enter second text: world

The texts are NOT anagrams.

6. Write a program to find the frequency of characters in a string using nested loops and

display the result

Program:

import java.util.Scanner;

public class CharFrequencyNestedLoops {

    public static String[] charFrequency(String str) {

        char[] chars = str.toCharArray();

        int len = chars.length;

        int[] freq = new int[len];

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

            freq[i] = 1;

        }

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

            if (chars[i] == '0') continue;

            for (int j = i + 1; j < len; j++) {

                if (chars[i] == chars[j]) {

                    freq[i]++;

                    chars[j] = '0';

                }

            }

        }

        int uniqueCount = 0;

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

            if (chars[i] != '0') uniqueCount++;

        }

        String[] result = new String[uniqueCount];

        int index = 0;

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

            if (chars[i] != '0') {

                result[index] = chars[i] + " : " + freq[i];

                index++;

            }

        }

        return result;

    }

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

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

        String input = scanner.nextLine();

        String[] frequencies = charFrequency(input);

        System.out.println("Character : Frequency");

        for (String s : frequencies) {

            System.out.println(s);

        }

        scanner.close();

    }

}

Output:

Enter a string: Hlo Welocme to Ja

va

Character : Frequency

H : 1

l : 2

o : 3

: 3

W : 1

e : 2

c : 1

m : 1

t : 1

J : 1

a : 2

v : 1