**MATHEMATICAL PROBLEMS**

**1. a) BASIC ARITHMETIC**

import java.util.Scanner;

public class exercise\_1a\_basicArithmetic

{

int calc(int m,int n)

{

int sum = (m \* n)/2%7;

return sum;

}

public static void main(String[] args)

{

exercise\_1a\_basicArithmetic obj=new exercise\_1a\_basicArithmetic();

Scanner scn=new Scanner(System.*in*);

System.*out*.println("Enter the value :");

int m=scn.nextInt();

int n=scn.nextInt();

int op=obj.calc(m,n);

System.*out*.println(op);

}

}

**1. b) STATISTICS**

import java.util.Scanner;

public class exercise\_1b\_statistics

{

void calcSumAndCountAllNumbersDivBy()

{

Scanner scn=new Scanner(System.in);

System.out.println("Enter the value: ");

int max=scn.nextInt();

int count = 0;

int sum = 0;

for (int i = 2; i < max; i++)

{

if (i % 2 == 0 || i % 7 == 0)

{

count++;

sum =sum + i;

}

}

System.out.println("Count: " + count);

System.out.println("Sum: " + sum);

}

public static void main(String[] args)

{

exercise\_1b\_statistics obj=new exercise\_1b\_statistics();

obj.calcSumAndCountAllNumbersDivBy();

}

}

**1. C) EVEN OR ODD**

import java.util.Scanner;

public class exercise\_1c\_evenOrOdd

{

static boolean isEven(int n) {

return n % 2 == 0;

}

static boolean isOdd(int n) {

return n % 2 != 0;

}

public static void main(String[] args)

{

int value;

Scanner scn=new Scanner(System.in);

System.out.println("Enter the value :");

value=scn.nextInt();

System.out.println(value + " is even: " + isEven(value));

System.out.println(value + " is odd: " + isOdd(value));

}

}

**2. NUMBER AS TEXT**

import java.util.Scanner;

public class exercise\_2\_numberAsText

{

static String numberAsText(final int n)

{

final String[] textValues = {"zero", "one", "two", "three", "four", "five", "six", "seven", "eight", "nine"};

final int remainder = n % 10;

return textValues[remainder];

}

public static void main(String[] args)

{

Scanner scn=new Scanner(System.in);

System.out.println("Enter the value :");

int n = scn.nextInt();

String numberAsText = "";

while (n > 0)

{

int digit = n % 10;

String digitAsText = numberAsText(digit);

numberAsText = digitAsText + " " + numberAsText;

n /= 10;

}

System.out.println("Number as text : " + numberAsText);

}

}

**3. PERFECT NUMBERS**

import java.util.ArrayList;

import java.util.List;

public class exercise\_3\_perfectNumbers

{

static List<Integer> calcPerfectNumbers(int max)

{

List<Integer> perfectNumbers = new ArrayList<>();

for (int i = 1; i <= max; i++) {

int sum = 0;

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

if (i % j == 0) {

sum = sum + j;

}

}

if (sum == i) {

perfectNumbers.add(i);

}

}

return perfectNumbers;

}

public static void main(String[] args)

{

List<Integer> perfectNumbers = calcPerfectNumbers(10000);

System.out.println("The perfect numbers upto 10000 are :" + perfectNumbers);

}

}

**4. PRIME NUMBERS**

import java.util.ArrayList;

import java.util.List;

import java.util.Scanner;

public class exercise\_4\_primeNumbers

{

static List<Integer> calcPrimesUpTo(int n)

{

List<Integer> primes = new ArrayList<>();

for (int i = 2; i <= n; i++)

{

boolean isPrime = true;

for (int j = 2; j < i; j++)

{

if (i % j == 0) {

isPrime = false;

break;

}

}

if (isPrime)

{

primes.add(i);

}

}

return primes;

}

public static void main(String[] args)

{

Scanner scn=new Scanner(System.in);

System.out.println("Enter the value :");

int n = scn.nextInt();

List<Integer> primes = calcPrimesUpTo(n);

System.out.println("Prime numbers up to " + n + ": " + primes);

}

}

**6. CHECK SUM**

import java.util.Scanner;

public class exercise\_6\_checkSum

{

static int calcChecksum(String num)

{

int sum = 0;

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

int digit = Character.getNumericValue(num.charAt(i));

sum += (i + 1) \* digit;

}

return sum % 10;

}

public static void main(String[] args)

{

Scanner scn=new Scanner(System.in);

System.out.println("Enter the string value :");

String str=scn.nextLine();

int checksum = calcChecksum(str);

System.out.println("Checksum: " + checksum);

}

}

**9. ARMSTRONG**

import java.util.ArrayList;

import java.util.List;

public class exercise\_9\_armStrong

{

public static List<Integer> calcArmstrongNumbers()

{

List<Integer> armstrongNumbers = new ArrayList<>();

for (int i = 100; i <= 999; i++) {

int digit1 = i / 100;

int digit2 = (i / 10) % 10;

int digit3 = i % 10;

int sumOfCubes = (int) (Math.pow(digit1, 3) + Math.pow(digit2, 3) + Math.pow(digit3, 3));

if (i == sumOfCubes) {

armstrongNumbers.add(i);

}

}

return armstrongNumbers;

}

public static void main(String[] args)

{

List<Integer> armstrongNumbers = calcArmstrongNumbers();

System.out.println("Armstrong numbers: " + armstrongNumbers);

}

}

**BASIC PROBLEMS**

**1. COUNT DUPLICATE CHATRACTERS**

import java.util.Scanner;

public class countingDuplicateCharacters

{

public static void main(String[] args)

{

String str;

Scanner scn=new Scanner(System.in);

System.out.println("Enter the string values :");

str=scn.nextLine();

int count;

char ch[] = str.toCharArray();

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

{

count = 1;

for(int j = i+1; j <ch.length; j++)

{

if(ch[i] == ch[j] && ch[i] != ' ')

{

count++;

ch[j] = '0';

}

}

if(count > 1 && ch[i] != '0')

System.out.println("Duplicate characters count : " + count);

}

}

}

**2. COUNT VOWELS AND CONSONANTS**

import java.util.Scanner;

public class countVowelsAndConsonants

{

public static void main(String[] args)

{

int vowels=0;

int consonants=0;

String str;

Scanner scn=new Scanner(System.in);

System.out.println("Enter the sentence :");

str=scn.nextLine();

char[] ch=str.toCharArray();

str=str.toLowerCase();

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

{

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

vowels++;

else if(ch[i]>'a'&& ch[i]<'z')

consonants++;

}

System.out.println("Count of vowels :" + vowels);

System.out.println("Count of consonants :" + consonants);

}

}

**3. FIRST NON REPEATED CHARACTER**

import java.util.Scanner;

public class firstNonRepeatedChar

{

public static void main(String[] args)

{

String str;

Scanner scn=new Scanner(System.in);

System.out.println("Enter the string :");

str=scn.nextLine();

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

{

char ch=str.charAt(i);

boolean value=false;

for (int j=i+1;j<str.length();j++)

{

if(ch==str.charAt(j))

{

value=true;

break;

}

}

if(value==false)

{

System.out.println("First non repeated value is :" + ch);

break;

}

}

}

}

**5. JOINING MULTIPLE STRING**

import java.util.Scanner;

public class joiningString

{

public static void main(String[] args)

{

Scanner scn=new Scanner(System.in);

System.out.println("Enter the sentance 1 :");

String word1=scn.nextLine();

System.out.println("Enter the sentance 2 :");

String word2=scn.nextLine();

String delimeter="|";

String output=String.join(delimeter,word1,word2);

System.out.println("joined string :" + output);

}

}

**6. MOST APPEARANCE CHARACTER**

import java.util.Scanner;

public class mostApperances

{

public static void main(String[] args)

{

Scanner scn=new Scanner(System.in);

System.out.println("Enter the string ");

String str = scn.nextLine();

char word = ' ';

int maxcount = 0;

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

char ch = str.charAt(i);

int Count = 0;

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

if (str.charAt(j) == ch) {

Count++;

}

}

if (Count > maxcount) {

word = ch;

maxcount = Count;

}

}

System.out.println("Most appearance character is : " + word);

}

}

**7. OCCURANCE OF CHARACTER**

import java.util.Scanner;

public class occuranceOfCharacter {

public static void main(String[] args)

{

String str;

int i, length, count[] = new int[256];

Scanner scn = new Scanner(System.in);

System.out.println("Enter a String");

str = scn.nextLine();

for (i = 0; i < str.length(); i++)

{

count[(int) str.charAt(i)]++;

}

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

{

if (count[i] != 0)

{

System.out.println("Character of " + (char) i + " appeared " + count[i]);

}

}

}

}

**8. STRING PALINDROME**

import java.util.Scanner;

public class Palindrome

{

public static void main(String[] args)

{

String str;

Scanner scn = new Scanner(System.in);

System.out.println("Enter a string value :");

str = scn.nextLine();

String output="";

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

output = output + str.charAt(i);

if (str.equals(output))

System.out.println(str+" is a palindrome");

else

System.out.println(str+" is not a palindrome");

}

}

**9. REMOVE DUPLICATE CHARACTERS**

import java.util.Scanner;

public class removeDuplicateCharacter

{

static String duplicateCharacter(String str)

{

String word="";

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

{

char ch=str.charAt(i);

if(word.indexOf(ch)==-1)

{

word=word+ch;

}

}

return word;

}

public static void main(String[] args)

{

String str;

Scanner scn = new Scanner(System.in);

System.out.println("Enter the string :");

str=scn.nextLine();

System.out.println("After removed duplicate character : " + duplicateCharacter(str));

}

}

**9. REMOVE GIVEN CHARACTER**

import java.util.Scanner;

public class removeGivenCharacter {

public static void main(String[] args)

{

Scanner scanner = new Scanner(System.in);

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

String word = scanner.nextLine();

System.out.print("Enter a character to remove: ");

char ch = scanner.next().charAt(0);

String str = word.replace(String.valueOf(ch), "");

System.out.println("Original string: " + word);

System.out.println("New string: " + str);

}

}

**11. REMOVING WHITE SPACES**

import java.util.Scanner;

public class removingWhiteSpaces {

public static void main(String[] args)

{

Scanner scn = new Scanner(System.in);

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

String str =scn.nextLine();

str = str.replaceAll(" ", "");

System.out.println(str);

}

}

**12. REVERSE WORD STRING**

import java.util.Scanner;

public class reverseWord {

public static void main(String[] args)

{

Scanner scn = new Scanner(System.in);

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

String str = scn.nextLine();

String split[] = str.split(" ");

String output = "";

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

{

String word = split[i];

String rev = "";

for (int j = word.length() - 1; j >= 0; j--) {

rev = rev + word.charAt(j);

}

output = output + rev + " ";

}

System.out.print("Reversed string : " + output);

}

}

**13. SORT BY LENGTH OF ARRAY**

import java.util.Arrays;

public class sortsLengthOfArray {

public static void main(String[] args)

{

String str[]= {"bmw", "lamborghini", "lykanhypersport", "jaguar", "rollsroyce"};

String temp;

System.out.println("Array before sorting by length :" + Arrays.toString(str));

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

{

for (int j = i+1; j < str.length; j++)

{

if(str[i].length()>str[j].length())

{

temp = str[i];

str[i] = str[j];

str[j] = temp;

}

}

}

System.out.println("Array after sorting :" + Arrays.toString(str));

}

}

**14. STRING CONTAINS ONLY DIGITS**

import java.util.Scanner;

public class stringContainOnlyDigits {

public static boolean onlyDigits(String str, int n)

{

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

if (str.charAt(i) < '0' || str.charAt(i) > '9') {

return false;

}

}

return true;

}

public static void main(String args[])

{

Scanner scn = new Scanner(System.in);

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

System.out.print("The given string contains only digits ? ");

String str = scn.nextLine();

int len = str.length();

System.out.println(onlyDigits(str, len));

}

}