**Day 2 Solutions**

**Solution 14:**

**package** com.hsbc.pack.day2;

//This Program is to perform various arithmetic operations using classes and objects

**public** **class** Calculator {

**public** **void** add(**int** a, **int** b){

**int** sum=a+b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The sum is: "+sum);

}

**public** **void** diff(**int** a, **int** b){

**int** diff=a-b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The difference is: "+diff);

}

**public** **void** mul(**int** a, **int** b){

**int** mul=a\*b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The product is: "+mul);

}

**public** **void** division(**int** a, **int** b){

**float** div=a/b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The division is: "+div);

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Calculator c=**new** Calculator(); //creation of object

c.add(4, 5);

c.diff(10, 7);

c.mul(7, 5);

c.division(10, 5);

}

}

**Solution 15:**

**package** com.hsbc.pack.day2;

//This code is to count the number of objects created.

**public** **class** Sample {

**static** **int** *count*=0;

**public** Sample(){

*count*++;

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Sample s=**new** Sample();

Sample s1=**new** Sample();

Sample s2=**new** Sample();

System.***out***.println("The number of objects created: "+*count*);

}

}

**Solution 17:**

**package** com.hsbc.pack.day2;

//This code is to demonstrate the operations performed on string.

**public** **class** Solution17 {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

StringBuffer sb=**new** StringBuffer("The quick brown fox jumps over the lazy dog");

//Print the character at the 12th index.

System.***out***.println("The character at 12th index is: "+sb.charAt(12));

//Check whether the String contains the word “is”

String str=sb.toString();

**if**(str.contains("is"))

System.***out***.println("The string contains is");

**else**

System.***out***.println("The string does not contains is");

//Add the string “and killed it” to the existing string

System.***out***.println("The apended string is: ");

System.***out***.println(sb.append(" and killed it."));

//Check whether the String ends with the word “dogs”.

String arr[]=str.split(" ",str.length());

**if**(arr[arr.length-1].equals("dogs"))

System.***out***.println("Yes, the string ends with dogs.");

**else**

System.***out***.println("No, It doesn't ends with dogs.");

//Check whether the String is equal to “The quick brown Fox jumps over the lazy Dog”.

StringBuffer sb1=**new** StringBuffer("The quick brown Fox jumps over the lazy Dog");

System.***out***.println(sb1);

**if**(sb.equals(sb1))

System.***out***.println("Both the strings are equal.");

**else**

System.***out***.println("Both the strings are not equal.");

//Check whether the String is equal to “THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG”.

String s1=sb1.toString().toUpperCase();

System.***out***.println(s1);

**if**(sb.equals(s1))

System.***out***.println("Both the strings are equal.");

**else**

System.***out***.println("Both the strings are not equal.");

//Find the index position of the character “a”.

System.***out***.println("The index position of the character a is: "+sb.indexOf("a"));

//Find the last index position of the character “e”.

System.***out***.println("The last index position of the character e is: "+sb.lastIndexOf("e"));

//Find the length of the String.

System.***out***.println("The length of the string is: "+sb.length());

//Check whether the String matches to “The quick brown Fox jumps over the lazy Dog”.

**if**(str.compareTo("The quick brown Fox jumps over the lazy Dog")==0)

System.***out***.println("Equal");

**else**

System.***out***.println("Not Equal");

//Replace the word “The” with the word “A”.

//String s2= sb.replace(0,3,"A").toString();

//System.out.println("The replaced string is: "+s2);

String word="";

String t="";

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

{

**char** ch=str.charAt(i);

**if**(Character.*isLetter*(ch))

{

word=word+ch;

}

**else**

{

**if**(word.equals("The")||word.equals("the"))

{

t=t+" A";

word="";

}

**else**

{

t=t+" "+word;

word="";

}

}

}

System.***out***.println("After replacing "+ t);

//Split the above string into two such that two animal names do not come together.

/\*System.out.println("After splitting");

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

{

System.out.println(arr[i]);

}\*/

//Print the animal names alone separately from the above string.

System.***out***.println("The name of animals:");

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

{

**if**(arr[i].equals("fox")||(arr[i].equals("dog")))

System.***out***.println(arr[i]);

}

//Print the above string in completely upper case.

System.***out***.println("The string in upper case: "+str.toUpperCase());

//Print the above string in completely lower case.

System.***out***.println("The string in lower case: "+str.toLowerCase());

}

}

**Solution 18:**

**package** com.hsbc.pack.day2;

//This code is to test the == and equals operator

**public** **class** StringTesting {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

String str=**new** String("hello");

String str1= "hello";

**if**(str==str1)

System.***out***.println("In == operator both the strings are equal");

**else**

System.***out***.println("In == operator both the strings are not

equal");

**if**(str.equals(str1))

System.***out***.println("In equals operator both the strings are equal");

**else**

System.***out***.println("In equals operator both the strings are not equal");

}

}

**Solution 19:**

**package** com.hsbc.pack.day2;

**import** java.util.Scanner;

/\*This code is to declare an array with 8 elements and copy the 8 elements into \*another array and display the same

\*/

**public** **class** ArrayCopy {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

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

**int**[] arr=**new** **int**[8];

**int**[] arr1=**new** **int**[arr.length];

System.***out***.println("Enter the elements");

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

{

arr[i]=sc.nextInt(); //taking input from user

}

System.***out***.println("Original array");

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

{

System.***out***.println(arr[i]); //Printing the original array

arr1[i]=arr[i]; //copying the array

}

System.***out***.println("Copy array");

**for**(**int** i=0;i<arr1.length;i++)

{

System.***out***.println(arr1[i]); //Printing the copy array

}

}

}

**Soltuion 20:**

**package** com.hsbc.pack.day2;

**import** java.util.Scanner;

//This code is to display the sum and the average of elements in the array.

**public** **class** ArrayOperations {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

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

**int**[] arr=**new** **int**[8];

**int** sum=0;

**double** avg=0;

System.***out***.println("Enter the elements");

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

{

arr[i]=sc.nextInt(); //taking input from user

sum=sum+arr[i]; //adding elements of array

}

System.***out***.println("The sum of array is: "+sum);

avg=sum/arr.length;

System.***out***.println("The average of the array is: "+avg);

}

}

**Solution 21:**

**package** com.hsbc.pack.day2;

**import** java.util.Scanner;

//Code for Matrix Addition

**public** **class** MatrixAddition {

//Function for adding matrix

**public** **static** **void** add(**int**[][] first,**int**[][] second,**int** r,**int** c) {

**int**[][] sum=**new** **int**[r][c];

**for**(**int** i=0;i<r;i++)

{

**for**(**int** j=0;j<c;j++)

{

sum[i][j]=first[i][j]+second[i][j];

}

}

System.***out***.println("Printing the sum.3");

*printArray*(sum,r,c);

}

//Function for printing the array in the form of matrix

**public** **static** **void** printArray(**int**[][] arr,**int** r,**int** c)

{

**for**(**int** i=0;i<r;i++)

{

**for**(**int** j=0;j<c;j++)

{

System.***out***.print(arr[i][j]+"\t");

}

System.***out***.println();

}

}

**public** **static** **void** main(String[] args) {

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

System.***out***.println("Enter number of rows: ");

**int** r=sc.nextInt();

System.***out***.println("Enter number of columns: ");

**int** c=sc.nextInt();

**int**[][] first=**new** **int**[r][c]; //Declaration of 2-D Array.

**int**[][] second=**new** **int**[r][c];

System.***out***.println("Enter the values for first array: ");

**for**(**int** i=0;i<r;i++) {

**for**(**int** j=0;j<c;j++) {

first[i][j]=sc.nextInt(); //Scanning the value of first array.

}

}

System.***out***.println("Enter the values for second array: ");

**for**(**int** i=0;i<r;i++) {

**for**(**int** j=0;j<c;j++) {

second[i][j]=sc.nextInt(); //Scanning the value of second array.

}

}

System.***out***.println("First Array");

*printArray*(first, r, c); //Calling print function to print the first array

System.***out***.println("Second Array");

*printArray*(second, r, c); //calling the print function to print the second array

*add*(first,second,r,c); //calling the add function.

}

}

**Solution 22:**

**package** com.hsbc.pack.day2;

**import** java.util.Scanner;

//This code is to display the square of the elements of a two dimensional array.

**public** **class** ArraySquare {

**public** **static** **void** printArray(**int**[][] arr,**int** r,**int** c)

{

**for**(**int** i=0;i<r;i++)

{

**for**(**int** j=0;j<c;j++)

{

System.***out***.print(arr[i][j]+"\t");

}

System.***out***.println();

}

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

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

System.***out***.println("Enter number of rows: ");

**int** r=sc.nextInt();

System.***out***.println("Enter number of columns: ");

**int** c=sc.nextInt();

**int**[][] first=**new** **int**[r][c]; //Declaration of 2-D Array.

System.***out***.println("Enter the values for first array: ");

**for**(**int** i=0;i<r;i++) {

**for**(**int** j=0;j<c;j++) {

first[i][j]=sc.nextInt(); //Scanning the value of first array.

}

}

sc.close();

System.***out***.println("First Array");

*printArray*(first, r, c); //Calling print function to print the first array

**for**(**int** i=0;i<r;i++)

{

**for**(**int** j=0;j<c;j++)

{

first[i][j]=first[i][j]\*first[i][j];

}

}

System.***out***.println("Final Array");

*printArray*(first, r, c); //Calling print function to print the first array

}

}

**Solution 23:**

**package** com.hsbc.pack.day2;

**import** java.util.Scanner;

/\*To construct an array with 10 elements

\* and to find the number of occurrences of each element in the Array.

\*/

**public** **class** ArrayFrequency {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

//Initialize array

**int** [] arr = **new** **int** [10];

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

System.***out***.println("enter the values: ");

**for**(**int** i=0;i<10;i++)

{

arr[i]=sc.nextInt();

}

sc.close();

//fr Array will store frequencies of element

**int** [] fr = **new** **int** [arr.length];

**int** visited = -1;

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

**int** count = 1;

**for**(**int** j = i+1; j < arr.length; j++){

**if**(arr[i] == arr[j]){

count++;

//To avoid the counting same element again

fr[j] = visited;

}

}

**if**(fr[i] != visited)

fr[i] = count;

}

//Displays the frequency of each element present in array

System.***out***.println(" Element | Frequency");

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

**if**(fr[i] != visited)

System.***out***.println(" " + arr[i] + " | " + fr[i]);

}

}

}

**Solution 24:**

**package** com.hsbc.pack.day2;

/\*Demonstration of function overloading by

\* calculating area and perimeter of square

\* and rectangle.\*/

**public** **class** Shape {

**public** **void** area(**double** l, **double** b) {

System.***out***.println("The area of Rectangle is: "+(l\*b));

}

**public** **void** area(**double** s)

{

System.***out***.println("The area of square is: "+(s\*s));

}

**public** **void** perimeter(**double** l,**double** b)

{

**double** p=2\*(l+b);

System.***out***.println("The perimeter of rectange is: "+p);

}

**public** **void** perimeter(**double** s)

{

System.***out***.println("The perimeter of square is: "+(4\*s));

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Shape s1=**new** Shape();

s1.area(5);

s1.area(4,5);

s1.perimeter(6);

s1.perimeter(5, 7.8);

}

}

**Solution 26:**

**package** com.hsbc.pack.day2;

// Program to perform function overloading.

**public** **class** Calculator {

**public** **void** add(**int** a, **int** b){

**int** sum=a+b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The sum is: "+sum);

}

//function overloading

**public** **void** add(**double** a, **double** b){

**double** sum=a+b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The sum is: "+sum);

}

**public** **void** diff(**double** a, **double** b){

**double** diff=a-b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The difference is: "+diff);

}

**public** **void** diff(**int** a, **int** b){

**int** diff=a-b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The difference is: "+diff);

}

**public** **void** mul(**int** a, **int** b){

**int** mul=a\*b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The product is: "+mul);

}

//function overloading

**public** **void** mul(**int** a,**double** b){

**double** mul=a\*b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The product is: "+mul);

}

**public** **void** division(**int** a, **int** b){

**float** div=a/b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The division is: "+div);

}

**public** **void** division(**double** a, **int** b){

**double** div=a/b;

System.***out***.println("The numbers are a: "+a+" b: "+b);

System.***out***.println("The division is: "+div);

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Calculator c=**new** Calculator(); //creation of object

c.add(4, 5);

c.add(4.5, 5.5);

c.diff(10, 7);

c.diff(10.1, 7.8);

c.mul(7, 5);

c.mul(3, 4.75);

c.division(10, 5);

c.division(9.55, 2);

}

}

**Solution 27:**

**package** com.hsbc.pack.day2;

//To demonstrate the significance of initializer

**public** **class** Computer {

// Initializer block starts..{

// This code is executed before every constructor.

System.***out***.println("Class Loads !!");

}

// Initializer block ends

**public** Computer()

{

System.***out***.println("Default Constructor");

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Computer c=**new** Computer();

}

}

**Solution 28:**

**package** com.hsbc.pack.day2;

**public** **class** Calculator1 {

**public** **void** add(**int** ...args)

{

System.***out***.println("argument length: " + args.length);

**int** sum = 0;

**for**(**int** x: args){

sum += x;

}

System.***out***.println("The sum is: "+sum);

}

**public** **void** diff(**int** ...args )

{

System.***out***.println("argument length: " + args.length);

**int** diff = 0;

**for**(**int** x: args){

diff -= x;

}

System.***out***.println("The difference is: "+diff);

}

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Calculator1 c1=**new** Calculator1();

c1.add(2,3);

c1.diff(5,4);

c1.add(2,3,5);

c1.diff(2,3,5);

}

}