**Name: Kunal Porwal**

Lab exercise 14:

package com.hsbc.exercise14; //package name

//Class name

public class Calculator {

double result;

//Main method

public static void main(String[] args) {

Calculator calc = new Calculator(); //Object of class file

//Calling methods using object

calc.add(45.65, 34.76);

calc.diff(45.00, 12.34);

calc.mul(1.35, 5.02);

calc.div(54.00, 3);

}

//Methods declarations

public void add(double a,double b) {

result = a + b;

System.out.println("Addition of "+a+" and "+b+" is::"+result);

}

public void diff(double a,double b) {

result = a - b;

System.out.println("Difference of "+a+" and "+b+" is::"+result);

}

public void mul(double a,double b) {

result = a \* b;

System.out.println("Multiplication of "+a+" and "+b+" is::"+result);

}

public void div(double a,double b) {

result = a / b;

System.out.println("Division of "+a+" and "+b+" is::"+result);

}

}

Lab exercise 15:

package com.hsbc.exercise15; //Package name

//Class name

public class Sample {

static int count=0;

public Sample() {

super();

count++;

}

//main method

public static void main(String[] args) {

// TODO Auto-generated method stub

Sample s = new Sample();

Sample s1 = new Sample();

Sample s2 = new Sample();

Sample s3 = new Sample();

System.out.println("Total object is::"+count);

}

}

Lab exercise 16:

Student.java

package com.hsbc.exercise16; //Package name

//Class name

public class Student {

//Varibles

int rollNo;

String studName;

double marksInEng;

double marksInMaths;

double marksInScience;

double percentage;

//main method

public static void main(String[] args) {

// TODO Auto-generated method stub

}

//Getters and setters methods

public int getRollNo() {

return rollNo;

}

public void setRollNo(int rollNo) {

this.rollNo = rollNo;

}

public String getStudName() {

return studName;

}

public void setStudName(String studName) {

this.studName = studName;

}

public double getMarksInEng() {

return marksInEng;

}

public void setMarksInEng(double marksInEng) {

this.marksInEng = marksInEng;

}

public double getMarksInMaths() {

return marksInMaths;

}

public void setMarksInMaths(double marksInMaths) {

this.marksInMaths = marksInMaths;

}

public double getMarksInScience() {

return marksInScience;

}

public void setMarksInScience(double marksInScience) {

this.marksInScience = marksInScience;

}

public double getPercentage() {

return percentage;

}

public void setPercentage(double percentage) {

this.percentage = percentage;

}

}

Standard.java

package com.hsbc.exercise16; //Package name

import java.util.ArrayList;

import java.util.Arrays;

//Class name

public class Standard {

private int rollNo;

String studName;

double marksInEng;

double marksInMaths;

double marksInScience;

public Standard(int rollNo, String studName, double marksInEng, double marksInMaths, double marksInScience) {

this.rollNo=rollNo;

this.studName=studName;

this.marksInEng=marksInEng;

this.marksInMaths=marksInMaths;

this.marksInScience=marksInScience;

}

public Standard() {

// TODO Auto-generated constructor stub

}

//Main method

public static void main(String[] args) {

// TODO Auto-generated method stub

int rollNo=100; // Initialise roll number

Standard s = new Standard(rollNo++,"Vishal Shekhar",69,78,90);

Standard s1 = new Standard(rollNo++,"Somesh Suryawanshi",49,68,89);

Standard s2 = new Standard(rollNo++,"Omkar Bhide",41,97,97);

Standard s3 = new Standard(rollNo++,"Snehal Hari",98,96,100);

Standard s4 = new Standard(rollNo++,"Om Diwakar",40,95,87);

Standard s5 = new Standard(rollNo++,"Prabhu Mehta",69,94,39);

Standard s6 = new Standard(rollNo++,"Ganesh Katke",77,93,66);

Standard s7 = new Standard(rollNo++,"Daya Subramanian",87,58,49);

Standard [] studArray= {s,s1,s2,s3,s4,s5,s6,s7};

Standard std = new Standard();

//Problem 1

std.studDetails(studArray);

//Problem 2

std.highestPercentage(studArray);

}

public void studDetails(Standard [] studArray) {

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

System.out.println(studArray[i].rollNo+" : "+ studArray[i].studName);

}

}

public void highestPercentage(Standard [] studArray) {

double [] arr = new double[100];

double [] mathsMarks =new double[100];

double [] mathsScienceMaths =new double[100];

ArrayList<Student> tempStud = new ArrayList<Student>() ;

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

Student temp=new Student();

arr[i] = ( studArray[i].marksInEng + studArray[i].marksInMaths + studArray[i].marksInScience) \* 100 / 700 ;

temp.setRollNo(studArray[i].rollNo);

temp.setStudName(studArray[i].studName);

temp.setPercentage(arr[i]);

temp.setMarksInMaths(studArray[i].marksInMaths);

temp.setMarksInScience(studArray[i].marksInScience);

tempStud.add(temp);

mathsMarks[i] = studArray[i].marksInMaths;

mathsScienceMaths[i] = studArray[i].marksInScience + mathsMarks[i];

}

Arrays.sort(arr);

double highestPercentage = arr[arr.length-1];

System.out.println("\nStudent with highest percentage is::");

for(Student t:tempStud) {

if(t.percentage==highestPercentage) {

System.out.println("Student Name: "+t.studName+" ,Student roll no: "+t.rollNo+" ,Percentage:"+t.percentage);

break;

}

}

System.out.println("\nStudent with highest marks in maths is::");

Arrays.sort(mathsMarks);

double highestMathsMarks = mathsMarks[mathsMarks.length-1];

for(Student t:tempStud) {

if(t.marksInMaths==highestMathsMarks) {

System.out.println("Student Name: "+t.studName+" ,Student roll no: "+t.rollNo+" ,Maths Marks:"+t.marksInMaths);

break;

}

}

}

}

Lab exercise 17:

package com.hsbc.exercise17; //package name

public class StringClass { //Class name

//main method

public static void main(String[] args) {

//given string

String str = "The quick brown fox jumps over the lazy dog";

System.out.println("Character at 12th position is::"+str.charAt(12));

System.out.println("Checking the string contains word s::"+str.contains("s"));

System.out.println("Appending to string::"+str.concat(" and killed it"));

System.out.println("Checking if string ends with dog::"+str.endsWith("dog"));

System.out.println("Checking if string is equal to::"+str.equals("The quick brown Fox jumps over the lazy Dog"));

System.out.println("Checking if string is equal to::"+str.equals("THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG"));

System.out.println("Finding index position at char a::"+str.indexOf("a"));

System.out.println("Finding last index position at char e::"+str.lastIndexOf("e"));

System.out.println("Finding length of string::"+str.length());

System.out.println("Finding index position at char a::"+str.equals("The quick brown Fox jumps over the lazy Dog"));

System.out.println("Replacing The with A::"+str.replace("The", "A"));

int index = str.indexOf("jumps");

System.out.println("Splitting string::"+str.substring(0,index)+" , "+str.substring(index,str.length()));

StringBuilder sb = new StringBuilder();

for (String b : str.split(" ")) {

if (b.startsWith("f") || b.startsWith("d")) {

sb.append(b + "\n");

}

}

System.out.println("Animal names are::"+sb.toString());

System.out.println("String in lowercase::"+str.toLowerCase());

System.out.println("String in uppercase::"+str.toUpperCase());

}

}

Lab exercise 18:

package com.hsbc.exercise18; //Package name

//Class name

public class StringEquals {

//Main method

public static void main(String[] args) {

// TODO Auto-generated method stub

String s = new String("Hello");

String s1 = new String("Hello");

if(s==s1)

System.out.println("Strings are equal");

else

System.out.println("Strings are not equal");

if(s.equals(s1))

System.out.println("Strings are equal");

else

System.out.println("Strings are not equal");

}

}

Lab exercise 19:

package com.hsbc.exercise19; //Package name

//Class name

public class Arrays {

//Main method

public static void main(String[] args) {

// TODO Auto-generated method stub

int [] arr = {56,67,3,4,90,1,34,654};

int [] arr1 ;

arr1 = arr.clone();

System.out.println("Array elements are::");

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

System.out.println(arr1[i]);

}

}

}

Lab exercise 20:

package com.hsbc.exercise20; //Package name

//Program for sum and average of an array

//Class name

public class Arrays {

//Main method

public static void main(String[] args) {

// TODO Auto-generated method stub

double [] arr = {56,67,3,4,90,1,34,654};

double sum=0;

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

sum+=arr[i];

}

System.out.println("Sum of elements of array is::"+sum);

System.out.println("Average of elements is::"+sum/arr.length);

}

}

Lab exercise 21:

//Program for construction of matrices from array

package com.hsbc.exercise21;

public class Matrices {

public static void main(String[] args) {

// TODO Auto-generated method stub

int sum=0,sum1=0;

//Defining 2 matrices

int m[][] = { { -1, 2, 3, 4 },

{ 5, 6, -7, 8 },

{ 9, 10, 11, 12 } };

int m1[][] = { { -19, 2, 49 },

{ -35, 56, 7 },

{ 9, 10, -12 } };

System.out.println("Matrix 1 is::");

// Loop through all rows

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

{

// Loop through all elements of current row

for (int j = 0; j < m[i].length; j++) {

sum+=m[i][j];

System.out.print(m[i][j] + " ");

}

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

}

System.out.println("Sum of matrix 1 is::"+sum);

System.out.println("\nMatrix 2 is::");

// Loop through all rows

for (int i = 0; i < m1.length; i++)

{

// Loop through all elements of current row

for (int j = 0; j < m1[i].length; j++) {

sum1+=m1[i][j];

System.out.print(m1[i][j] + " ");

}

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

}

System.out.println("Sum of matrix 2 is::"+sum1);

}

}

Lab exercise 22:

//Program for square of elements of array

package com.hsbc.exercise22;

public class ArraySquares {

public static void main(String[] args) {

// TODO Auto-generated method stub

//Defining matrix in array form

int m[][] = { { -1, 2, 3, 4 },

{ 5, 6, -7, 8 },

{ 9, 10, 11, 12 } };

System.out.println("Sum of squares of matrix is::");

// Loop through all rows

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

{

// Loop through all elements of current row

for (int j = 0; j < m[i].length; j++) {

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

}

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

}

}

}

Lab exercise 23:

//program to create array and finding number of occurences of each element

package com.hsbc.exercise23;

import java.util.Random;

public class ArrayOccurences {

public static void main(String[] args) {

// TODO Auto-generated method stub

int [] arr = new int[15];

int [] arrFr = new int[arr.length];

int visited = -1;

Random rand = new Random(); //generate random number

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

arr[i] = rand.nextInt(10);

}

//loop through the array

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 counting same element again

arrFr[j] = visited;

}

}

if(arrFr [i] != visited)

arrFr[i] = count;

}

System.out.println(" Number" + " :: Frequency" );

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

if(arrFr[i] != visited)

System.out.println(" " + arr[i] + " :: " + arrFr[i]);

}

}

}

Lab exercise24:

//Overloading

package com.hsbc.exercise24;

public class Shape {

public static void main(String[] args) {

// TODO Auto-generated method stub

int len = 5;

int b = 9;

Shape s = new Shape();

s.area(len);

s.perimeter(len);

s.area(len, b);

s.perimeter(len, b);

}

public void area(int len) {

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

}

public void area(int len,int b) {

System.out.println("The area of rectangle::"+len \* b);

}

public void perimeter(int len) {

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

}

public void perimeter(int len,int b) {

System.out.println("The perimeter of rectangle::"+2 \* (len + b));

}

}

Lab exercise 25:

//Overloading example

package com.hsbc.exercise25;

public class Employee {

String empName;

int empId;

int empAge;

String empDesgn;

String empLocation;

int empExInYrs;

public Employee() {

super();

// TODO Auto-generated constructor stub

}

public Employee(String empName) {

super();

this.empName = empName;

}

public Employee(String empName, int empId) {

super();

this.empName = empName;

this.empId = empId;

}

public Employee(String empName, int empId, int empAge) {

super();

this.empName = empName;

this.empId = empId;

this.empAge = empAge;

}

public Employee(String empName, int empId, String empDesgn) {

super();

this.empName = empName;

this.empId = empId;

this.empDesgn = empDesgn;

}

public Employee(String empName, int empId, int empAge, String empDesgn) {

super();

this.empName = empName;

this.empId = empId;

this.empAge = empAge;

this.empDesgn = empDesgn;

}

public Employee(String empName, int empId, int empAge, int empExInYrs) {

super();

this.empName = empName;

this.empId = empId;

this.empAge = empAge;

this.empExInYrs = empExInYrs;

}

public Employee(String empName, int empId, String empDesgn, int empExInYrs) {

super();

this.empName = empName;

this.empId = empId;

this.empDesgn = empDesgn;

this.empExInYrs = empExInYrs;

}

public Employee(String empName, int empId, int empAge, String empDesgn, int empExInYrs) {

super();

this.empName = empName;

this.empId = empId;

this.empAge = empAge;

this.empDesgn = empDesgn;

this.empExInYrs = empExInYrs;

}

public Employee(String empName, int empId, String empDesgn, String empLocation, int empExInYrs) {

super();

this.empName = empName;

this.empId = empId;

this.empDesgn = empDesgn;

this.empLocation = empLocation;

this.empExInYrs = empExInYrs;

}

public Employee(String empName, int empId, int empAge, String empDesgn, String empLocation, int empExInYrs) {

super();

this.empName = empName;

this.empId = empId;

this.empAge = empAge;

this.empDesgn = empDesgn;

this.empLocation = empLocation;

this.empExInYrs = empExInYrs;

}

public static void main(String[] args) {

// TODO Auto-generated method stub

Employee e = new Employee("Girish Chandratreya");

System.out.println("Employee name: "+e.empName);

Employee e1 = new Employee("Mahesh Sonule",349803);

System.out.println("Employee name: "+e1.empName+"\t,Employee Id:"+e1.empId);

Employee e2 = new Employee("Seema Dube",349803,34);

System.out.println("Employee name: "+e2.empName+"\t,Employee Id:"+e2.empId+"\t,Employee age:"+e2.empAge);

Employee e3 = new Employee("Mahesh G",349803,"Accounting");

System.out.println("Employee name: "+e3.empName+"\t,Employee Id:"+e3.empId+"\t,Employee designation:"+e3.empDesgn);

Employee e4 = new Employee("Bhumen A",349803,43,"Sales");

System.out.println("Employee name: "+e4.empName+"\t,Employee Id:"+e4.empId+"\t,Employee age:"+e4.empAge+"\t,Employee Designation:"+e4.empDesgn);

Employee e5 = new Employee("Deepak J",349803,43,"Dubai");

System.out.println("Employee name: "+e5.empName+"\t,Employee Id:"+e5.empId+"\t,Employee age:"+e5.empAge+"\t,Employee Location:"+e5.empDesgn);

Employee e6 = new Employee("Seema Dube",349803,34,3);

System.out.println("Employee name: "+e6.empName+"\t,Employee Id:"+e6.empId+"\t,Employee age:"+e6.empAge+"\t,Employee Experience:"+e6.empExInYrs);

Employee e7 = new Employee("Mangesh D",349803,"Tester",3);

System.out.println("Employee name: "+e7.empName+"\t,Employee Id:"+e7.empId+"\t,Employee Designation:"+e7.empDesgn+"\t,Employee Experience:"+e7.empExInYrs);

Employee e8 = new Employee("Amit D",349803,"Tester","Amsterdam",3);

System.out.println("Employee name: "+e8.empName+"\t,Employee Id:"+e8.empId+"\t,Employee Designation:"+e8.empDesgn+"\t,Employee Location:"+e8.empLocation+"\t,Employee Experience:"+e8.empExInYrs);

Employee e9 = new Employee("Amit D",349803,47,"Manager","Bangalore",24);

System.out.println("Employee name: "+e9.empName+"\t,Employee Id:"+e9.empId+"\t,Employee Age:"+e9.empAge+"\t,Employee Designation:"+e9.empDesgn+"\tEmployee Location:"+e9.empLocation+"\t,Employee Experience:"+e9.empExInYrs);

}

}

Lab exercise 26:

//Calculator program overloading

package com.hsbc.exercise26;

public class Calculator {

public static void main(String[] args) {

// TODO Auto-generated method stub

Calculator c =new Calculator();

c.add(3, 4);

c.add(3, 4.56);

c.add(4.675, 98);

c.add(45.56, 3.12);

c.diff(3, 4);

c.diff(3, 4.56);

c.diff(4.675, 98);

c.diff(45.56, 3.12);

c.mul(3, 4);

c.mul(3, 4.56);

c.mul(4.675, 98);

c.mul(45.56, 3.12);

c.div(30, 4);

c.div(38, 4.56);

c.div(478.75, 98);

c.div(45.56, 3.12);

}

public void add(int a,int b) {

System.out.println("Addition is::"+(a+b));

}

public void add(int a,double b) {

System.out.println("Addition is::"+(a+b));

}

public void add(double a,int b) {

System.out.println("Addition is::"+(a+b));

}

public void add(double a,double b) {

System.out.println("Addition is::"+(a+b));

}

public void diff(int a,int b) {

System.out.println("Difference is::"+(a-b));

}

public void diff(int a,double b) {

System.out.println("Difference is::"+(a-b));

}

public void diff(double a,int b) {

System.out.println("Difference is::"+(a-b));

}

public void diff(double a,double b) {

System.out.println("Difference is::"+(a-b));

}

public void mul(int a,int b) {

System.out.println("Multiplication is::"+(a\*b));

}

public void mul(int a,double b) {

System.out.println("Multiplication is::"+(a\*b));

}

public void mul(double a,int b) {

System.out.println("Multiplication is::"+(a\*b));

}

public void mul(double a,double b) {

System.out.println("Multiplication is::"+(a\*b));

}

public void div(int a,int b) {

System.out.println("Division is::"+(a/b));

}

public void div(int a,double b) {

System.out.println("Division is::"+(a/b));

}

public void div(double a,int b) {

System.out.println("Division is::"+(a/b));

}

public void div(double a,double b) {

System.out.println("Division is::"+(a/b));

}

}

Lab exercise 27:

//Object should be created after class is loaded

package com.hsbc.exercise27;

public class Computer {

public static void main(String[] args) {

// TODO Auto-generated method stub

new Computer();

Computer c = new Computer();

}

}

Lab exercise 28:

package com.hsbc.exercise28;

//Varibale arguments in calculator program

public class VariableArgs {

public static void main(String[] args) {

// TODO Auto-generated method stub

VariableArgs v =new VariableArgs();

v.varArgsAdd(100,3445,65,-34,6,1);

v.varArgsDiff(1009,445);

}

public void varArgsAdd(int ...a) {

int sum=0;

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

sum+=a[i];

}

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

}

public void varArgsDiff(int ...a) {

System.out.println("Difference is::"+(a[0]-a[1]));

}

}