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**19K-1043**

**SCD LAB 6**

**Task 1**

package com.company;

class CalculatorGen<N extends Number, M extends Number> {

private N num1;

private M num2;

public N getNum1() {

return num1;

}

public void setNum1(N num1) {

this.num1 = num1;

}

public M getNum2() {

return num2;

}

public void setNum2(M num2) {

this.num2 = num2;

}

public void sum() {

if (num1 instanceof Integer && num2 instanceof Integer) {

System.out.println("The Sum: " + (num1.intValue() + num2.intValue()) );

}

else if (num1 instanceof Double && num2 instanceof Double) {

System.out.println("The Sum: " + (num1.doubleValue() + num2.doubleValue()) );

}

else {

double a = num1.doubleValue();

double b = num2.doubleValue();

System.out.println("The Sum: " + (a + b));

}

}

public void sub() {

if (num1 instanceof Integer && num2 instanceof Integer) {

System.out.println("The Subtraction: " + (num1.intValue() - num2.intValue()) );

}

else if (num1 instanceof Double && num2 instanceof Double) {

System.out.println("The Subtraction: " + (num1.doubleValue() - num2.doubleValue()) );

}

else {

double a = num1.doubleValue();

double b = num2.doubleValue();

System.out.println("The Subtraction: " + (a - b));

}

}

public void multiply() {

if (num1 instanceof Integer && num2 instanceof Integer) {

System.out.println("The Product: " + (num1.intValue() \* num2.intValue()) );

}

else if (num1 instanceof Double && num2 instanceof Double) {

System.out.println("The Product: " + (num1.doubleValue() \* num2.doubleValue()) );

}

else {

double a = num1.doubleValue();

double b = num2.doubleValue();

System.out.println("The Product: " + (a \* b));

}

}

public void divide() {

if (num1 instanceof Integer && num2 instanceof Integer) {

System.out.println("The Division: " + (num1.intValue() / num2.intValue()) );

}

else if (num1 instanceof Double && num2 instanceof Double) {

System.out.println("The Division: " + (num1.doubleValue() / num2.doubleValue()) );

}

else {

double a = num1.doubleValue();

double b = num2.doubleValue();

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

}

}

}

public class Task1 {

public static void main(String args[]) {

CalculatorGen<Integer, Double> cal = new CalculatorGen<>();

cal.setNum1(5);

cal.setNum2(3.3);

cal.sum();

cal.sub();

cal.multiply();

cal.divide();

}

}

**Task 2**

package com.company;

import javax.net.ssl.SSLContext;

import java.util.Iterator;

import java.util.Set;

import java.util.ArrayList;

class HashSet<T> {

Set<T> obj;

Iterator<T> it;

public HashSet() {

this.obj = new java.util.HashSet<T>();

}

public Set<T> getObj() {

return obj;

}

public void setObj(T object) {

this.obj.add(object);

}

public void printRecord() {

System.out.println("Printing the record\n");

// for (T t: obj) {

// System.out.println(t);

// }

this.it = obj.iterator();

while(it.hasNext()) {

System.out.println(it.next());

}

System.out.println("");

}

}

class MyArrayList<T> {

ArrayList<T> obj;

public MyArrayList() {

this.obj = new ArrayList<T>();

}

public ArrayList<T> getObj() {

return obj;

}

public void setObj(T object) {

this.obj.add(object);

}

public void printRecord() {

System.out.println("Printing the record\n");

for (T t: obj) {

System.out.println(t);

}

System.out.println("");

}

}

public class Task2 {

public static void main(String args[]) {

HashSet<Integer> hash\_obj = new HashSet<>();

hash\_obj.setObj(1);

hash\_obj.setObj(2);

hash\_obj.setObj(3);

hash\_obj.setObj(4);

hash\_obj.setObj(5);

HashSet<String> hash\_obj\_str = new HashSet<>();

hash\_obj\_str.setObj("Salman");

hash\_obj\_str.setObj("Ahmed");

hash\_obj\_str.setObj("Khan");

hash\_obj\_str.setObj("Sadeem");

hash\_obj\_str.setObj("Abdullah");

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

System.out.println("HashSet - Integer\n\n");

hash\_obj.printRecord();

System.out.println("HashSet - String\n\n");

hash\_obj\_str.printRecord();

MyArrayList<Integer> arr = new MyArrayList<>();

arr.setObj(100);

arr.setObj(200);

arr.setObj(300);

arr.setObj(400);

arr.setObj(500);

MyArrayList<String> arrStr = new MyArrayList<>();

arrStr.setObj("Hello");

arrStr.setObj("World");

arrStr.setObj("Car");

arrStr.setObj("Ball");

arrStr.setObj("Bat");

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

System.out.println("MyArrayList - Integer\n\n");

arr.printRecord();

System.out.println("MyArrayList - String\n\n");

arrStr.printRecord();

}

}