***Dt : 6/12/2023***

***Program : DemoWrapperClass1.java***

***package maccess;***

***public class DemoWrapperClass1 {***

***@SuppressWarnings("removal")***

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

***//Boxing Process***

***Integer ob1 = new ~~Integer~~(12);***

***Integer ob2 = new ~~Integer~~("13");***

***Float ob3 = new ~~Float~~(11.23F);***

***Float ob4 = new ~~Float~~("23.54F");***

***Float ob5 = new ~~Float~~(21.56);***

***Character ob6 = new ~~Character~~('A');***

***Boolean ob7 = new ~~Boolean~~(true);***

***Boolean ob8 = new ~~Boolean~~("true");***

***System.out.println("value in ob1:"+ob1.toString());***

***System.out.println("value in ob2:"+ob2.toString());***

***System.out.println("value in ob3:"+ob3.toString());***

***System.out.println("value in ob4:"+ob4.toString());***

***System.out.println("value in ob5:"+ob5.toString());***

***System.out.println("value in ob6:"+ob6.toString());***

***System.out.println("value in ob7:"+ob7.toString());***

***System.out.println("value in ob8:"+ob8.toString());***

***}***

***}***

***o/p:***

***value in ob1:12***

***value in ob2:13***

***value in ob3:11.23***

***value in ob4:23.54***

***value in ob5:21.56***

***value in ob6:A***

***value in ob7:true***

***value in ob8:true***

***=================================================================***

***faq:***

***define UnBoxing process?***

***=>The process of taking primitive datatype values out of WrapperClass***

***objects is known as UnBoxing process.***

***=>we use the following pre-defined methods to perform UnBoxing process:***

***public byte byteValue();***

***public short shortValue();***

***public int intValue();***

***public long longValue();***

***public float floatValue();***

***public double doubleValue();***

***public char charValue();***

***public boolean booleanValue();***

***Ex-program : DemoWrapperClass2.java***

***package maccess;***

***public class DemoWrapperClass2 {***

***@SuppressWarnings("removal")***

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

***//Boxing Process***

***Integer ob1 = new ~~Integer~~(12);***

***Integer ob2 = new ~~Integer~~("13");***

***Float ob3 = new ~~Float~~(11.23F);***

***Float ob4 = new ~~Float~~("23.54F");***

***Float ob5 = new ~~Float~~(21.56);***

***Character ob6 = new ~~Character~~('A');***

***Boolean ob7 = new ~~Boolean~~(true);***

***Boolean ob8 = new ~~Boolean~~("true");***

***//UnBoxing process***

***int i1 = ob1.intValue();***

***int i2 = ob2.intValue();***

***float f1 = ob3.floatValue();***

***float f2 = ob4.floatValue();***

***double d = ob5.doubleValue();***

***char ch = ob6.charValue();***

***boolean b1 = ob7.booleanValue();***

***boolean b2 = ob8.booleanValue();***

***System.out.println("====datavalues===");***

***System.out.println("int-value:"+i1);***

***System.out.println("int-value:"+i2);***

***System.out.println("float-value:"+f1);***

***System.out.println("float-value:"+f2);***

***System.out.println("double-value:"+d);***

***System.out.println("char-value:"+ch);***

***System.out.println("boolean-value:"+b1);***

***System.out.println("boolean-value:"+b2);***

***}***

***}***

***o/P:***

***====datavalues===***

***int-value:12***

***int-value:13***

***float-value:11.23***

***float-value:23.54***

***double-value:21.559999465942383***

***char-value:A***

***boolean-value:true***

***boolean-value:true***

***============================================================***

***faq:***

***define AutoBoxing process?***

***=>The Boxing process which is performed automatically is known as***

***AutoBoxing process.***

***=>In AutoBoxing process the NonPrimitive datatype variable is assigned***

***with primitive datatype value.***

***faq:***

***define AutoUnBoxing process?***

***=>The UnBoxing process which is performed automatically is known as***

***AutoUnBoxing process.***

***=>In AutoUnBoxing process the NonPrimitive datatype variables are***

***assigned to Primitive datatype variables.***

***Ex-program : DemoWrapperClasses3.java***

***package maccess;***

***public class DemoWrapperClass3 {***

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

***//AutoBoxing Process***

***Integer ob1 = 12;***

***Float ob2 = 11.23F;***

***Character ob3 = 'A';***

***Boolean ob4 = true;***

***//AutoUnBoxing process***

***int i = ob1;***

***float f = ob2;***

***char ch = ob3;***

***boolean b = ob4;***

***System.out.println("====datavalues===");***

***System.out.println("int-value:"+i);***

***System.out.println("float-value:"+f);***

***System.out.println("char-value:"+ch);***

***System.out.println("boolean-value:"+b);***

***}***

***}***

***o/p:***

***====datavalues===***

***int-value:12***

***float-value:11.23***

***char-value:A***

***boolean-value:true***

***===================================================================***

***faq:***

***why we have to make primitive datatypes available in the form of Objects?***

***=>Java Tools and Java Frameworks will hold only Objects,because of this***

***reason we have to make Primitive datatypes available in the form of***

***Objects.***

***=====================================================================***

***faq:***

***define Generic Programming Components?***

***=>The programming Components which are ready to accept any type are***

***known as Generic Programming Components.***

***=>The following are some important Generic Programming Components:***

***1.Generic Types***

***2.Generic methods***

***3.Generic Classes***

***4.Generic Interfaces***

***1.Generic Types:***

***=>The types which are ready to accept any type of data are known as***

***Generic Types***

***T - Type***

***E - Element***

***K - Key***

***V - Value***

***R - Result***

***2.Generic methods:***

***=>The methods which are ready to accept any type of data as parameter***

***are known as Generic methods***

***Structure of Generic Method:***

***<T>return\_type method\_name(T);***

***3.Generic Classes:***

***=>The class object which is ready to hold any type of data is known as***

***Generic Class.***

***Structure of Generic Class:***

***class Class\_name<T>***

***{***

***//Class\_body***

***}***

***4.Generic Interfaces:***

***=>The interfaces which are implemented to generic Classes are known as***

***Generic Interfaces.***

***Structure of Generic Interface:***

***interface Interface\_name<T>***

***{***

***//Interface\_body***

***}***

***----------------------------------------------------***

***Ex-program:(demonstrating User defined Generic Class)***

***p1 : Display.java***

***package p1;***

***public class Display<T>***

***{***

***public T ob;***

***public T getOb()***

***{***

***return ob;***

***}***

***public void setOb(T ob)***

***{***

***this.ob = ob;***

***}***

***}***

***p1 : User.java***

***package p1;***

***public class User***

***{***

***public String uName,mId;***

***public User(String uName,String mId)***

***{***

***this.uName=uName;***

***this.mId=mId;***

***}***

***public String toString()***

***{***

***return uName+" "+mId;***

***}***

***}***

***p2 : DemoGeneric.java(MainClass)***

***package p2;***

***import p1.Display;***

***import p1.User;***

***public class DemoGeneric***

***{***

***@SuppressWarnings("removal")***

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

***{***

***Display<Integer> ob1 = new Display<Integer>();***

***Display<String> ob2 = new Display<String>();***

***Display<User> ob3 = new Display<User>();***

***//Setter methods***

***ob1.setOb(new Integer(12));***

***ob2.setOb(new String("HYD-NIT"));***

***ob3.setOb(new User("Raj","r@gmail.com"));***

***//Getter methods***

***System.out.println("int-value:"+ob1.getOb());***

***System.out.println("String-value:"+ob2.getOb());***

***System.out.println("User-details:"+ob3.getOb());***

***}***

***}***

***o/p:***

***int-value:12***

***String-value:HYD-NIT***

***User-details:Raj r@gmail.com***

***-------------------------------------------------------------***