ASSIGNMENT 15

Q1 Complete the below code by making main class

```
package DAY_2_20_07_2022_JAVA;
class CPU {
    double price;
    //nested class
    class Processor{
        //member of nested class
        double cores;
        String manufacturer;

        double getCatch(){
            return 4.3;
        }
        public String toString()
        {
            return "cores : "+cores+" \n manufacturer : "+manufacturer;
        }
    }
    //nested protected class
    protected class RAM{
        //member of protected nested class
        double memory;
        String manufacturer;

        double getClockSpeed(){
            return 5.5;
        }
        public String toString()
        {
            return "memory : "+memory+" \n manufacturer : "+manufacturer;
        }
    }
}
//driver class
public class CpuCaller {
    public static void main(String a[]) {
        CPU cpu = new CPU();
        CPU.Processor processor = cpu.new Processor();
        processor.manufacturer="SAMSUNG";
        processor.cores=4;
        System.out.println(processor);
        System.out.println("Processor class detail : "+processor.getCatch());
        CPU.RAM ram = cpu.new RAM();
        ram.manufacturer="WD";
        ram.memory=4;
```

```
        System.out.println(ram);
        System.out.println("Ram class detail : "+ram.getClockSpeed());
    }
}
```

```
cores : 4.0
 manufacturer : SAMSUNG
Processor class detail : 4.3
memory : 4.0
 manufacturer : WD
Ram class detail : 5.5
```

Q2 Write a program of Local instance, Instance Variable , Static Variable

```
 package DAY_2_20_07_2022_JAVA;
//This Program is for Bank Loan Registration process
class Banking_Loan_Registration {
    long account_number , Phone_Number , Loan_Want , amount;
    String Name ;
    //rate of interest is for all customer
    static int interest = 7;
    Banking_Loan_Registration(long account_number , long Phone_Number , String Name , long Loan_Want)
    {
      long returnAmount=0;
      this.account_number = account_number ;
      this.Phone_Number = Phone_Number ;
      this.Name = Name ;
      this.Loan_Want = Loan_Want ;
      returnAmount= (Loan_Want/interest)+Loan_Want;
      this.amount=returnAmount;
    }
    // tostring method is return value in refernce variable of a class so we can direclty print that reference variable
    public String toString()
    {
       return "CUSTOMER DETAIL "+"\n"+
              "Account_Number : "+account_number+" \n "+
              "Phone Number :"+Phone_Number+" \n "+
              "Name :"+Name+" \n "+
              "Total Amount with interest :"+amount+" ";
    }
```

```
}
//Driver class
public class Banking_Loan
{
   public static void main(String[]  args) {
      Banking_Loan_Registration banking_loan_registration =
            new Banking_Loan_Registration
                  (12342,789543304,  "Anuj Sundriyal ",10000);
      System.out.println(banking_loan_registration);
   }
}
```

```
CUSTOMER DETAIL
Account_Number : 12342
  Phone Number :789543304
 Name :Anuj Sundriyal
 Total Amount with interest :11428

Process finished with exit code 0
```

Q3 Write a program on operator in java .Explore the concept of operator and check the difference between bitwise and logical operator

```
public  class  Operators {


   public  void  arithmetic(){
      // declare  variables
      int  number1  = 12, number2  = 5;


      System.out.println("Arithmetic  Operators");


      // addition  operator
```

```
    System.out.println("number1 + number2 = " + (number1 + number2));

    // subtraction operator
    System.out.println("number1 - number2 = " + (number1 - number2));

    // multiplication operator
    System.out.println("number1 * number2 = " + (number1 * number2));

    // division operator
    System.out.println("number1 / number2 = " + (number1 / number2));

    // modulo operator
    System.out.println("number1 % number2 = " + (number1 % number2));

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

public void assignment(){
    // create variables
    int num = 5;
    int var;

    System.out.println("Assignment operators");

    // assign value using =
```

```
    var = num;
    System.out.println("var  using  =: " + var);

    // assign  value  using  =+
    var += num;                 //var  = num  + var;
    System.out.println("var  using  +=: " + var);

    // assign  value  using  =*
    var *= num;      //    var = num * var
    System.out.println("var  using  *=: " + var);
    System.out.println("*****************************************");
}

public  void relational(){
    int  a = 15, b = 11;  //keeping  variables  as a and b because  its  easire  to compare  a and b


    System.out.println("Relational  Operators");
    // value  of a and b
    System.out.println("a  is  " + a + " and b is  " + b);

    // == operator
    System.out.println("a  = b:-" + (a == b));  // false

    // != operator
```

```
    System.out.println("a  != b:- "+(a  != b));  // true

    // > operator
    System.out.println("a  > b:-"+(a  > b));  // false

    // < operator
    System.out.println("a  < b" + (a < b));  // true

    // >= operator
    System.out.println("a  >= b" + (a >= b));  // false

    // <= operator
    System.out.println("a  <= b" + (a <= b));  // true
    System.out.println("*****************************************");
}

 public  void  logical(){

     System.out.println("Logical  Operators");
     // && operator
     System.out.println((5  > 3) && (8 > 5));  // true
     System.out.println((5  > 3) && (8 < 5));  // false

     // || operator
     System.out.println((5  < 3) || (8 > 5));  // true
```

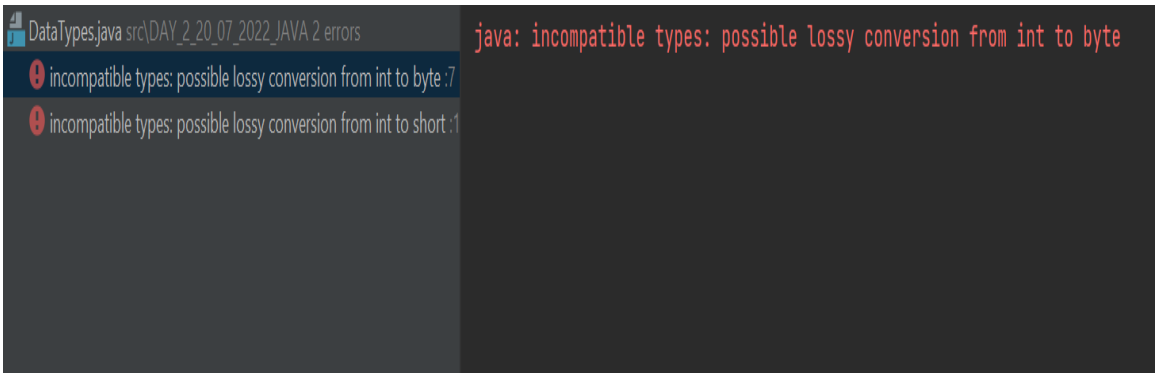
```
    System.out.println((5  > 3) || (8 < 5));  // true
    System.out.println((5  < 3) || (8 < 5));  // false

    // ! operator
    System.out.println(!(5  == 3));  // true
    System.out.println(!(5  > 3));  // false
    System.out.println("*****************************************");
 }

public  void IncDec(){

   int  a = 12, b = 12;
   int  increment,  decrement;

   System.out.println("This  is Increment  and Decrement  Operators");
   // original  value
   System.out.println("Value  of a: " + a);

   // increment  operator
   increment  = ++a;
   System.out.println("After  increment:  " + increment);

   System.out.println("Value  of b: " + b);

   // decrement  operator
```

```
        decrement = --b;
        System.out.println("After decrement: " + decrement);
        System.out.println("*****************************************");
    }

    public void Ternary(){
        int februaryDays = 29;
        String result;

        System.out.println("This is Ternary operator:");
        System.out.println("No of days in February:" + februaryDays );
        // ternary operator
        result = (februaryDays == 28) ? "Not a leap year" : "Leap year";
        System.out.println(result);
    }

    public static void main(String[] args) {
        Operators operators = new Operators();
        operators.arithmetic();
        operators.assignment();
        operators.relational();
        operators.logical();
        operators.IncDec();
        operators.Ternary();
}
```

Q4 Addition of two same datatype variable in third variable

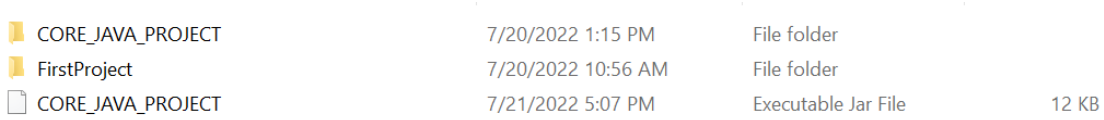
```
package DAY_2_20_07_2022_JAVA;

public class DataTypes {
   public void byteCheck()
   {
      byte num1 =0 , num2 = 9 ,num3 = 10;
      num1=num2+num3;//  error occur because there is a chance of exceeding the byte range
      System.out.println(num1);
   }
   public void shortCheck()
   {
      short num1 =0 ,num2 = 4,num3 = 9;
      num1 = num2 + num3;// error occur because there is a chance of exceeding the short range
      System.out.println(num1);
   }
   public void intCheck()
   {
      int num1 =0 ,num2 =4 , num3 =9 ;
      num1=num2+num3;
      System.out.println(num1);
   }

   public void   longCheck()
   {
      long num1 =0 ,num2 =4 , num3 =9 ;
      num1=num2+num3;
      System.out.println(num1);
   }
   public void floatCheck()
   {
      float num1 =0.0f ,num2 =4.9f , num3 =9.8f ;
      num1=num2+num3;
      System.out.println(num1);
   }
   public void doubleCheck()
   {
```

```
    double num1 =0.0d ,num2 =4.9d , num3 =9.8d ;
    num1=num2+num3;
    System.out.println(num1);
  }

  public static void main(String[] args) {
    DataTypes d=new DataTypes();
    d.byteCheck();
    d.intCheck();
    d.doubleCheck();
    d.floatCheck();
    d.longCheck();
    d.shortCheck();
  }

}
```



Q5 Create ".jar" file of your project ?

```
C:\Users\Coditas\IdeaProjects>jar -cvf CORE_JAVA_PROJECT.jar CORE_JAVA_PROJECT
added manifest
adding: CORE_JAVA_PROJECT/(in = 0) (out= 0)(stored 0%)
adding: CORE_JAVA_PROJECT/.idea/(in = 0) (out= 0)(stored 0%)
adding: CORE_JAVA_PROJECT/.idea/.gitignore(in = 50) (out= 50)(deflated 0%)
adding: CORE_JAVA_PROJECT/.idea/misc.xml(in = 287) (out= 202)(deflated 29%)
adding: CORE_JAVA_PROJECT/.idea/modules.xml(in = 281) (out= 172)(deflated 38%)
adding: CORE_JAVA_PROJECT/.idea/workspace.xml(in = 4374) (out= 1189)(deflated 72%)
adding: CORE_JAVA_PROJECT/CORE_JAVA_PROJECT.iml(in = 433) (out= 248)(deflated 42%)
adding: CORE_JAVA_PROJECT/out/(in = 0) (out= 0)(stored 0%)
adding: CORE_JAVA_PROJECT/out/production/(in = 0) (out= 0)(stored 0%)
adding: CORE_JAVA_PROJECT/out/production/CORE_JAVA_PROJECT/(in = 0) (out= 0)(stored 0%)
adding: CORE_JAVA_PROJECT/out/production/CORE_JAVA_PROJECT/DAY_2_20_07_2022_JAVA/(in = 0) (out= 0)(stored 0%)
adding: CORE_JAVA_PROJECT/out/production/CORE_JAVA_PROJECT/DAY_2_20_07_2022_JAVA/Banking_Loan.class(in = 816) (out= 469
(deflated 42%)
adding: CORE_JAVA_PROJECT/out/production/CORE_JAVA_PROJECT/DAY_2_20_07_2022_JAVA/Banking_Loan_Registration.class(in = 1
90) (out= 688)(deflated 42%)
adding: CORE_JAVA_PROJECT/out/production/CORE_JAVA_PROJECT/DAY_2_20_07_2022_JAVA/CheckMultipleMain.class(in = 320) (out
 226)(deflated 29%)
adding: CORE_JAVA_PROJECT/out/production/CORE_JAVA_PROJECT/DAY_2_20_07_2022_JAVA/CPU$Processor.class(in = 968) (out= 53
)(deflated 45%)
adding: CORE_JAVA_PROJECT/out/production/CORE_JAVA_PROJECT/DAY_2_20_07_2022_JAVA/CPU$RAM.class(in = 957) (out= 531)(def
ated 44%)
```


CORE_JAVA_PROJECT 7/20/2022 1:15 PM File folder
FirstProject 7/20/2022 10:56 AM File folder
CORE_JAVA_PROJECT 7/21/2022 5:07 PM Executable Jar File 12 KB