CORE JAVA

Date: 21-07-2022

1. **Complete the below code by writing main() in different classes**

Code

```
package Core_Java.Day2;

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

        double getCatch(){
            System.out.println(cores+" core processor and manufactured by
"+manufacturer);
            return 4.3;
        }
   }
   //nested protected class
   protected class RAM{
        //member of protected nested class
        double memory;
        String manufacturer;

        double getClockSpeed(){
            System.out.println(memory+"gb memory and manufactured by
"+manufacturer);
            return 5.5;
        }
   }
}

public class Cpu_manufacturer {
   public static void main(String args[]){
        //object creation of outer class
        CPU cpu_obj = new CPU();
        //object creation of 1st inner class
        CPU.Processor processor_obj = cpu_obj.new Processor();
        processor_obj.cores = 4 ;
```

```
        processor_obj.manufacturer = "intel" ;
        System.out.println(processor_obj.getCatch());
        //object creation of 1st class
        CPU.RAM ram_obj = cpu_obj.new RAM();
        ram_obj.memory = 512 ;
        ram_obj.manufacturer = "intel" ;
        System.out.println(ram_obj.getClockSpeed());
    }
}
```

Output

```
4.0 core processor and manufactured by intel
4.3
512.0gb memory and manufactured by intel
5.5
```

2. Write a program of local, instance, static variables.

Code

```
package Core_Java.Day2;

class College {

    int scholarship ;             //instance variable
    static int amount = 20000 ;              //static variable
    void scholarship_avail() {
        int score = 90 ;              //local variable
        System.out.println("Fees amount before scholarship is :
"+amount);
        amount = (amount - amount / scholarship) ;
        System.out.println("Fees amount after scholarship is : "+amount+"
and score is : "+score);
    }
}

public class Variables_java {
    public static void main(String[] args) {
        College obj = new College();             //creating object of
class college
        obj.scholarship=10;
        obj.scholarship_avail();
    }
}
```

Output

```
Fees amount before scholarship is : 20000
Fees amount after scholarship is : 18000 and score is : 90
```

3. **Write a program of operators in java. Explore the concept of operators and check the difference between Logical and Bitwise Operators.**

Code

```
package Core_Java.Day2;

public class Operator_Java {

    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
```

```java
        // || 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) {
        Operator_Java operators = new Operator_Java();
        operators.arithmetic();
        operators.assignment();
        operators.relational();
```

```
        operators.logical();
        operators.IncDec();
        operators.Ternary();


    }

}
```

Output

```
Arithmetic Operators
number1 + number2 = 17
number1 - number2 = 7
number1 * number2 = 60
number1 / number2 = 2
number1 % number2 = 2
****************************************
Assignment operators
var using =: 5
var using +=: 10
var using *=: 50
****************************************
Relational Operators
a is 15 and b is 11
a = b:-false
a != b:- true
a > b:-true
a < bfalse
a >= btrue
a <= bfalse
****************************************
Logical Operators
true
false
true
true
false
true
false
****************************************
This is Increment and Decrement Operators
Value of a: 12
After increment: 13
Value of b: 12
After decrement: 11
****************************************
This is Ternary operator:
```

```
No of days in February:29
Leap year
```

4. **Addition of two same data types variable into the same third data type variable.**

Code

```
package Core_Java.Day2;

class Data_Type {
   void byte_function() {
       byte num1 = 1, num2 = 2, sum = 0 ;
       sum = num1 + num2 ;          //java: incompatible types: possible
lossy conversion from int to byte
       System.out.println(sum);
   }

   void int_function() {
       int num1 = 1, num2 = 2, sum = 0;
       sum = num1 + num2 ;          //Sum of int is : 3
       System.out.println("Sum function of int is : "+sum);
   }

   void long_function() {
       long num1 = 6, num2 = 2, sum = 0;
       sum = num1 + num2 ;          //Sum of long is : 8
       System.out.println("Sum of long is : "+sum);
   }

   void float_function() {
       float num1 = 9, num2 = 2, sum = 0;
       sum = num1 + num2 ;          //Sum of long is : 11.0
       System.out.println("Sum of long is : "+sum);
   }

   void double_function() {
       double num1 = 9.56, num2 = 2.23, sum = 0;
       sum = num1 + num2 ;          //Sum of long is : 11.790000000000001
       System.out.println("Sum of long is : "+sum);
   }

   void short_function() {
       short num1 = 4, num2 = 3, sum = 0;
       sum = num1 + num2 ;          //java: incompatible types: possible
lossy conversion from int to short
       System.out.println("Sum of long is : "+sum);
```

```
    }

    void char_function() {
        char char1 = 't', char2 = 'u' ;
        int sum ;
        sum = char1 + char2 ;          //Sum of char is : 233
        System.out.println("Sum of long is : "+sum);
    }

}

public class Same_data_type {
    public static void main(String[] args) {
        Data_Type class_obj = new Data_Type();
        class_obj.byte_function();
        class_obj.int_function();
        class_obj.long_function();
        class_obj.float_function();
        class_obj.double_function();
        class_obj.short_function();
        class_obj.char_function();
    }
}
```

5. **Create a .jar file of your project.**

   GitHub link:
   https://github.com/mubarkaati/Assignment.git

   C:\Users\coditas\IdeaProjects\untitled\src>jar cf Core_Java.jar Core_Java