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Java Homework 3

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1) Sales.java Code

```
// Sales.java
// Program calculates sales, based on an input of product
// number and quantity sold
import java.util.Scanner;

public class sales
{
    // calculates sales for 5 products
    public static void main( String args[] )
    {
        Scanner input = new Scanner( System.in );
        int productNumber;

        double product1 = 0; // amount sold of first product
        double product2 = 0; // amount sold of second product
        double product3 = 0; // amount sold of third product
        double product4 = 0; // amount sold of fourth product
        double product5 = 0; // amount sold of fifth product
        double product1val = 2.98;
        double product2val = 4.50;
        double product3val = 9.98;
        double product4val = 4.49;
        double product5val = 6.87;
        /* Ask the user to enter product number */

        System.out.println("\nEnter Product Number 1-5 (0 to stop and view summary) :
");
        productNumber = input.nextInt();

        /* Create while statement that loops until sentinel is entered */
        while (productNumber != 0){

            /* Determine whether user's product number is in 1-5 */
            if (productNumber >= 1 && productNumber <= 5)

                /* If so, ask user to input the quantity sold */
                /* Write a switch statement here that will compute the total
                for that product */
                switch(productNumber)
                {
                    case 5:{
                        System.out.print("Enter quantity sold: ");
                        product5+=input.nextDouble();
                        break;
                    }
                }
            }
        }
    }
}
```

```

    }
    case 4:{
        System.out.print("Enter quantity sold: ");
        product4+=input.nextDouble();
        break;
    }
    case 3:{
        System.out.print("Enter quantity sold: ");
        product3+=input.nextDouble();
        break;
    }
    case 2:{
        System.out.print("Enter quantity sold: ");
        product2+=input.nextDouble();
        break;
    }
    case 1:{
        System.out.print("Enter quantity sold: ");
        product1+=input.nextDouble();
        break;
    }
}

/* If product number is not in 1-5, test if product number is not 0 */
productNumber = input.nextInt();
if(productNumber < 0 || productNumber > 5)

    /* Display error message for invalid product number */
    System.out.println("Invalid product number!\nPlease enter
another product: ");

    /* Ask the user to enter another product number */
    System.out.println("Enter product number (1-5), 0 to stop and view
summary: ");
    productNumber = input.nextInt();

} /* end while loop */

// print summary
System.out.println();
System.out.printf( "Product 1: $%.2f\n", product1 * product1val);
System.out.printf( "Product 2: $%.2f\n", product2 * product2val);
System.out.printf( "Product 3: $%.2f\n", product3 * product3val);
System.out.printf( "Product 4: $%.2f\n", product4 * product4val);
System.out.printf( "Product 5: $%.2f\n", product5 * product5val);
/* write code here for the rest of the summary message it should contain
the totals for the rest of the products, each on its own line */
} // end main
} // end class body

```

1a. Sales.java Solution

Product 1: \$8.94
Product 2: \$13.50
Product 3: \$0.00
Product 4: \$8.98
Product 5: \$0.00

2. Triples.Java Code

```
// Lab 3: Triples.java
// Program calculates Pythagorean triples
public class Triples
{
    public static void main( String args[] )
    {
        // declare the three sides of a triangle
        int side1;
        int side2;
        int hypotenuse;

        /* Write loop for side1 to try the values 1-500. */
        int max=500;
        for (side1 = 1; side1 <= max; side1++)

            /* Write loop for side2 to try the values 1-500. */
            for (side2 = 1; side2 <= max; side2++)

                /* Write loop for hypotenuse to try the values 1-500 */
                for (hypotenuse = 1; hypotenuse <= max; hypotenuse++)

                    /* Write an if statement that determines whether the sum of the
                    two sides squared equals the hypotenuse squared. If this
                    condition is true display side1, side2 and hypotenuse. */

                    if ((side1*side1)+(side2*side2)==(hypotenuse*hypotenuse))
                    if(side1 < side2)

                        System.out.println("s1: " + side1 + " " + "s2: " + side2 + " " + "h: " +
hypotenuse);

                    } // end main
    } // end class Triples
```

2a. Triples.Java Solution

```
s1: 3 s2: 4 h: 5
s1: 5 s2: 12 h: 13
s1: 6 s2: 8 h: 10
s1: 7 s2: 24 h: 25
s1: 8 s2: 15 h: 17
s1: 9 s2: 12 h: 15
s1: 9 s2: 40 h: 41
s1: 10 s2: 24 h: 26
s1: 11 s2: 60 h: 61
```

continued to

```
s1: 340 s2: 357 h: 493
```

3. Multiply.Java Code

```
// Lab 3: Multiply.java
// Program generates single digit multiplication problems
import java.util.*;

public class Multiply
{
    Random randomNumbers = new Random();

    int answer; // the correct answer

    // ask the user to answer multiplication problems
    public void quiz()
    {
        Scanner input = new Scanner( System.in );

        int guess; // the user's guess

        /* write code to call method checkResponse to display the question */
        createQuestion();
        System.out.println( "Enter your answer (-1 to exit):" );
        guess = input.nextInt();

        while ( guess != -1 )
        {
            /* write code to call the method to check the user's answer */
            checkResponse( guess);

            System.out.println( "Enter your answer (-1 to exit):" );
            guess = input.nextInt();
        } // end while
    } // end method

    // prints a new question and stores the corresponding answer
    /* write method header for the createQuestion method */
```

```

private void createQuestion()
{
    // get two random numbers between 0 and 9
    /* Write code to get two random numbers and store them in variables
    digit1 and digit2. */
    int digit1 = randomNumbers.nextInt( 9 );
    int digit2 = randomNumbers.nextInt( 9 );

    /* Write code to multiply the two variables and store the result
    in variable answer */
    answer = digit1 * digit2;

    System.out.printf( "How much is %d times %d?\n", digit1, digit2 );
} // end method createQuestion

// checks if the user answered correctly
/* Write method header for checkResponse */
private void checkResponse( double guess )
{
    /* Write code to test whether the answer is incorrect */
    /* Write code to tell the user to try again, if the answer is incorrect */

    if (guess != answer)
    {
        System.out.println("Wrong answer. Please try again.");
    }
    else
    System.out.println( "Very Good!" );
    {

        /* Write code to call method createQuestion to display another question */
        createQuestion();

    } // end else
} // end method checkResponse
} // end class Multiply

```

3a. Multiply.java Solution

```

How much is 3 times 2?
Enter your answer (-1 to exit):
6
Very Good!
How much is 4 times 8?
Enter your answer (-1 to exit):
32
Very Good!
How much is 4 times 5?
Enter your answer (-1 to exit):
2
Wrong answer. Please try again.
How much is 2 times 0?
Enter your answer (-1 to exit):

```

4. TrianglePrinting.Java

```
public class TrianglePrinting
{
    public static void main(String args[])
    {
        int row, col, space;

        System.out.println("(a)");

        // Triangle A Code

        for (row = 1; row <=10; row++)
        {
            for(col=1; col <= row; col++)

                System.out.print('*');

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

        // Triangle B Code

        for (row=10; row >= 1; row--)
        {
            for (col=1; col <= row; col++)

                System.out.print('*');

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

        // Triangle Code

        for (row=10; row >= 1; row--)
        {
            for (space=10; space >= row ; space--)

                System.out.print(' ');

            for (col = 1; col < row; col++)

                System.out.print('*');

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

        // Triangle D Code

        for(row = 10; row >= 1; row--)
        {
            for (space = 1; space < row; space++)
```

```

        System.out.print(' ');

        for(col = 10; col >= row; col--);
    }
    System.out.print('*');

    System.out.println();
}
} // end TrianglePrinting class

```

4. TrianglePrinting Solution :

(a)

```

*
**
***
****
*****
*****
*****
*****
*****
*****
*****

```

(b)

```

*****
*****
*****
*****
*****
*****
*****
****
***
**
*

```

(c)

```

*****
*****
*****
*****
*****
****
***
**
*

```

(d)

```

*
**
***
****
*****

```

```
*****
*****
*****
*****
*****
*****
```

5. RoundNumbers. Java

```
import java.util.Scanner;

public class roundingNumbers
{
    public static void main (String[] args)
    {
        double x;

        //Create Scanner to obtain input form user
        Scanner input=new Scanner(System.in);
        {

            System.out.print("Enter a digit with at least four decimal places:");

            x=input.nextDouble();

            //create an output String with appropriate rounding
            System.out.println("The number: "
            +String.valueOf(x) +
            "\n This is your number rounded to Integer:\t\t" +
            String.valueOf(roundToInteger(x)) +
            "\n This is your number rounded to the Tenth:\t\t" +
            String.valueOf(roundToTenths(x)) +
            "\n This is your number rounded to Hundredth:\t\t" +
            String.valueOf(roundToThusandths(x)));}

        }

        public static double roundToInteger(double number)
        {
            return(Math.floor(number + .5));
        }

        public static double roundToTenths(double number)
        {
            return(Math.floor(number*10+.5)/10);
        }

        public static double roundToHudredths(double number)
        {
            return(Math.floor(number*100+.5)/100);
        }

        public static double roundToThusandths(double number)
```



```

    {
    return(Math.floor(number*1000+.5) /1000);
    }
    { //end class round
}
}

```

5. RoundingNumbers.Java Solution

```

Enter a digit with at least four decimal places:.4321
The number: 0.4321
This is your number rounded to Integer:           0.0
This is your number rounded to the Tenth:         0.4
This is your number rounded to Hundredth:         0.432

```

6. ReversingDigits.Java Code

```

import java.util.Scanner;

public class reversingDigits
{
public static void main(String[] args)
{
int number, reverse;
Scanner input = new Scanner(System.in);

System.out.print("Type Number:");
number = input.nextInt();

reverse=reversingDigits(number);
System.out.println("Reverse of typed number is: " + reverse);

System.exit(0);
}
public static int reversingDigits(int num)
{
int reverse=0;
while(num>0)
{
reverse = (reverse*10)+num%10;
num=num/10;
}
return reverse;
}
}

```

ReverseDigits.Java solutions:

```

Number:123
Reversed Number is 321

```