Nathan Gaffney

Lab 2

9-9-2014

Task 1.

/\*\*  
 This program demonstrates how numeric types and operators behave in Java  
\*/  
  
//TASK #2 Add import statement here to use the Scanner class  
import java.util.Scanner;  
import javax.swing.JOptionPane;  
//TASK #2 (Alternate) Add import statment to use JOptionPane class  
  
public class NumericTypes  
{  
 public static void main (String [] args)  
 {  
 //TASK #2 Create a Scanner object here (not used for alternate)  
   
 //identifier declarations  
 final int NUMBER = 2 ; // number of scores  
 final double SCORE1 = 100; // first test score  
 final double SCORE2 = 95; // second test score  
 final int BOILING\_IN\_F = 212; // freezing temperature  
 int fToC; // temperature in celsius  
 double average; // arithmetic average  
 String output; // line of output to print out  
 //TASK #2 declare variables used here  
 //TASK #3 declare variables used here  
 //TASK #4 declare variables used here  
  
 // Find an arithmetic average  
 average = (SCORE1 + SCORE2) / NUMBER;  
 output = SCORE1 + " and " + SCORE2 + " have an average of "  
 + average;  
 System.out.println(output);  
  
 // Convert Fahrenheit temperatures to Celsius  
 fToC = 5 \* (BOILING\_IN\_F - 32) / 9;  
 output = BOILING\_IN\_F + " in Fahrenheit is " + fToC  
 + " in Celsius.";  
 System.out.println(output);  
 System.out.println(); // to leave a blank line  
  
 // ADD LINES FOR TASK #2 HERE  
 // prompt the user for first name  
 // read the user's first name  
 // prompt the user for last name  
 // read the user's last name  
 // concatenate the user's first and last names  
 // print out the user's full name   
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #3 HERE  
 // get the first character from the user's first name  
 // print out the user's first initial  
 // convert the user's full name to all capital letters  
 // print out the user's full name in all capital letters  
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #4 HERE  
 // prompt the user for a diameter of a sphere  
 // read the diameter  
 // calculate the radius  
 // calculate the volume   
 // print out the volume  
 }   
}

§Ï100.0 and 95.0 have an average of 97.5  
ÏÏ§Ï212 in Fahrenheit is 100 in Celsius.  
ÏÏ§Ï

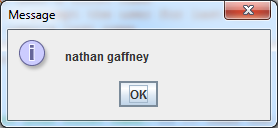
Task 2 a.

/\*\*  
 This program demonstrates how numeric types and operators behave in Java  
\*/  
  
//TASK #2 Add import statement here to use the Scanner class  
import java.util.Scanner;  
import javax.swing.JOptionPane;  
//TASK #2 (Alternate) Add import statment to use JOptionPane class  
  
public class NumericTypes  
{  
 public static void main (String [] args)  
 {  
 //TASK #2 Create a Scanner object here (not used for alternate)  
 Scanner keyboard = new Scanner (System.in) ; //Scanner  
 //identifier declarations  
 final int NUMBER = 2 ; // number of scores  
 final double SCORE1 = 100; // first test score  
 final double SCORE2 = 95; // second test score  
 final int BOILING\_IN\_F = 212; // freezing temperature  
 double fToC; // temperature in celsius  
 double average; // arithmetic average  
 String output; // line of output to print out  
 //TASK #2 declare variables used here  
 String firstName;  
 String lastName;  
 String fullName;  
 //TASK #3 declare variables used here  
 //TASK #4 declare variables used here  
  
 // Find an arithmetic average  
 average = (SCORE1 + SCORE2) / NUMBER;  
 output = SCORE1 + " and " + SCORE2 + " have an average of "  
 + average;  
 System.out.println(output);  
  
 // Convert Fahrenheit temperatures to Celsius  
 fToC = 5 \* (BOILING\_IN\_F - 32) / 9;  
 output = BOILING\_IN\_F + " in Fahrenheit is " + fToC  
 + " in Celsius.";  
 System.out.println(output);  
 System.out.println(); // to leave a blank line  
  
 // ADD LINES FOR TASK #2 HERE  
 System.out.print("Enter your first name: "); // prompt the user for first name  
 firstName = keyboard.nextLine();// read the user's first name  
 System.out.print("Enter your last name: ");// prompt the user for last name  
 lastName = keyboard.nextLine();// read the user's last name  
 fullName = firstName + " " + lastName;// concatenate the user's first and last names  
 System.out.print(fullName);// print out the user's full name   
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #3 HERE  
 // get the first character from the user's first name  
 // print out the user's first initial  
 // convert the user's full name to all capital letters  
 // print out the user's full name in all capital letters  
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #4 HERE  
 // prompt the user for a diameter of a sphere  
 // read the diameter  
 // calculate the radius  
 // calculate the volume   
 // print out the volume  
 }   
}

ÏÏ§Ï100.0 and 95.0 have an average of 97.5  
ÏÏ§Ï212 in Fahrenheit is 100.0 in Celsius.  
ÏÏ§Ï  
ÏÏ§Ïnathan gaffney

Task 2 b.

/\*\*  
 This program demonstrates how numeric types and operators behave in Java  
\*/  
  
//TASK #2 Add import statement here to use the Scanner class  
import java.util.Scanner;  
import javax.swing.JOptionPane;  
//TASK #2 (Alternate) Add import statment to use JOptionPane class  
  
public class NumericTypes  
{  
 public static void main (String [] args)  
 {  
 //TASK #2 Create a Scanner object here (not used for alternate)  
 Scanner keyboard = new Scanner (System.in) ; //Scanner  
 //identifier declarations  
 final int NUMBER = 2 ; // number of scores  
 final double SCORE1 = 100; // first test score  
 final double SCORE2 = 95; // second test score  
 final int BOILING\_IN\_F = 212; // freezing temperature  
 double fToC; // temperature in celsius  
 double average; // arithmetic average  
 String output; // line of output to print out  
 //TASK #2 declare variables used here  
 String firstName;  
 String lastName;  
 String fullName;  
 //TASK #3 declare variables used here  
 //TASK #4 declare variables used here  
  
 // Find an arithmetic average  
 average = (SCORE1 + SCORE2) / NUMBER;  
 output = SCORE1 + " and " + SCORE2 + " have an average of "  
 + average;  
 System.out.println(output);  
  
 // Convert Fahrenheit temperatures to Celsius  
 fToC = 5 \* (BOILING\_IN\_F - 32) / 9;  
 output = BOILING\_IN\_F + " in Fahrenheit is " + fToC  
 + " in Celsius.";  
 System.out.println(output);  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #2 HERE  
 //System.out.print("Enter your first name: "); // prompt the user for first name  
 //firstName = keyboard.nextLine();// read the user's first name  
 //System.out.print("Enter your last name: ");// prompt the user for last name  
 //lastName = keyboard.nextLine();// read the user's last name  
 //fullName = firstName + " " + lastName;// concatenate the user's first and last names  
 //System.out.print(fullName);// print out the user's full name   
  
 // ADD LINES FOR TASK #2 Alternate HERE  
 // prompt the user for first name  
 firstName = JOptionPane.showInputDialog("Enter your first name."); // read the user's first name  
 lastName = JOptionPane.showInputDialog("Enter your last name."); // read the user's last name  
 fullName = firstName + " " + lastName;// concatenate the user's first and last names  
 JOptionPane.showMessageDialog(null, fullName);// print out the user's full name   
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #3 HERE  
 // get the first character from the user's first name  
 // print out the user's first initial  
 // convert the user's full name to all capital letters  
 // print out the user's full name in all capital letters  
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #4 HERE  
 // prompt the user for a diameter of a sphere  
 // read the diameter  
 // calculate the radius  
 // calculate the volume   
 // print out the volume  
 }   
}



Task 3.

/\*\*  
 This program demonstrates how numeric types and operators behave in Java  
\*/  
  
//TASK #2 Add import statement here to use the Scanner class  
import java.util.Scanner;  
import javax.swing.JOptionPane;  
//TASK #2 (Alternate) Add import statment to use JOptionPane class  
  
public class NumericTypes  
{  
 public static void main (String [] args)  
 {  
 //TASK #2 Create a Scanner object here (not used for alternate)  
 Scanner keyboard = new Scanner (System.in) ; //Scanner  
 //identifier declarations  
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 final double SCORE2 = 95; // second test score  
 final int BOILING\_IN\_F = 212; // freezing temperature  
 double fToC; // temperature in celsius  
 double average; // arithmetic average  
 String output; // line of output to print out  
 //TASK #2 declare variables used here  
 String firstName;  
 String lastName;  
 String fullName;  
 //TASK #3 declare variables used here  
 char firstInitial;  
   
 //TASK #4 declare variables used here  
  
 // Find an arithmetic average  
 average = (SCORE1 + SCORE2) / NUMBER;  
 output = SCORE1 + " and " + SCORE2 + " have an average of "  
 + average;  
 System.out.println(output);  
  
 // Convert Fahrenheit temperatures to Celsius  
 fToC = 5 \* (BOILING\_IN\_F - 32) / 9;  
 output = BOILING\_IN\_F + " in Fahrenheit is " + fToC  
 + " in Celsius.";  
 System.out.println(output);  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #2 HERE  
 System.out.print("Enter your first name: "); // prompt the user for first name  
 firstName = keyboard.nextLine();// read the user's first name  
 System.out.print("Enter your last name: ");// prompt the user for last name  
 lastName = keyboard.nextLine();// read the user's last name  
 fullName = firstName + " " + lastName;// concatenate the user's first and last names  
 System.out.print(fullName);// print out the user's full name   
  
 // ADD LINES FOR TASK #2 Alternate HERE  
 // prompt the user for first name  
 firstName = JOptionPane.showInputDialog("Enter your first name."); // read the user's first name  
 lastName = JOptionPane.showInputDialog("Enter your last name."); // read the user's last name  
 fullName = firstName + " " + lastName;// concatenate the user's first and last names  
 JOptionPane.showMessageDialog(null, fullName);// print out the user's full name   
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #3 HERE  
 firstInitial = firstName.charAt(0);// get the first character from the user's first name  
 System.out.print(firstInitial);// print out the user's first initial  
 System.out.println(); // to leave a blank line  
 fullName = fullName.toUpperCase();// convert the user's full name to all capital letters  
 System.out.print(fullName);// print out the user's full name in all capital letters  
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #4 HERE  
 // prompt the user for a diameter of a sphere  
 // read the diameter  
 // calculate the radius  
 // calculate the volume   
 // print out the volume  
 }   
}

Task 4.

/\*\*  
 This program demonstrates how numeric types and operators behave in Java  
\*/  
  
//TASK #2 Add import statement here to use the Scanner class  
import java.util.Scanner;  
import javax.swing.JOptionPane;  
//TASK #2 (Alternate) Add import statment to use JOptionPane class  
  
public class NumericTypes  
{  
 public static void main (String [] args)  
 {  
 //TASK #2 Create a Scanner object here (not used for alternate)  
 Scanner keyboard = new Scanner (System.in) ; //Scanner  
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 final double SCORE2 = 95; // second test score  
 final int BOILING\_IN\_F = 212; // freezing temperature  
 double fToC; // temperature in celsius  
 double average; // arithmetic average  
 String output; // line of output to print out  
 //TASK #2 declare variables used here  
 String firstName;  
 String lastName;  
 String fullName;  
 //TASK #3 declare variables used here  
 char firstInitial;  
   
 //TASK #4 declare variables used here  
 double diameter;  
 double radius;  
 double volume;  
  
 // Find an arithmetic average  
 average = (SCORE1 + SCORE2) / NUMBER;  
 output = SCORE1 + " and " + SCORE2 + " have an average of "  
 + average;  
 System.out.println(output);  
  
 // Convert Fahrenheit temperatures to Celsius  
 fToC = 5 \* (BOILING\_IN\_F - 32) / 9;  
 output = BOILING\_IN\_F + " in Fahrenheit is " + fToC  
 + " in Celsius.";  
 System.out.println(output);  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #2 HERE  
 System.out.print("Enter your first name: "); // prompt the user for first name  
 firstName = keyboard.nextLine();// read the user's first name  
 System.out.print("Enter your last name: ");// prompt the user for last name  
 lastName = keyboard.nextLine();// read the user's last name  
 fullName = firstName + " " + lastName;// concatenate the user's first and last names  
 System.out.print(fullName);// print out the user's full name   
  
 // ADD LINES FOR TASK #2 Alternate HERE  
 // prompt the user for first name  
 firstName = JOptionPane.showInputDialog("Enter your first name."); // read the user's first name  
 lastName = JOptionPane.showInputDialog("Enter your last name."); // read the user's last name  
 fullName = firstName + " " + lastName;// concatenate the user's first and last names  
 JOptionPane.showMessageDialog(null, fullName);// print out the user's full name   
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #3 HERE  
 firstInitial = firstName.charAt(0);// get the first character from the user's first name  
 System.out.print(firstInitial);// print out the user's first initial  
 System.out.println(); // to leave a blank line  
 fullName = fullName.toUpperCase();// convert the user's full name to all capital letters  
 System.out.print(fullName);// print out the user's full name in all capital letters  
  
 System.out.println(); // to leave a blank line  
   
 // ADD LINES FOR TASK #4 HERE  
 System.out.print("Enter the diameter of a shpere: ");// prompt the user for a diameter of a sphere  
 diameter =keyboard.nextDouble(); // read the diameter  
 radius = diameter / 2;// calculate the radius  
 volume = (4 \* Math.PI \* Math.pow(radius, 3.0))/3;// calculate the volume   
 System.out.print(volume);// print out the volume  
 }   
}

|  |  |  |
| --- | --- | --- |
| Diameter | Volume(Hand Calculated) | Volume(Resulting Input) |
| 2 | 4.188786666666667 | 4.1887902047863905 |
| 25.4 | 8580.066066915266 | 8580.24664605096 |
| 875,000 | 3.507702734965397e+17 | 3.5077027349651661E17 |

Task 5. Task 6 was the documentation

/\*======================================================  
Milage program  
Created by: Nathan Gaffney  
Date: 9-9-2014  
Purpose: This program will calculate the miles per gallon of a trip.  
No dependant files.  
=========================================================\*/  
import java.util.Scanner;  
public class Mileage  
{  
 public static void main(String [] args)  
 {  
 Scanner keyboard = new Scanner (System.in) ; //Scanner  
 double miles; //miles driven  
 double gas; //amount of gas used in gallons  
 double milespergallon;  
 System.out.print("This program will calculate the miles per gallon used during the trip.\n"); //Display purpose  
 System.out.print("Enter the number of miles driven."); //prompt for miles driven  
 miles = keyboard.nextDouble(); // get miles driven  
 System.out.print("Enter the number of gallons of gas used."); //prompt for gas used  
 gas = keyboard.nextDouble(); // get gas used  
 milespergallon = miles / gas; // divide miles driven by gas used  
 System.out.println("Miles per gallon: " +milespergallon); //output the miles per gallon  
 }  
}

|  |  |  |  |
| --- | --- | --- | --- |
| Miles Drive | Gallons of Gas Used | Miles per Gallon Hand | Miles per Gallon Computer |
| 2000 | 100 | 20 | 20.0 |
| 500 | 25.5 | 19.6078431372549 | 19.607843137254903 |
| 241.5 | 10 | 24.15 | 24.15 |
| 100 | 0 | Error | Error |