**PROG1003 & PROG1012**

**Programming Assignment 2: Elementary Programming**

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1. Show the output of the following statements (write a program to verify your result):

|  |
| --- |
| * + System.out.println(**"1"** + **1**); =11   + System.out.println(**'1'** + **1**); =50   + System.out.println(**"1"** + **1** + **1**); =111   + System.out.println(**"1"** + (**1** + **1**)); =12   + System.out.println(**'1'** + **1** + **1**); =51 |

1. (Computing the volume of a cylinder) Write a program that reads in the radius and length of a cylinder and computes volume using the following formulas:

area = radius \* radius \* π volume = area \* length

**ANS:**

|  |
| --- |
| import java.util.\*;  public class Question2 {  public static void main(String[] args) {  Scanner input = new Scanner(System.in);  System.out.print("Enter the radius and length of a cylinder :");  double radius = input.nextDouble();  double length = input.nextDouble();  double area = radius\*radius\*3.1415;  double volume= area\*length;  System.out.println("The area is "+ area);  System.out.println("The volume is "+ volume);  }  } |

1. (Converting feet into meters) Write a program that reads a number in feet, converts it to meters, and displays the result. One foot is 0.305 meter. Here is a sample run:



**ANS:**

|  |
| --- |
| import java.util.\*;  public class Question3 {  public static void main(String[] args) {    Scanner input=new Scanner(System.in);  System.out.print("Enter a value for feet:");  double feet = input.nextDouble();  double meters = feet\*0.305;  System.out.print(feet+" feet is " +meters+ "meters");  }    } |

1. (*Financial application: payroll*) Write a program that reads the following information and prints a payroll statement:

Employee’s name (e.g., Smith)

Number of hours worked in a week (e.g., 10)

Hourly pay rate (e.g., 6.75)

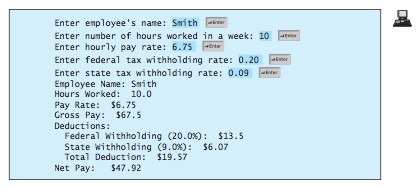
Federal tax withholding rate (e.g., 20%)

State tax withholding rate (e.g., 9%)

Write this program in two versions:

1. Use dialog boxes to obtain input and display output;

(b) Use console input and output. A sample run of the console input and output is shown below:



**ANS:**

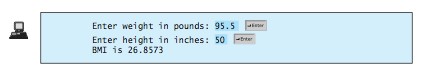
1. Use dialog boxes to obtain input and display output

|  |
| --- |
| package javaapplication8;  import javax.swing.JOptionPane;  public class JavaApplication8 {  public static void main(String[] args) {  String name= JOptionPane.showInputDialog(null,"Enter employee's name","Financial application: payroll",JOptionPane.INFORMATION\_MESSAGE);  String HoursWork = JOptionPane.showInputDialog(null,"Enter number of hours work in a week","Financial application: payroll",JOptionPane.INFORMATION\_MESSAGE);  String PayRate = JOptionPane.showInputDialog(null,"Enter hourly pay rate","Financial application: payroll",JOptionPane.INFORMATION\_MESSAGE);  String FederalTax = JOptionPane.showInputDialog(null,"Enter federal tax withholding rate","Financial application: payroll",JOptionPane.INFORMATION\_MESSAGE);  String StateTax = JOptionPane.showInputDialog(null,"Enter state tax withholding rate","Financial application: payroll",JOptionPane.INFORMATION\_MESSAGE);  double GrossPay = Double.parseDouble(HoursWork)\* Double.parseDouble(PayRate);  double Federa = GrossPay\*Double.parseDouble(FederalTax);  double State = GrossPay\*Double.parseDouble(StateTax);  double Deuction = Federa+State;  double NetPay = GrossPay-Deuction;  JOptionPane.showMessageDialog(null, "Employee name: "+name+"\nHours Worked: "+HoursWork+"\nPay Rate: "+"$"+PayRate+"\nGross Pay "+"$"+GrossPay+"(n)Deuctions:"+"\n Federa Withholding (20%): "+"$"+Federa+"\n State Withholding (9.0%): "+"$"+State+"\n Total Deuction: "+"$"+Deuction+"\nNet Pay: "+"$"+NetPay,"Financial application: payroll",JOptionPane.INFORMATION\_MESSAGE);  }  } |

1. Use console input and output. A sample run of the console input and output is shown below:

|  |
| --- |
| package javaapplication8;  import java.util.\*;  public class JavaApplication8 {  public static void main(String[] args) {  Scanner input=new Scanner(System.in);  System.out.print("Enter employee's name: ");  String name= input.next();  System.out.print("Enter number of hours work in a week: ");  double HoursWork = input.nextDouble();  System.out.print("Enter hourly pay rate: ");  double PayRate = input.nextDouble();  System.out.print("Enter federal tax withholding rate: ");  double FederalTax = input.nextDouble();  System.out.print("Enter state tax withholding rate: ");  double StateTax = input.nextDouble();  double GrossPay = HoursWork\*PayRate;  double Federa = GrossPay\*FederalTax;  double State = GrossPay\*StateTax;  double Deuction = Federa+State;  double NetPay = GrossPay-Deuction;  System.out.println("Employee name:\t"+name);  System.out.println("Hours Worked\t:"+HoursWork);  System.out.println("Pay Rate:\t"+"$"+PayRate);  System.out.println("Gross Pay\t"+"$"+GrossPay);  System.out.println("Deuctions:");  System.out.println("\tFedera Withholding (20%):\t"+"$"+Federa);  System.out.println("\tState Withholding (9.0%):\t"+"$"+State);  System.out.println("\tTotal Deuction:\t"+"$"+Deuction);  System.out.println("Net Pay:\t"+"$"+NetPay);  }    } |

1. *(Health application: computing BMI*) Body Mass Index (BMI) is a measure of health on weight. It can be calculated by taking your weight in kilograms and dividing by the square of your height in meters. Write a program that prompts the user to enter a weight in pounds and height in inches and display the BMI. Note that one pound is **0.45359237** kilograms and one inch is **0.0254** meters. Here is a sample run:



**ANS:**

package question5;

|  |
| --- |
| import java.util.\*;  public class Question5 {  public static void main(String[] args) {  // TODO code application logic here  Scanner input=new Scanner(System.in);  System.out.print("Enter weight in pounds: ");  double pounds = input.nextDouble();  System.out.print("Enter height in inches: ");  double inches = input.nextDouble();  double kilograms = pounds\*0.45359237;  double meters = inches\*0.0254;  double BMI = kilograms/(meters\*meters);  System.out.print("BMI is "+BMI);    }    } |