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Lab 5

7-Oct-14

1.

/\*\*  
 This function will print out a menu to the user.  
 This is a geometry calculator  
 Choose what you would like to calculate  
 1. Find the area of a circle  
 2. Find the area of a rectangle  
 3. Find the area of a triangle  
 4. Find the circumference of a circle  
 5. Find the perimeter of a rectangle  
 6. Find the perimeter of a triangle  
 Enter the number of your choice:   
 \*/  
 public static void printMenu()  
 {  
 System.out.println("This is a geometry calculator.");  
 System.out.println("Choose what you would like to calculate:");  
 System.out.println("1. Find the area of a circle.");  
 System.out.println("2. Find tyhe area of a rectangle.");  
 System.out.println("3. Find the area of a triangle.");  
 System.out.println("4. Find the cicumfrence of a circle");  
 System.out.println("5. Find the perimeter of a rectangle");  
 System.out.println("6. Find the perimeter of a triangle.");  
 System.out.print("Enter the number of your choice: ");  
 }

Task 2.

/\*\*  
 This method will recieve an integer  
 Then do the formula for area  
 A=(3.14159265359) \* r^2  
 @r is the radius of the circle  
 @return is the area of a cricle  
 \*/  
 public static double circleArea(double r)  
 {  
 return Math.PI \* Math.pow(r, 2);  
 }  
 /\*\*  
 This method will find the area oif a rectangle  
 A = length \* width  
 @l is the length  
 @w is the width  
 @return is the area of a rectangle  
 \*/  
 public static double rectangleArea(double l, double w)  
 {  
 return l \* w;  
 }  
 /\*\*  
 This method will find the area of a triangle  
 A = .5 \* base \* height  
 @b is the base  
 @w is the width  
 @return is the area of a triangle  
 \*/  
 public static double triangleArea(double b, double h)  
 {  
 return (.5)\* b \* h;  
 }  
 /\*\*  
 This method will find the circumference of a cricle  
 C = 2\*(3.14159265359)\*r  
 @r is the radius  
 @return is the Circumference of a circle  
 \*/  
 public static double circleCircumference(double r)  
 {  
 return 2 \* Math.PI \* r;  
 }  
 /\*\*  
 This method will find the perimeter of a rectangle  
 A = 2l + 2w  
 OR  
 A = 2(l+w)  
 @l is the length  
 @w is the width  
 @return is the perimeter of a rectangle  
 \*/  
 public static double rectanglePerimeter(double l, double w)  
 {  
 return 2\*(l+w);  
 }  
 /\*\*  
 This method will find the perimeter of a trianlge  
 P= a+b+c  
 @a is the first side  
 @b is the second side  
 @c is the third side  
 @return is ther perimeter of a triangle  
 \*/  
 public static double trianglePerimeter(double a, double b, double c)  
 {  
 return a+b+c;  
 }

Final code:

import java.util.Scanner;  
  
/\*\*  
 This program demonstrates static methods  
\*/  
  
public class Geometry  
{  
 /\*\*  
 This function will print out a menu to the user.  
 This is a geometry calculator  
 Choose what you would like to calculate  
 1. Find the area of a circle  
 2. Find the area of a rectangle  
 3. Find the area of a triangle  
 4. Find the circumference of a circle  
 5. Find the perimeter of a rectangle  
 6. Find the perimeter of a triangle  
 Enter the number of your choice:   
 \*/  
 public static void printMenu()  
 {  
 System.out.println("This is a geometry calculator.");  
 System.out.println("Choose what you would like to calculate:");  
 System.out.println("1. Find the area of a circle.");  
 System.out.println("2. Find tyhe area of a rectangle.");  
 System.out.println("3. Find the area of a triangle.");  
 System.out.println("4. Find the cicumfrence of a circle");  
 System.out.println("5. Find the perimeter of a rectangle");  
 System.out.println("6. Find the perimeter of a triangle.");  
 System.out.print("Enter the number of your choice: ");  
 }  
 /\*\*  
 This method will recieve an integer  
 Then do the formula for area  
 A=(3.14159265359) \* r^2  
 @r is the radius of the circle  
 @return is the area of a cricle  
 \*/  
 public static double circleArea(double r)  
 {  
 return Math.PI \* Math.pow(r, 2);  
 }  
 /\*\*  
 This method will find the area oif a rectangle  
 A = length \* width  
 @l is the length  
 @w is the width  
 @return is the area of a rectangle  
 \*/  
 public static double rectangleArea(double l, double w)  
 {  
 return l \* w;  
 }  
 /\*\*  
 This method will find the area of a triangle  
 A = .5 \* base \* height  
 @b is the base  
 @w is the width  
 @return is the area of a triangle  
 \*/  
 public static double triangleArea(double b, double h)  
 {  
 return (.5)\* b \* h;  
 }  
 /\*\*  
 This method will find the circumference of a cricle  
 C = 2\*(3.14159265359)\*r  
 @r is the radius  
 @return is the Circumference of a circle  
 \*/  
 public static double circleCircumference(double r)  
 {  
 return 2 \* Math.PI \* r;  
 }  
 /\*\*  
 This method will find the perimeter of a rectangle  
 A = 2l + 2w  
 OR  
 A = 2(l+w)  
 @l is the length  
 @w is the width  
 @return is the perimeter of a rectangle  
 \*/  
 public static double rectanglePerimeter(double l, double w)  
 {  
 return 2\*(l+w);  
 }  
 /\*\*  
 This method will find the perimeter of a trianlge  
 P= a+b+c  
 @a is the first side  
 @b is the second side  
 @c is the third side  
 @return is ther perimeter of a triangle  
 \*/  
 public static double trianglePerimeter(double a, double b, double c)  
 {  
 return a+b+c;  
 }  
 public static void main (String [] args)  
 {  
 int choice; //the user's choice  
 double value = 0; //the value returned from the method  
 char letter; //the Y or N from the user's decision to exit  
 double radius; //the radius of the circle  
 double length; //the length of the rectangle  
 double width; //the width of the rectangle  
 double height; //the height of the triangle  
 double base; //the base of the triangle  
 double side1; //the first side of the triangle  
 double side2; //the second side of the triangle  
 double side3; //the third side of the triangle  
   
 //create a scanner object to read from the keyboard  
 Scanner keyboard = new Scanner (System.in);  
   
 //do loop was chose to allow the menu to be displayed first  
 do  
 {  
 printMenu();  
   
 choice = keyboard.nextInt();  
   
 switch (choice)  
 {  
 case 1:  
 System.out.print("Enter the radius of the circle: ");  
 radius = keyboard.nextDouble();  
 //call the circleArea method and store the result in the value variable  
 value = circleArea(radius);   
   
 System.out.println("The area of the circle is " + value);  
 break;  
 case 2:  
 System.out.print("Enter the length of the rectangle: ");  
 length = keyboard.nextDouble();  
 System.out.print("Enter the width of the rectangle: ");  
 width = keyboard.nextDouble();  
 //call the rectangleArea method and store the result in the value variable  
 value = rectangleArea(length, width);  
   
 System.out.println("The area of the rectangle is " + value);  
 break;  
 case 3:   
 System.out.print("Enter the height of the triangle: ");  
 height = keyboard.nextDouble();  
 System.out.print("Enter the base of the triangle: ");  
 base = keyboard.nextDouble();  
 //call the triangleArea method and store the result in the value variable  
 value = triangleArea(base, height);  
   
 System.out.println("The area of the triangle is " + value);  
 break;  
 case 4:  
 System.out.print("Enter the radius of the circle: ");  
 radius = keyboard.nextDouble();  
 //call the circumference method and store the result in the value variable  
 value = circleCircumference(radius);  
   
 System.out.println("The circumference of the circle is " + value);  
 break;  
 case 5:  
 System.out.print("Enter the length of the rectangle: ");  
 length = keyboard.nextDouble();  
 System.out.print("Enter the width of the rectangle: ");  
 width = keyboard.nextDouble();  
 //call the perimeter method and store the result in the value variable  
 value = rectanglePerimeter(length,width);  
   
 System.out.println("The perimeter of the rectangle is " + value);  
 break;  
 case 6:  
 System.out.print("Enter the length of side 1 of the triangle: ");  
 side1 = keyboard.nextDouble();  
 System.out.print("Enter the length of side 2 of the triangle: ");  
 side2 = keyboard.nextDouble();  
 System.out.print("Enter the length of side 3 of the triangle: ");  
 side3 = keyboard.nextDouble();  
 //call the perimeter method and store the result in the value variable  
 value = trianglePerimeter(side1,side2,side3);  
   
 System.out.println("The perimeter of the triangle is " + value);  
 break;  
 default:  
 System.out.println("You did not enter a valid choice.");  
 }   
 keyboard.nextLine(); //consumes the new line character after the number   
 System.out.println("Do you want to exit the program (Y/N)?: ");  
 String answer = keyboard.nextLine();  
 letter = answer.charAt(0);  
 }while (letter != 'Y' && letter != 'y');  
 }  
}

Example data

Area of circle with radius 1:

3.14159265359

Area of rectangle with l=2 and w =1

2

Circumference of a crcle with radius .5:

3.14159265359

Perimeter of square with l=1 and w=1:

4

Perimeter of triangle with a=1 b=2 c=3

6

ÏÏ«Ï ----jGRASP exec: java Geometry  
ÏÏ§Ï  
ÏÏ§ÏThis is a geometry calculator.  
ÏÏ§ÏChoose what you would like to calculate:  
ÏÏ§Ï1. Find the area of a circle.  
ÏÏ§Ï2. Find tyhe area of a rectangle.  
ÏÏ§Ï3. Find the area of a triangle.  
ÏÏ§Ï4. Find the cicumfrence of a circle  
ÏÏ§Ï5. Find the perimeter of a rectangle  
ÏÏ§Ï6. Find the perimeter of a triangle.  
¼¼§ÏEnter the number of your choice: 1  
¼¼§ÏEnter the radius of the circle: 1  
ÏÏ§ÏThe area of the circle is 3.141592653589793  
ÏÏ§ÏDo you want to exit the program (Y/N)?:   
¼¼§Ïn  
ÏÏ§ÏThis is a geometry calculator.  
ÏÏ§ÏChoose what you would like to calculate:  
ÏÏ§Ï1. Find the area of a circle.  
ÏÏ§Ï2. Find tyhe area of a rectangle.  
ÏÏ§Ï3. Find the area of a triangle.  
ÏÏ§Ï4. Find the cicumfrence of a circle  
ÏÏ§Ï5. Find the perimeter of a rectangle  
ÏÏ§Ï6. Find the perimeter of a triangle.  
¼¼§ÏEnter the number of your choice: 2  
¼¼§ÏEnter the length of the rectangle: 2  
¼¼§ÏEnter the width of the rectangle: 1  
ÏÏ§ÏThe area of the rectangle is 2.0  
ÏÏ§ÏDo you want to exit the program (Y/N)?:   
¼¼§Ïn  
ÏÏ§ÏThis is a geometry calculator.  
ÏÏ§ÏChoose what you would like to calculate:  
ÏÏ§Ï1. Find the area of a circle.  
ÏÏ§Ï2. Find tyhe area of a rectangle.  
ÏÏ§Ï3. Find the area of a triangle.  
ÏÏ§Ï4. Find the cicumfrence of a circle  
ÏÏ§Ï5. Find the perimeter of a rectangle  
ÏÏ§Ï6. Find the perimeter of a triangle.  
¼¼§ÏEnter the number of your choice: 4  
¼¼§ÏEnter the radius of the circle: .5  
ÏÏ§ÏThe circumference of the circle is 3.141592653589793  
ÏÏ§ÏDo you want to exit the program (Y/N)?:   
¼¼§Ïn  
ÏÏ§ÏThis is a geometry calculator.  
ÏÏ§ÏChoose what you would like to calculate:  
ÏÏ§Ï1. Find the area of a circle.  
ÏÏ§Ï2. Find tyhe area of a rectangle.  
ÏÏ§Ï3. Find the area of a triangle.  
ÏÏ§Ï4. Find the cicumfrence of a circle  
ÏÏ§Ï5. Find the perimeter of a rectangle  
ÏÏ§Ï6. Find the perimeter of a triangle.  
¼¼§ÏEnter the number of your choice: 5  
¼¼§ÏEnter the length of the rectangle: 1  
¼¼§ÏEnter the width of the rectangle: 1  
ÏÏ§ÏThe perimeter of the rectangle is 4.0  
ÏÏ§ÏDo you want to exit the program (Y/N)?:   
¼¼§Ïn  
ÏÏ§ÏThis is a geometry calculator.  
ÏÏ§ÏChoose what you would like to calculate:  
ÏÏ§Ï1. Find the area of a circle.  
ÏÏ§Ï2. Find tyhe area of a rectangle.  
ÏÏ§Ï3. Find the area of a triangle.  
ÏÏ§Ï4. Find the cicumfrence of a circle  
ÏÏ§Ï5. Find the perimeter of a rectangle  
ÏÏ§Ï6. Find the perimeter of a triangle.  
¼¼§ÏEnter the number of your choice: 6  
¼¼§ÏEnter the length of side 1 of the triangle: 1  
¼¼§ÏEnter the length of side 2 of the triangle: 2  
¼¼§ÏEnter the length of side 3 of the triangle: 3  
ÏÏ§ÏThe perimeter of the triangle is 6.0  
ÏÏ§ÏDo you want to exit the program (Y/N)?:   
¼¼§Ïy  
ÏÏ§Ï  
ÏÏ©Ï ----jGRASP: operation complete.