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CPS 150 02 – Algorithms and Programming 1

Lab Group Project 1

9/10/20

**Program 1 – Algorithm**

1. Start program
2. Define variables
3. Import scanner
4. Prompt user to enter first number (year)
5. Define int variable for year input by user
6. Complete mathematic computations – define double variable to store average repair cost per year
7. Print repair cost for given year
8. End program

**Program 1 – Running Screenshot**

A screen shot of a computer

Description automatically generated

**Program 1 – Code**

import java.util.\*;

public class Gradient {

public static void main(String[] aegs) {

//step1. definevariables

double year;

//step2. create a Scanner(System.in);

Scanner sc=new Scanner(System.in);

//step3. prompt user to enter the first number

System.out.println( "please enter the year here: ");

int yearNumber = sc.nextInt();

//step4. mathematic computaions

double avg = ((1500 - 100) / 9.0);

System.out.print("Time repair cost is: $");

System.out.println(avg \* (yearNumber - 1) + 100);

}// end of program

**Program 2 – Algorithm**

1. Start program
2. Import scanner
3. Prompt the user to input a value for the bottom radius
4. Declare a double variable to store the value of the bottom radius (r1)
5. Prompt the user to input a value for the top radius
6. Declare a double variable to store the value of the top radius (r2)
7. Prompt the user to input a value for the height of the bottom cylinder
8. Declare a double variable to store the height of the bottom cylinder (h1)
9. Prompt the user to input a value for the height of the top cylinder
10. Declare a double variable to store the height of the top cylinder (h2)
11. Prompt the user to input a value for the height of the cone
12. Declare a double variable to store the height of the cone (h3)
13. Declare a double variable to store the volume of the bottle using the inputs – use the equation
14. Print the volume of the bottle
15. End program

**Program 2 – Running Screenshot**

**A screenshot of a cell phone

Description automatically generated**

**Program 2 – Code**

/\*

Christopher Bussen

CPS 150 02

Lab Group Project 1

VolumeOfBottle: number number number number number; number

program takes in values for bottom radius, top radius, bottom height, top height,

and cone height then uses those inputs to calculate the volume of a bottle

V= π((r1^2 +r1\*r2 +r2^2)(h1+h2+h3))/3

ex1: user inputs 1, 2, 3, 4, 5 - program outputs 87.964

ex2: user inputs 8.2, 4, 4.2, 1.32, 2.21 - program outputs 939.324

ex3: user inputs 2.44, 0.79, 3.677, 0.42, 0.9 - program outputs 44.506

ex4: user inputs one, two, abc, four, x - program outputs error

ex5: user inputs 1.8, 0.76, -4.2, -0.65, -1.25 - program outputs -33.125

\*/

import java.util.Scanner;

public class VolumeOfBottle {

public static void main(String [] args){

//Import scanner

Scanner input = new Scanner(System.in);

//Prompt the user to input a value for the bottom radius

System.out.print("Enter the value of the bottom radius: ");

//Declare a double variable to store the value of the bottom radius (r1)

double r1 = input.nextDouble();

//Prompt the user to input a value for the top radius

System.out.print("Enter the value of the top radius: ");

//Declare a double variable to store the value of the top radius (r2)

double r2 = input.nextDouble();

//Prompt the user to input a value for the height of the bottom cylinder

System.out.print("Enter the value of the height of the bottom cylinder: ");

//Declare a double variable to store the height of the bottom cylinder (h1)

double h1 = input.nextDouble();

//Prompt the user to input a value for the height of the top cylinder

System.out.print("Enter the value of the height of the top cylinder: ");

//Declare a double variable to store the height of the top cylinder (h2)

double h2 = input.nextDouble();

//Prompt the user to input a value for the height of the cone

System.out.print("Enter the height of the cone: ");

//Declare a double variable to store the height of the cone (h3)

double h3 = input.nextDouble();

//Declare a double variable to store the volume of the bottle using the inputs

double volume = Math.PI \* ((Math.pow(r1, 2) + r1\*r2 + Math.pow(r2, 2)) \* (h1+h2+h3)) / 3;

//Print the volume of the bottle

System.out.println("The volume of the bottle is: " + volume);

}

}