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Computer Science 1-INT 2210

Lab Assignment #1

Dr. Homer Sharafi

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**Solution to Lab Assignment #2.**

I have named this program, *Formula*. This program calculates Pi using the formula provided and by summing up consecutive values of i as per the formula. The idea here is to generate all the values in the interval i=10,000 to i=100,000 (the boundaries of this interval are included) and apply these values to the general formula provided. The sum of these operations will generate the value of Pi for the sum of values in this interval.

For my program to do this, I first initialized my variables with the break down of the parts of the formula that each variable would store. I then went ahead to define a method to compute the sum. I then called this method in the main method of my program to display the computation. In order to make every line of code understandable, I made comments for proper documentation.

**Input data:** The input data, *i,* for this program was internally generated by the structure of my “for loop.” These values were systematically plugged into the variables containing the break down of the formula.

**Output data:** sumPi was my output data: this stands for the gross value Pi at the end of all calculations/computations.

**Processing data:** total\_aPi, total\_bPi, totalPi, sumPi, and getSum are my processing data that did all the internal processing to reach to my final answer.

***Formula* Program (written in java)**

**/\*\***

**\* This program was written by Edward Tatchim on 09/28/2018.**

**\* This program computes the values of PI from i=10,000 to i=100,000**

**\* It uses a set formula for summation to do this computation.**

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**\*/**

**public class Formula {**

**public static void main(String[] args) { //auto-generated main method**

**int i = 0; //integer numbers to that will be summed up**

**double total\_aPi=Math.pow(-1, (i+1)); //will store the numerator of the formula**

**double total\_bPi=(2\*i)-1; // will store the denominator of the formula**

**double totalPi=4\*((total\_aPi/total\_bPi)); // will store the value for the complete formula**

**getSum(i,total\_aPi,total\_bPi,totalPi); //calls the method with the calculation for the sum of pi**

**}**

**public static double getSum(int i,double total\_aPi, double total\_bPi,double totalPi) {**

**double sumPi=0; //will sum up every variable of i generated by the formula**

**for(i=10000;i<=100000;i=i+10000) { //this for loop makes sure that all the values 10000<=i<=100000 are considered for this formula**

**System.out.println("The value of i at this level is =" + " " + i + " "); //keeps the user in check about the currently processed value of i**

**total\_aPi=Math.pow(-1, (i+1)); //will store the numerator of the formula**

**total\_bPi=(2\*i)-1; // will store the denominator of the formula**

**totalPi=4\*((total\_aPi/total\_bPi));**

**sumPi=sumPi+totalPi;**

**}**

**System.out.println("The cumulative value of Pi after doing all the math is " + " " + sumPi); //Prints the final value for Pi onto the screen**

**return sumPi; //returns a value to the method. This is to satisfy the structure of the method "getSum"**

**}**

**}**