Course : Programming Fundamental – ENSF 337

Lab # : Lab 2

Instructor : M. Moussavi

Student Name : Nimna Wijedasa

Lab Section : B02

Date submitted : Sept 29, 2022

Exercise 1

/\*

\* File Name: lab\_one.c

\* Assignment: Lab 1 Exercise B

\* Lab section: B02

\* Completed by: Nimna Wijedasa

\* Submission Date: Sept 18, 2022

\*/

#include <stdio.h>

int main()

{

double num1 = -34.5;

double num2 = 98.7;

double sum; // sum of num1 and num2

double sumSquared; // the square of num2 plus num2

// 1) Add the two numbers and store the result in the variable 'sum'

sum = num1 + num2;

// 2) Compute the square of the sum and store the result in the variable 'sum Squared'

// Use the variable 'sum' (computed above) for this computation

sumSquared = sum\*sum;

printf( "The sum squared is: %f \n", sumSquared );

// 3) Now double the sum squared value and store the result in 'sumSquared'

printf( "The sum squared is now: %f \n", sumSquared);

sumSquared = sumSquared\*2;

return 0;

}

Text

Description automatically generated

Exercise 2

**double z = 0;**

**double x = 2.5;**

**double y = -1.5;**

**int m = 18;**

**int n = 4;**

Now, what are the values of z in the following expressions? Show your work.

1. **z=x+n\*y–(x+n)\*y;**

z = 2.5 + (4\*(-1.5) ) – ((2.5+4)\*(-1.5))= 2.5 – 6 + 9.75 =6.25

1. **z=m/n+m%n;**

z = 4 + 2 = 6.0

**c) z=n/m+n%m;**

z = 0 + 4 = 4.0

**d) z=5\*x–n/5;**

z =12.5 – 0 =12.5

**e) z=1–(1–(1–(1–(1–n))));**

z = 1 - (1 - (1 - (4) ) ) = 1 (- 4) = - 3

**f) z = sqrt(sqrt((double)n);**

z = sqrt(2) = 1.414

Exercise 3

/\*

\* File Name: lab\_one.c

\* Assignment: Lab 1 Exercise B

\* Lab section: B02

\* Completed by: Nimna Wijedasa

\* Submission Date: Sept 18, 2022

\*/

#include <stdio.h>

#include <math.h>

int main() {

double angle, sine, taylor;

printf("input angle \n");

scanf("%lf",&angle);

sine = sin(angle);

taylor = (angle) - ((pow(angle,3)) / 6 ) + (pow(angle,5) / (120) ) - ((pow(angle, 7))/ 5040 );

printf("The angle is %.5lf \nThe Taylor approximation is %.5lf\n", sine,taylor);

return 0;

}

Text

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated

Exercise 3

/\*

\* File Name: lab\_one.c

\* Assignment: Lab 1 Exercise B

\* Lab section: B02

\* Completed by: Nimna Wijedasa

\* Submission Date: Sept 18, 2022

\*/

#include <stdio.h>

#include <math.h>

int main() {

int a,b,c;

float x\_p, x\_n, x, root\_val;

printf("input the values for the coefficients for ax^2 + bx + c \na = ");

scanf("%d",&a);

printf("b = ");

scanf("%d",&b);

printf("c = ");

scanf("%d",&c);

root\_val = (pow(b, 2))-(4\*a\*c);

if (root\_val < 0) {

root\_val = root\_val\*(-1);

root\_val = sqrt((double)root\_val);

x = (float)(-1\*b)/(float) (2\*a);

x\_p = (root\_val) / (2\*a);

x\_n = (-1\*root\_val) / (2\*a);

printf("roots are %.1f +%.2fi and %.1f %.2fi \n",x,x\_p,x,x\_n);

}

else{

root\_val = sqrt((double)root\_val);

x\_p = ((-1\*b)+root\_val) / (2\*a);

x\_n = ((-1\*b)-root\_val) / (2\*a);

printf("roots are %.2f and %.2f\n",x\_p,x\_n);

}

return 0;

}

Text

Description automatically generatedText

Description automatically generatedText

Description automatically generated

|  |  |  |
| --- | --- | --- |
| coefficients | Root 1 | Root 2 |
| a =1, b = -8, c = 15 | 5 | 3 |
| a =4, b = -20, c = 21 | 3.5 | 1.5 |
| a =1, b = 2, c = 2 | -1+i | -1-i |