Course: Programming Fundamental – ENSF 337
Lab #: Lab 1
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Lab Section: B01
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Ex. B

```c
*
* File Name: Lab1B.c
* Assignment: Lab 1 Exercise B
* Lab section: B01
* Completed by:  Aarushi Roy Choudhury
* Submission Date: Sept 16, 2021
*/

#include <stdio.h>
#include <math.h>
int main(void)
{
 double num1 = -34.5;
 double num2 = 98.7;
 double sum=0; // sum of num1 and num2, intialize
 double sumSquared=0; // the square of num2 plus num2 intialize

 // 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 varia
ble 'sumSquared'
 // Use the variable 'sum' (computed above) for this computation
 sumSquared= pow(sum,2);

 printf( "The sum squared is: %f \n", sumSquared);
 // 3) Now double the sum squared value and store the result in 'sumSq
uared'
 sumSquared = sumSquared * 2;
 printf( "The sum squared is now: %f \n", sumSquared);

 return 0;
}
```

```
C:\Users\Aarus\Desktop\ENSF 337> gcc Lab1B.c

C:\Users\Aarus\Desktop\ENSF 337>a.exe
The sum squared is: 4121.640000
The sum squared is now: 8243.280000
```

Ex. C

a) $z = 2.5 + 4(-1.5) - (2.5+4)(-1.5)$

$2.5 - 6 + 9.75$

$z = 6.25$

b) $z = 18/4 + 18 \% 4$

$z = 4 + 2$

$z = 6$

c) $z = 4/18 + 4 \cdot 1 \cdot 18$

$z = 0 + 4$

$z = 4$

d) $z = 5 \times 2.5 - 4/5$

$= 12.5 - 0$

$z = 12.5$

e) $z = 1 - (1 - (1 - (1 - (1 - 4))))$ (= -3, = 4, = -3, = 4, = -3)

$z = -3$

f) $z = \sqrt{\sqrt{4.0}}$

$z = \sqrt{2}$

$z \doteq 1.41$

Ex. D

```c
#include <stdio.h>
#include<math.h>
int main(){
    float x;
    int Numer_of_terms;
    int i;
    float sinx = 0;
    float term;
    printf("To evaluate sin(x), enter the angle, x in radians and number of terms
:");
    scanf("%f %d", &x, &Numer_of_terms);
    printf("The sine of %f radians calculated using the sine function is %f\n",x,
sin(x));
    i = 1;
    term = x;
    while (i < Numer_of_terms) {
        sinx +=  term;
        i = i + 2;  \
        term *= -(x * x) / ( (i-1) * i);
    }

    printf("The sine of %f radians calculated using the Taylor Series is %f\n",x,
sinx);
}
```

```
To evaluate sin(x), enter the angle, x in radians and number of terms:0 100
The sine of 0.000000 radians calculated using the sine function is 0.000000
The sine of 0.000000 radians calculated using the Taylor Series is 0.000000
```

```
To evaluate sin(x), enter the angle, x in radians and number of terms:0.5 100
The sine of 0.500000 radians calculated using the sine function is 0.479426
The sine of 0.500000 radians calculated using the Taylor Series is 0.479426
```

```
To evaluate sin(x), enter the angle, x in radians and number of terms:1 100
The sine of 1.000000 radians calculated using the sine function is 0.841471
The sine of 1.000000 radians calculated using the Taylor Series is 0.841471
```

```
To evaluate sin(x), enter the angle, x in radians and number of terms:2.5 100
The sine of 2.500000 radians calculated using the sine function is 0.598472
The sine of 2.500000 radians calculated using the Taylor Series is 0.598472
```

X (rads)	Sin(x)
0	0
0.5	0.479
1.0	0.841
2.5	0.598

Ex. E

```c
#include <math.h>
#include <stdio.h>
int main() {
    float a, b, c, dis, x1, x2, real, img;
    printf("Enter the coefficients a, b and c: ");
    scanf("%f %f %f", &a, &b, &c);

    dis = b*b - 4*a*c;


    if (dis > 0) {
        x1 = (-b + sqrt(dis)) / (2 * a);
        x2 = (-b - sqrt(dis)) / (2 * a);
        printf("x = %f and x = %f", x1, x2);
    }


    else if (dis == 0) {
        x1 = -b / (2 * a);
        printf("x=  %f;", x1);
    }


    else {
        real = -b / (2 * a);
        img = sqrt(-dis) / (2 * a);
        printf("x = %f + %fi and x = %f - %fi", real, img, real, img);
    }

    return 0;
}
```

```
Enter the coefficients a, b and c: 2 9 1
x = -0.113999 and x = -4.386001
```

```
Enter the coefficients a, b and c: 2 4 5
x = -1.000000 + 1.224745i and x = -1.000000 - 1.224745i
```