**Extra Practices 2**

***Theoretical Questions***

1. Write the following equation as a C statement using the functions pow and log:

Y= 2 3log n

1. What value is assigned to the type **double** variable **result** by the following statement:

**Result=** 25.0 \*3 /2.5;

1. Rewrite the following mathematical expressions using C functions:
2. √x+y \* z2
3. √(x-y)3
4. |xy-w/z|
5. Evaluate the following expressions
6. ceil(16.2)
7. floor(-7.5)\*pow(3.0,4.0)
8. ceil(22.7+0.7)
9. sqrt(floor(fabs(-8.4)))
10. z-(a+b/2) +w\*-y

int z=8, a=3, b=9, w=2,y=-5;

1. Evaluate the following expressions with 8 and 23 as operands:

23/8 8/23 23%8 8%23

1. Assume a is 3, b is 4, and y is -1.0. Indicate which of the following expressions are valid and find the value stored by them. Also indicate why the remaining statements are invalid.
2. i=a%b;
3. x= a8y;
4. i= a/-b;
5. a%(a/b);
6. i=b/0;
7. (double) a/b;
8. i= a%0;

***-----> on the next page you will find the programming questions!!***

***\*\*Questions marked challenge are those which need an extra bit of creativity or mathematical background: Ask if you would like to learn how to solve them***

***Programming Questions***

1. **\*\*\*Challenge Question1**: Write a program that determines how many binary bits are required to represent a positive integer number. For example, 3 bits are needed to represent the value 7, 4 bits are needed for numbers 8 or number 15 and so on. Use the log(), or log10() functions in your program. The user must enter the positive integer.
2. R.W. Gosper proposed the following formula to approximate n factorial.

nfactorial= 

(**π = 3.14, e = 2.72)**

The answer to this question should be a C program structured as a main function only.

Your program should prompt the user for an integer value and input that value into a variable *n. Next, your program should use* Gosper's formula and display the result.

1. write a C program that will **ask the user for 4 positive integer values** and then produce the following output:
   1. The sum of the four numbers.
   2. The sum of the first two numbers minus the sum of the last two.
   3. The sum of the squares of the four numbers.
   4. The quotient (real, with decimals) of the **square root of the sum of the squares** divided by the **sum of all the numbers**.
2. **\*\*\*Challenge Question2:** Write a program that computes the length f the opposite and adjacent sides of a right triangle. Given the length of the hypotenuse and an angle. The user must enter the length of the hypotenuse and angle in degrees  
      
      
   \Rrightarrow 1 \mbox{ rad} = \frac{180^\circ}{\pi}