Implementation of a rudimentary code snippets preferably on the Linux operating system

Implement C programs for the following problem statements:

a. Expression Evaluation: The prescribed expression has a single pair of parentheses missing that makes it syntactically wrong and it does not compile. In your c code snippet, place a pair of parentheses in proper places to correct the expression and evaluate it for x = 3, y =5,z =15, w = -1;

Given Expression: x * w + y * z = 7 (syntactically wrong)

Corrected Expression: k= x * w + y *(z = 7)

Value of the corrected Expression: 32

Inference- syntax errors make the codes unable to be compiled.

b. Expression Evaluation: What would be the value of the given expressions by assuming the following operand values?

Expression1: (int) (c * y / z + y / z * c)

Expresssion2: x - s * t * - c – u

Expression3: (float) (x + y < z + w && a > b - 17 * x || ! x < 5)

int w = 0, x = 2.5, y = 5, z = 3, r, s = 4, t = 5, u = -3;

double a = 2.36, b = 3.19, c = 3.0, d = 2.91726;

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```
#include <stdio.h>
int main()
{
   int w = 0, x = 2.5, y = 5, z = 3, r, s = 4, t = 5, u = -3, m, n;
double a = 2.36, b = 3.19, c = 3.0, d = 2.91726;
float o;

  m= (int) (c * y / z + y / z * c);
n= (x - s * t *- c - u);
o= (float) (x + y < z + w && a > b - 17 * x || ! x < 5);

   printf("Value of given expression m= %d\n", m);
      printf("Value of given expression n= %d\n", n);
   printf("Value of given expression o= %f\n", o);

   return 0;
}
```

Inference- Parentheses is very important. Even a simple mistake can give a different answer.

c. Pattern Display: Implement a C code snippet to print the pattern below.

Sample input 1: 3

Sample input 2: 5

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```
#include <stdio.h>

int main() {
    int rows,col,i,j;
    printf("Enter rows=");
    scanf ("%d", &rows);
    col=2*rows;
    printf ("rows=%d col=%d\n", rows, col);

    for (i=1; i<=rows; i++)
    {
        //printf("i=%d",i);
            for (j=1; j<=col; j++)
            {
               if((j<=i) || (j>=(col-i+1)))
                    printf ("*");
                else
                    printf (" ");
            }
        printf("\n");
    }
    return 0;
}
```

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Inference- Pyramid made of stars is formed on entering value for number of rows in output. It is based on increment and decrement.

d. Leap Year: A calendar year is said to be a leap year if it occurs four years once and has 29 days for the month of February. One of your friends Advaith was born on 29th of February. He wishes to know how many times till date he has celebrated his birthday (29th February). Take his birth year and present year as inputs and print the number of times he has experienced 29th of February. Note if present year is a leap year, do include its 29th of February as well. You may also display an error as “Birth Year is incorrect” if the birth year entered is not a leap year.

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```
#include <stdio.h>


int main() {
    // Write C code here
    int a, b, year=0;
    printf("Please enter year of birth ");
    scanf("%d",&a);
    printf("Please enter current year ");
    scanf("%d",&b);


    if(((a%4 == 0) && (a%100!= 0)) || ((a%4 == 0) && (a%400 == 0)))
     // Code for calculating number of leap years.
    {
        year = (b/4 - b/400 + b/100)-(a/4 - a/400 + a/100)+1;
        printf ("No: of Leap years between %d and %d is %d", a,b, year);
    }
     else
     {
         printf ("Entered year %d is not a leap year!", a);
     }
    return 0;
}
```

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Inference- When calculating we should do it in such a way that the result includes year of birth also.

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