**Every Boiler Engineering Code – Intermediate Level Programming**

**Week 1 – Programming Exercises**

1. (15 points) Write a Python program that uses nested loops to draw this pattern:

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# #

1. (15 points) A prime integer number is one that has exactly two different divisors: 1 and the number itself. Write a Python program that finds and prints all the prime numbers between 0-100.
2. (20 points) Metrix practice：
   1. **Metrix Transpose.** Suppose there is a matrix M:

2 -5 8 11

M =

3 7 -9 -5

4 0 -1 7

Write a Python program that creates the transpose of M and displays MT in Matrix format such as:

2 3 4

-5 7 0

8 -9 -1

11 -5 7

* 1. **Metrix Multiplication.** Write a Python program that calculates the multiplication of M and MT, and displays the results (M \* MT) in Matrix format.