For the following programs you can start from scratch with skel.asm or you can modify an existing example program such as math.asm or prime.asm. Problem 1 is actually a relatively simple modification of prime.asm

Please paste NASM listing files into a word processor, and print landscape with Lucida Consolas 10 pt or Courier New 10 pt font.

1. (3 pts) Write a program that prompts the user to enter a number N, determines whether N is prime and then prints N followed by either " is prime", or " = \(X \times Y\) " where X and Y two factors you found, for example:

\[
634621 = 13 \times 48817 \\
488171 \text{ is prime}
\]

Submit your program listing as assembled by NASM. Example command line:

\[\text{nasm -l hw6-1.txt -f win32 hw6-1.asm}\]

Submit a screen dump of output for 1929071527 and 844717

2. (3 pts) Write an assembler program that prompts the user to enter two integers and then evaluates the following expression:

\[
x^3 - y^2 + 3x^2 y - 4xy^2 + y - 2x - 1
\]

Submit your program listing assembled in NASM and a screen dump of output for \(x = 5, y = -3\) and \(x = 1234, y=4321\)

3. (4 pts) An iterative version of Euclid's algorithm for finding the greatest common divisor of two positive integers can expressed as follows in C/C++. Note that \% is the modulo operator.

\[
\text{unsigned int GCD(unsigned int x, unsigned int y)}\{
\text{unsigned int n;}
\text{do }\{
\text{ n = x \% y;}
\text{ x = y;}
\text{ y = n;}
\text{ }\text{while } y > 0;
\text{ return x;}
\text{ }\}
\}
\]

Write an assembler program that prompts the user to enter two integers, computes the GCD and then displays a result, for example:

\[\text{The GCD of 289344 and 2382 is 6}\]

Submit your program listing assembled in NASM and a screen dump of output for 83846 and 2366, 9685368 and 664422, 99 and 19