Homework #4 (100 pts)

Write x86 assembly code that computes the following 5 steps of integer arithmetic:

1. \( x = 2 \)
2. \( y = x + 4 \)
3. \( z = y - (x + 1) \)
4. \( a = (x + z) * (y / 2) + z^2 \)
5. \( x = a + z \)

- At the end of these 5 arithmetic operations, put \( x, y, z, \) and \( a \) in registers \( \text{eax}, \text{ebx}, \text{ecx}, \) and \( \text{edx}, \) respectively. (This is for grading purposes).
  - You will NOT receive any points if you just hard-code the final answers...

- Your code must assemble using the nasm assembler.

- You code must load/link and execute on 32-Linux computer.

- Name your assembly source file \texttt{hw4.asm}.

- Please comment every line of assembly code. This makes debugging reasonable.
  - It’s helpful to comment the expected value after each line executes.
  - E.g., \texttt{mov eax,4 ; eax = 4}

- Please submit a Makefile to assemble / link your code with the make command.
  - Your executable should be named \texttt{hw4}.
  - Hint: adapt the Makefile in the \texttt{~/Documents/chapter7/sandbox} directory provided in the Linux virtual machine. (May be called “makefile”).

- Submit the compressed directory containing \\texttt{ONLY hw4.asm} and the Makefile to blackboard.
  - Blackboard will NOT let you upload an executable.
  - You must delete the executable before compressing and uploading.
    - Note: you can use Linux’s file folder GUI interface to delete / compress
    - Be careful not to delete your source code!! There’s no “undo” in Linux.

- Please post questions to Piazza:
  - Help with command line
  - Help with assembling / linking / executing
  - Help with make
  - Help with assembly coding
    - Multiplication and division can be tricky
    - Temporary variables are helpful
  - Help with compressing