Lab exercises for CMT304, 25 February 2018.

1. Build an emulator for a processor with the following characteristics:

   - 4 Registers: A, B, C, D

   - Memory

   - Flags:

       - Zero flag – set if last instruction resulted in zero

       - Equal flag – set by CMP operation

   - Instruction Set

       - INC/DEC <register> -- increment/decrement register by 1

       - ADD <register1>, <register2> -- add register2 to register 1 and store the result in register1

       - XOR <register1>, register2> -- perform exclusive or between registers and store result in register1

       - LOAD <register>, <memory> -- load data from memory into register

       - STOR <memory>, <register> -- store data from register in memory

       - CMP <register1>, <register2> -- compare register1 and register2

       - JMP – unconditional jump

       - JNZ – jump if not zero

       - JE – jump if equal

   - Addressing modes: Immediate, Direct, Indirect, Register Direct, Register Indirect

2. Write a program that can be executed by your processor