Mid-Term Tips

General

- C1,2,4,5 (3 is NOT coming out)
- Set by Mr.Loh, great teacher = great questions = we GG, so please **prepare like no tomorrow**
- Tips enough to pass, GitHub notes prepare you for A- and above, your own notes prepare you for A. 100 marks, pray to god.

Theory

- C1: Definition of Bit
- C2: Conventional vs BCD
- C4: 3 components of CPU, Volatile vs non-volatile memory, 3 types of buses lines, 3 types of registers. Machine cycle. CISC & RISC, Advantages.
- C5: All the debug commands functions & parameters:
    - A
    - U
    - R
    - D
    - E
    - T
    - P
    - Q
    - H
    - C

Burn this into your brain

- If question ask **LOAD** means write **FETCH + LOAD + END** contents. If **FETCH** then **FETCH** + **END** contents.

FETCH		
PC -> MAR		
MDR -> IR		
LOAD	**STORE**	**ADD/MUL/DIV/SUB**
IR[Address] -> MAR		
MDR -> A	A -> MDR	A +*/- MDR -> A
END (Applies to all)		
PC + 1		

Practical

Perform conversion from decimal to hexa.

Practice

6258_10 to hex

6258

391 – 2

24 – 7

Two's Complement

Practice

Using 8-bit system, Perform binary subtraction using two's comeplement, verify answer by showing answer in signed decimal value.

15-23

0000 1111 (15)

0001 0111 (23)

1st: 110 1000

2nd complement: 1110 1001

1110 1001 (-23)

1111 1000

-128+64+32+16+8 = -8

15-23 = -8

Valid.

(Hae multiply, plus and minus)

Excess-N Floating Point

Excess-55 floating point, 1 for negative, 9 for positive.

Multiply 2 numbers,

95234577

15557890

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52 + 55 – 55 = 52

0.34577 * 0.57890 = 0.20017 (can round up cause 5 digits ennough)

Positive * negative = negative

15220017

Sign and magnitude

-0.20017 * 10^-3

How to change decimal to binary

IEEE 752

LMC (Little man computer)

Trace instruction (Practice)

4. Show changes of contents in IR, PC, MAR, MDR, A. Execution instruction 22 nd 23

PC: 22

Value in mem loc 22: 670 (LOAD)

Val in mem loc 23 271 (MUL)

Val in mem loc 24: 470 (STORE)

Val in mem loc 70: A_16

Val in mem loc 71: 5_16

Instruction 22	Registers
PC -> MAR	MAR: 22
MDR -> IR	IR: 670
IR address -> MAR	MAR: 70
MDR -> A	A: A_{16}
PC = PC+1	PC: 23
Instruction 23	Registers
PC -> MAR	PC: 23
MDR -> IR	IR: 271
IR[address] -> MAR	MAR: 71
A * MDR -> A	A: 32H
PC = PC + 1	PC = 24

CISC, RISC, Bus

Debug:

Practice

5. Issue DEBUG command for these instruction

a. Execute 10 instructions at once

-t 10

P=10, 0200 (cannot use P becaues need offset)

b. Display content of memory at CS starting from offset 0100H

-d CS:0100

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