



PROBLEM SESSION 2: Instructions Sequencing.

Problem 1

Instruction Set

Instruction	Description
LOAD R, [A]	Load value from memory address A into register R
STORE R, [A]	Store value in register R into memory address A
ADD R1, R2, R3	$R1 = R2 + R3$
SUB R1, R2, R3	$R1 = R2 - R3$
MOV R1, R2	Copy R2 into R1

Assume:

- All instructions take 1 cycle unless stated otherwise
- Registers are initially set to 0 unless specified.

Given the following initial value: $R1 = 5$, $R2 = 10$, $R3 = 0$, and $MEM[100] = 20$ with the following instruction Sequence.

1. LOAD R3, [100]
2. ADD R1, R3, R2
3. SUB R2, R1, R3
4. STORE R2, [104]

Fill in the value of each register and memory location.

Ri/LOC	R1	R2	R3	[100]	[104]
Initial	5	10	0	20	x
Inst 1.					
Inst 2.					
Inst 3.					
Inst 4.					

Problem 2

1. Write a program to calculate the 44th Fibonacci number without using any special library in C language
2. Convert your C code into ARM assembly.
3. Create a report that contains the following:
 - Brief explanation of how your code calculate 44th Fibonacci number.
 - maps the C instruction to the assembly instruction.
 - Include the **command(s)/steps used** to convert C into ARM assembly.

Submission

Submit the C, assembly source code, and Report containing answers to both problems into LEB2.

Hint: Check out this website: <https://godbolt.org/>. It may help you understand more about assembly language.

This is the problem session for the group of 2-3 students.