LAB 3
MIPS Instruction

OBJECTIVE: To get acquainted with basic MIPS instructions.

Using the MARS simulator, write and execute the MIPS assembly code that will perform the C statements. Find the value of the C variable on the LHS of indicated C instruction in **BOLD**. Use comment hash #### to identify and separate the problems. Identify C variables as A($s0), B($s1), C($s2), D($S3), E($s4), F($s5), G($s6) and H($s7). The register $t0 can be used for temporary storage.

1. A=5; B=12; **C = A + B**
2. A=-15; B=-26; **D = A - B**
3. A=10; B=30; C=60; D=-75; E=-100; **F = (A + B - C) – (D-E)**
4. F = F – A + B (use the previous values for RHS A, B and F)
5. A=0x89AB; B=0x98B3; **G = B – A**
6. B=0x0D; **H = B + B + B + B**
7. A=25; **A = A – 0x1C**
8. B=20; E=50; F=35; G=120; **D = (G – E) + 100 – (F – B - 45)**
9. D=456; F=123; G=0x44; A **= F + (D – G)**
10. Run this C code segment by using the branch instruction **bne** and find F.
    A=3; B=50; F=0; ***for (H=0; H! = B; H++)*** **F = F + A.**

Complete the given table with calculated values from MARS simulator and include it in the lab report. Note: RHS=right hand side; LHS=left hand side.

#	LHS C Variable	MIPS Target Register	Resulting Decimal Value Found in Target Register	Resulting 8-digit Hex Value in Target Register
1	C	$s2, 18	17	0x00000011
2	D	$s3, 18	11	0x0000000B
3	F	$s5, 21	-45	0xFFFFFFD3
4	F	$s5, 21	-25	0xFFFFFFE7
5	G	$s6, 22	74334	0x0001225E
6	H	$s7, 23	52	0x00000034
7	A	$s0, 16	-18	0xFFFFFFEE
8	D	$s3, 18	200	0x000000CB
9	A	$s0, 16	511	0x000001FF
10	F	$s5, 21	150	0x00000096

DELIVERABLES:

A folder containing

1) A copy of the MARS MIPS code for these exercises
2) A Lab Report, explaining your work and include the code in the appendix of the report
    - The filename should be in this format
        Lab3_<student_id>_<lastname>

Notes:

- Comments for the code are required
- Keep these lab files as they will be needed for future labs!

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