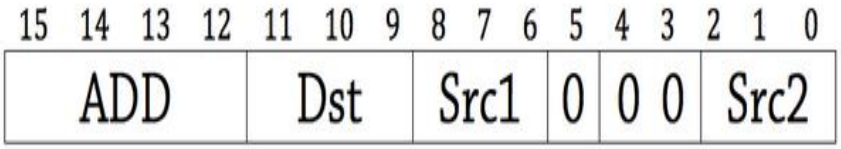
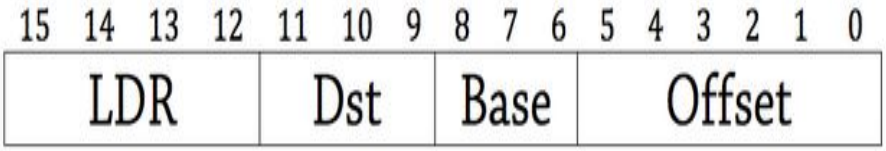
HOMEWORK 1. LC-3 INSTRUCTIONS (1/1 point)

An LC-3 ADD instruction has an Opcode of 0001 and the following format:



An LC-3 LDR instruction has an Opcode of 0110 and the following format:



The values in decimal of the LC-3 register file are as follows:

R0: 0
R1: 10
R2: 22
R3: 2
R4: 3
R5: 17
R6: 1
R7: 14

The first four locations in memory have the following values:

0: 16
1: 10
2: 5
3: 7

The following three instructions are executed one after the other:

0110110011000000
0110111011000001
0001111111000110

Which of the following describes the resulting changes in the register file?

- R3 will change to 10 and R7 will change to 24.
- R3 will change to 10 and R6 will change to 24.
- R6 will change to 5 and R7 will change to 7.
- R6 will change to 5 and R7 will change to 12. ✔

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EXPLANATION

The first LDR instruction adds the offset of 0 to the contents of R3 (2) to form the memory address of 2. The value at memory location 2 (5) is loaded into R6. The second LDR instruction adds the offset of 1 to the contents of R3 (2) to form the memory address of 3. The value at memory location 3 (7) is loaded into R7. The last ADD instruction performs R7 = R7 + R6, which changes the value of R7 to 12.

Final Check | **Save** | **Hide Answer** *You have used 1 of 2 submissions*

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HOMEWORK 2. LC-3 INSTRUCTIONS (1/1 point)

An LC-3 STR instruction stores a value from a register into a memory location. As with LDR, it forms the memory address by adding the offset to the base register, but instead of loading (reading) data from memory as with LDR, data is read from the register file and stored (written) into memory.

Which of the following statements properly describes the operation of the STR instruction during the phases of instruction processing?

- No action is performed during Evaluation Address.
- Data is read from the register file during Fetch Operands. ✔
- No action is performed during Store Result.

EXPLANATION

As with LDR, during Evaluate Address, the offset is added to the base register to form the memory address for STR. For STR during Fetch Operands, data is read from the register file. For STR during Store Result, the data that was read from the register file is stored into memory.

Final Check | **Save** | **Hide Answer** *You have used 1 of 2 submissions*

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