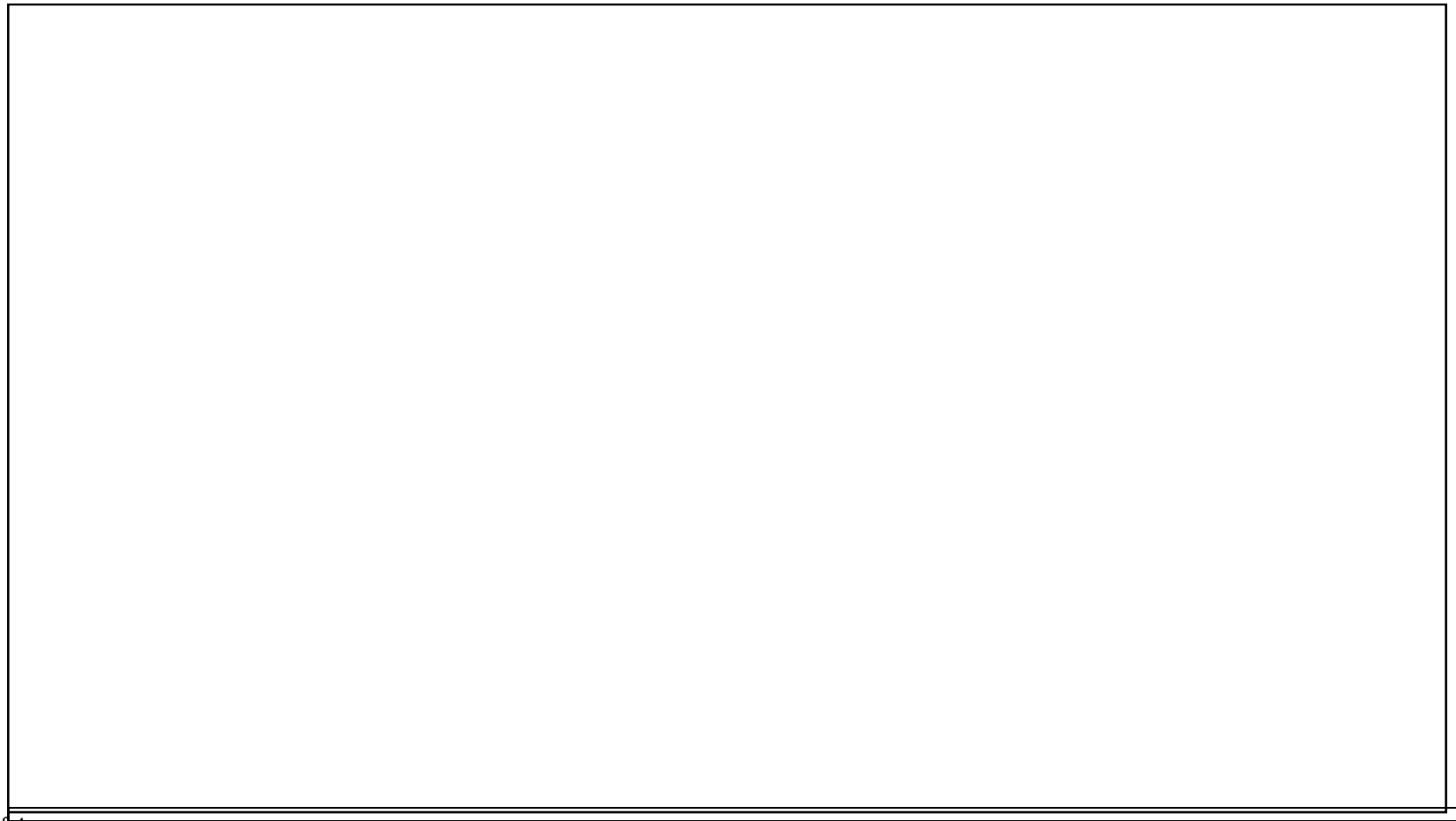
BR INSTRUCTION



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1. CHECK YOUR UNDERSTANDING (1 point possible)

Which of the following is an **incorrect** statement regarding the execution of the LC-3 BR instruction?

- If BEN = 1, the instruction takes more time to execute than if BEN = 0.
- If BEN = 0, the PC is incremented and loaded into the PC register. ✔
- If BEN = 1, the PC is added to the sign-extended offset and then loaded into the PC register. ✖
- The ALU is not used for this instruction.

EXPLANATION

If BEN = 0 in the first state after Instruction Decode, the FSM returns to the first state of Instruction Fetch. If BEN = 1, the

FSM passes to the second state for one cycle before returning to the first state of Instruction Fetch.

The PC has already been incremented during Instruction Fetch and therefore should not be updated again when BEN = 0.

When BEN = 1, the target address is formed by adding the sign-extended immediate value to the PC, and then loaded into the PC register.

The ALU is only used for operate instructions (ADD, AND, and NOT).

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