

Term Test #02

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Ans. to the question no: 1

(a) A single cycle implementation is not used today. Because the length of the clock will always be determined by the slowest operation (lw, sw) even if the data memory is not used.

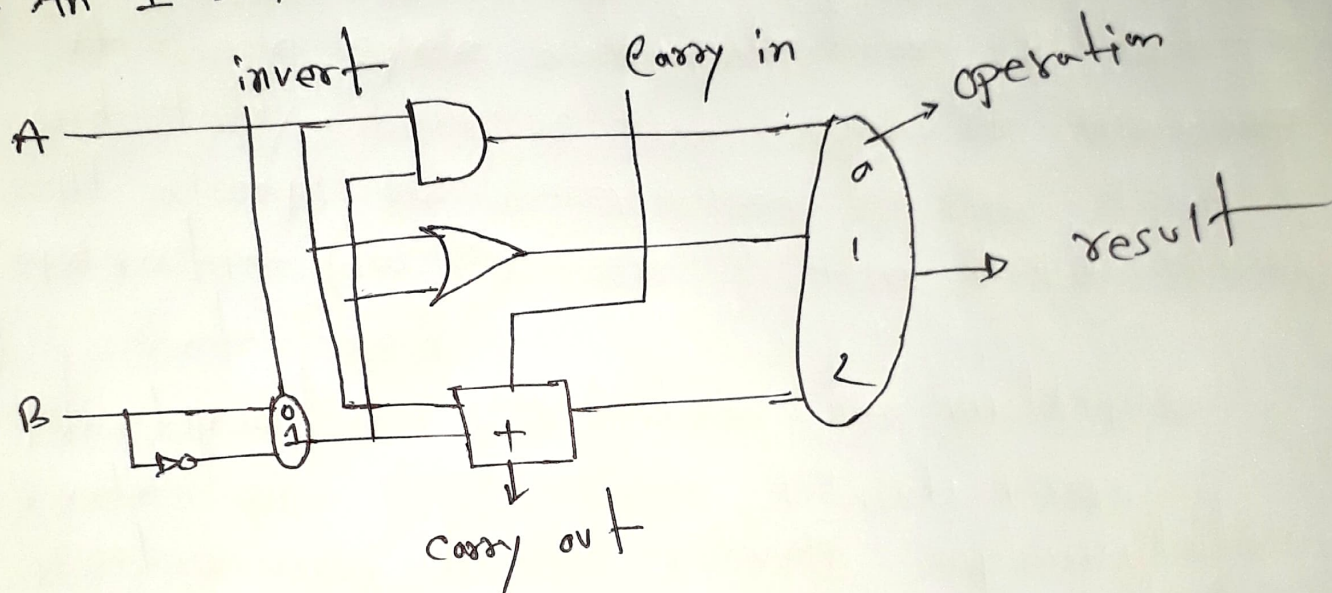
Practical implementation use multiple cycles per instruction, which fixes shortcoming of the 1-cycle implementation. On the other hand, the performance of the single cycle implementation is slow which is not good. For these reason, the single cycle implementation is not used today.

Advantages of pipeline datapath:

- Instruction throughput increases
- Faster ALU can be designed when pipelining is used.
- Pipelining increases the overall performance of the CPU.

Q An Arithmetic Logic Unit (ALU) is a digital circuit used to perform arithmetic and logical operations.

An 1-bit ALU is given below;



Ans. to the question no: 3

A single cycle datapath is Design below:-

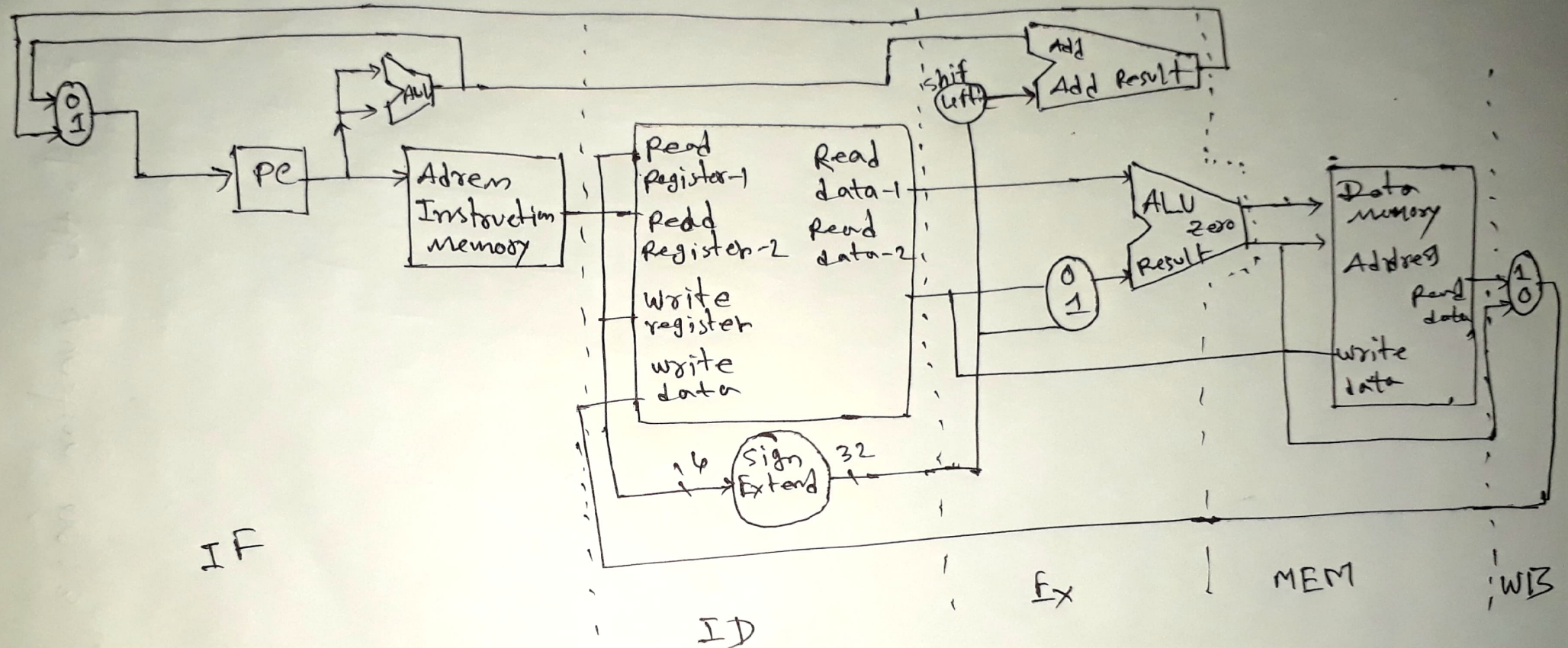


Fig: A single cycle datapath.