edX   **CornellX:** ENGRI1210x The Computing Technology Inside Your Smartphone   🏠 **KarenWest** ▾

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In this module we learn how a processor splits its work into many smaller steps (called pipelining). This is analogous to a manufacturing plant that breaks work down into smaller steps on an assembly line. Just as in manufacturing, by breaking work down into smaller tasks we can get a higher rate of completion (higher throughput). We will split our instruction execution into a 5-stage pipeline.

By the end of this module you will be able to:

- Describe the 5 phases of instruction processing for pipelining: instruction fetch, decode, execute, memory access, and writeback.

- Describe which instruction execution operations are performed in each phase.

- Describe how a pipeline improves throughput in a processor.

- Describe the changes needed in the LC-3 to support pipelining.

- Explain the flow of instructions through a 5-stage pipeline.

INTRODUCING PIPELINING

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