7 BASIC DIAGRAMS
Basic Diagrams

1. Block diagram
   - Just like it says; diagram of blocks (and inter-connections)

2. Circuit diagram
   - Although it may not require details to the transistor level or gate level (e.g., NAND or NOR), it should have more circuit-type detail if applicable
   - Having said that, in some cases it may be the same as a block diagram
3. Timing diagram

- Logic level (voltage) versus time
- As a rule, the clock is at the top. Draw a small arrow on each active edge. Draw a light vertical line aligned with each active clock edge.
- Several common waveform features:
  - Simple single-bit signal 0/1 values
  - Multi-bit bus
  - Transition location or region where a signal, or signal(s) within a bus, changes value
3. Timing Diagram continued

- Draw transitions of signals that come from a register a very short time after the active edge of the clock, not at the same time as the clock edge—this is for increased clarity however it also explicitly shows the "clock-to-Q delay"

- Timing diagrams may also show higher-level events such as state and counter values
4. State Diagram

5. Arithmetic Dot Diagrams
6. Pipelined Block Diagram
   - All registers are aligned with others in the same pipeline stage
   - “Reverse-flowing” signals are generally not pipelined
   - It is often advisable to include a pipeline-stage notation in each signal’s name

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7. Pipeline Diagram
   – Useful for designing deeply-pipelined digital processors

constant HW pipeline stages