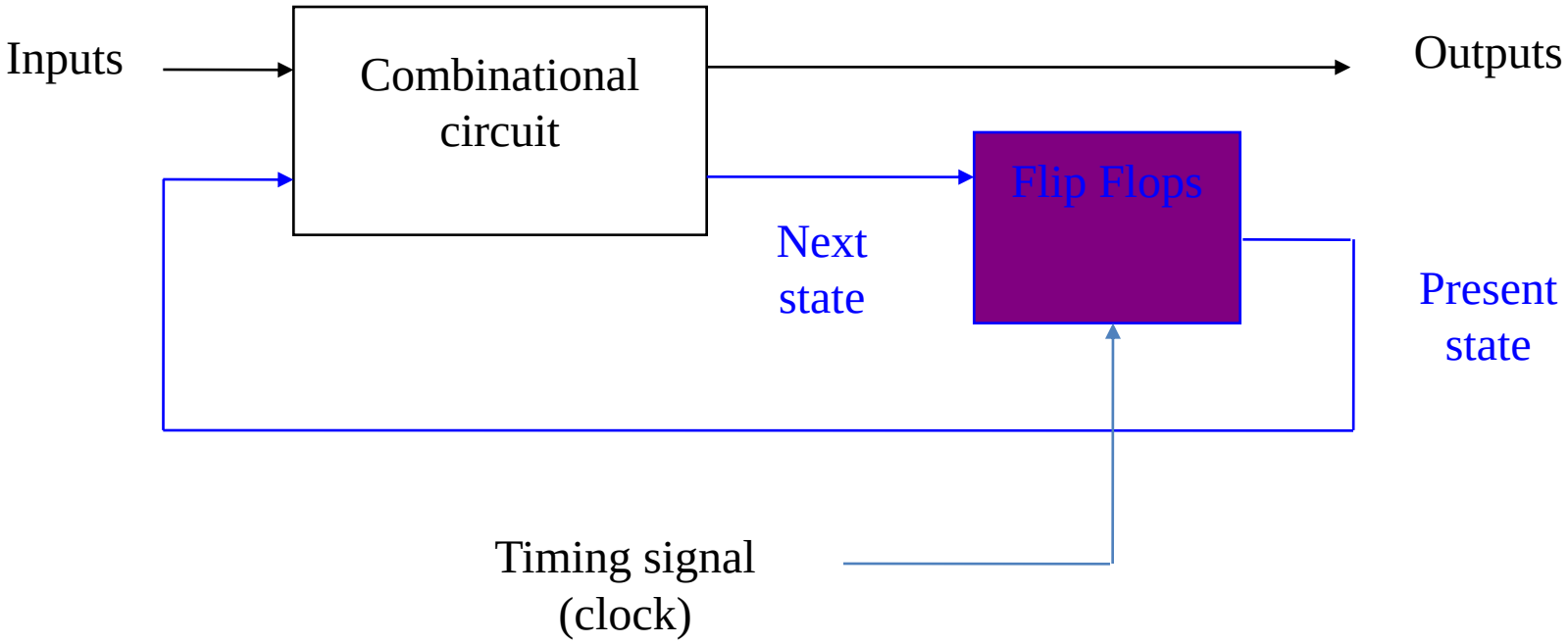
Sequential Circuits



Clock
a periodic external event (input)

Clock

synchronizes when current state changes happen
keeps system well-behaved
makes it easier to design and build large systems

Overview

- Circuits require memory to store intermediate data
- Sequential circuits use a periodic signal to determine when to store values.
  - A clock signal can determine storage times
  - Clock signals are periodic
- Single bit storage element is a flip flop
- A basic type of flip flop is a latch
- Latches are made from logic gates
  - NAND, NOR, AND, OR, Inverter

The story so far ...

- Logical operations which respond to combinations of inputs to produce an output.
  - Call these combinational logic circuits.
- For example, can add two numbers. But:
  - No way of adding two numbers, then adding a third (a sequential operation);
  - No way of remembering or storing information after inputs have been removed.
- To handle this, we need sequential logic capable of storing intermediate (and final) results.