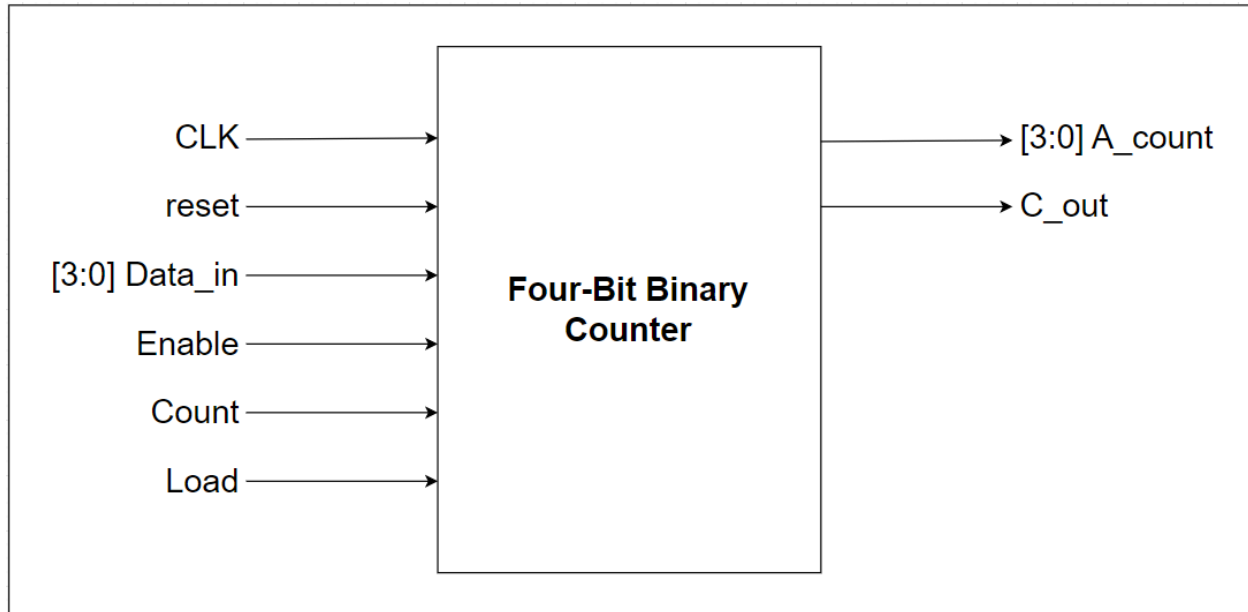# 4-Bit Binary Counter Specifications

Top Module:

The Top Module of a Four-bit binary counter is given above.

Functionalities:

1. Synchronous reset

2. Load data into the register

3. Up-counting operation

4. Down-counting operation

Signal List:

Signals	Bit Width	Description
CLK	1	Input Clock Frequency 50~100MHz
reset	1	Input signal. Active Low synchronous reset signal which resets circuit when reset = 0
Enable	1	Input control signal. Enable = 0, then the circuit keeps its current state Enable = 1, then load, up-counting, and down-counting operations will work
Load	1	Input control signal. Load = 0, then the circuit keeps its current state Load = 1, then load Data_in data into the circuit
Data_in	4	An input data signal
Count	1	Input control signal. Count = 0, down-counts the current data, -1 Count = 1, up-counts the current data, +1
A_count	4	An output data signal
C_out	1	An output data signal. It's an output carry.