



Materi Pembelajaran

Matakuliah :

**DESAIN DAN SIMULASI RANGKAIAN  
ELEKTRONIKA**

Kode Matakuliah : SKO 21425

**Prodi : SISTEM KOMPUTER**

Dosen Pengampu Matakuliah:

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# Tables of Content

Flip Flop

D Flip Flop

D Flip Flop Circuit

Truth Table D Flip Flop

The Master-Slave D Flip Flop

D Flip Flop ICs

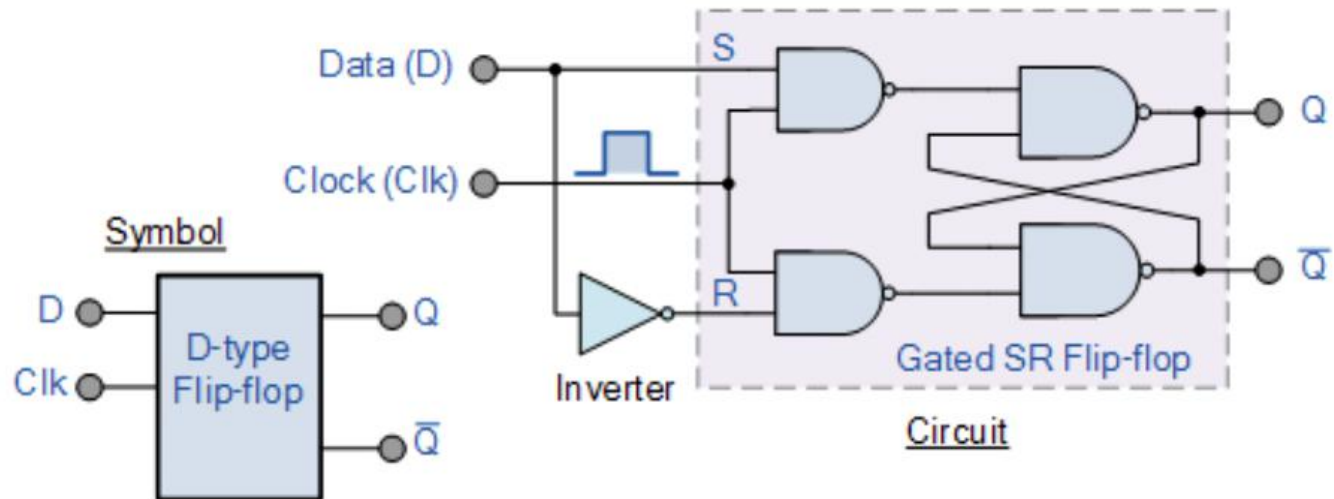
Tugas Mandiri

# D Flip Flop

The D Flip Flop is by far the most important of all the clocked flip-flops. By adding an inverter (NOT gate) between the Set and Reset inputs, the S and R inputs become complements of each other ensuring that the two inputs S and R are never equal (0 or 1) to each other at the same time allowing us to control the toggle action of the flip-flop using one single D (Data) input.

# D Flip Flop Circuit

## D-type Flip-Flop Circuit



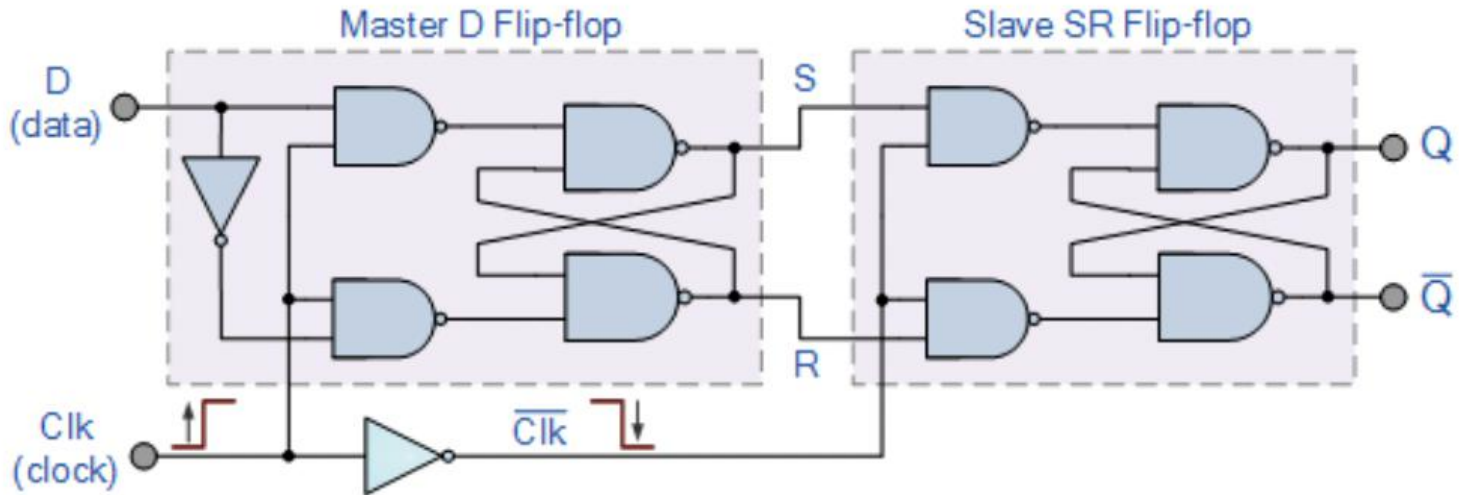
# Truth Table D Flip Flop

## Truth Table for the D-type Flip Flop

Clk	D	Q	$\bar{Q}$	Description
$\downarrow \gg 0$	X	Q	$\bar{Q}$	Memory no change
$\uparrow \gg 1$	0	0	1	Reset Q $\gg$ 0
$\uparrow \gg 1$	1	1	0	Set Q $\gg$ 1

# The Master-Slave D Flip Flop

## The Master-Slave D Flip Flop Circuit



# D Flip Flop ICs

## Other Popular D-type flip-flop ICs

Device Number	Subfamily	Device Description
74LS74	LS TTL	Dual D-type Flip Flops with Preset and Clear
74LS175	LS TTL	Quad D-type Flip Flops with Clear
74LS273	LS TTL	Octal D-type Flip Flops with Clear
4013B	Standard CMOS	Dual type D Flip Flop
40174B	Standard CMOS	Hex D-type Flip Flop with Master Reset

Tugas Mandiri (teori):

Lakukan pembuatan skema rangkaian D Flip Flop dengan LED menggunakan software simulator

Tugas Mandiri (prakt):

Lakukan Simulasi D Flip Flop menggunakan software simulator dan jelaskan hasil simulasinya.

**end**

