TF 2203 Sistem Logika Digital – Semester II 2014/2015
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Draft Catatan Cepat

0. Pengetahuan Umum Elektronika Digital

1 Pustaka dan Rujukan

1.1 Pustaka utama yang digunakan untuk kuliah Sistem Logika Digital:

Nelson, V.P. et al., "Digital Logic Circuit Analysis & Design", Prentice Hall, 1995

1.2 Situs internet untuk Digital Electronics:

http://www.electronics-tutorials.ws/binary/bin_1.html
http://www.electronics-tutorials.ws/binary/bin_1.html
https://learn.sparkfun.com/tutorials/serial-communication

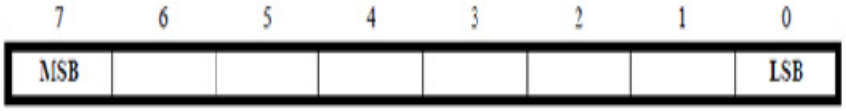
Kbyte, MB, GB, TB

1.3 Clock, Frekuensi, Hz, MHz, GHz.
Perioda, detik (s), ms, micro-s, ns.

1.4 Sinyal clock menaik, dan sinyal menurun

2 Peristilahan Umum pada Elektronika Digital

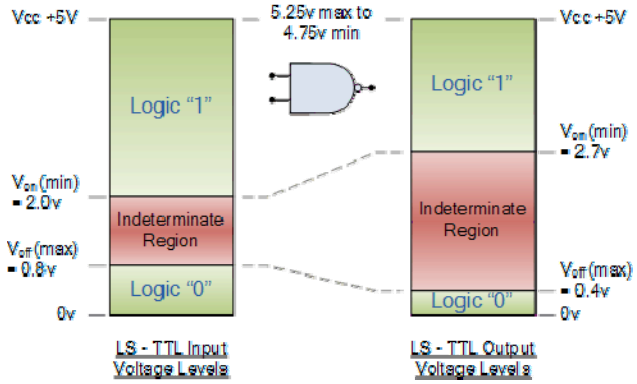
2.1 Biner, Logika Biner, Bit, Byte, MSB, LSB
Tabel Kebenaran dan Timing Diagram (gambarkan clock-nya)
Byte = 8 bit, MSB - LSB : b7 b6 ….. b0.



(Rapikan penulisan subscript A0, A1, … D0, D1, ……)

Istilah Port digunakan untuk sekelompok pin yang memiliki kesamaan fungsi tertentu, contoh: I/O Port, Serial Port, ...

2.2 Logik "0", Logik "1". Level Sinyal TTL pada komputer dan mikrokontroller (dikutip dari http://www.electronics-tutorials.ws/logic/logic_1.html)



2.3 TTL dan IC (Integrated Circuit, chip)

Standard commercially available digital logic gates are available in two basic families or forms, TTL which stands for *Transistor-Transistor Logic* such as the 7400 series, and CMOS which stands for *Complementary Metal-Oxide-Silicon* which is the 4000 series of chips. This notation of TTL or CMOS refers to the logic technology used to manufacture the integrated circuit, (IC) or a "chip" as it is more commonly called.

2.4 Klasifikasi IC

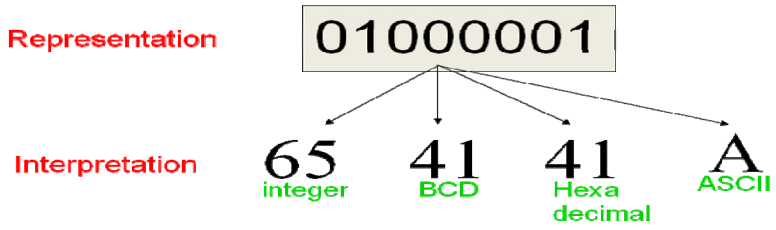
- Small Scale Integration or (SSI) – Contain up to 10 transistors or a few gates within a single package such as AND, OR, NOT gates.
- Medium Scale Integration or (MSI) – between 10 and 100 transistors or tens of gates within a single package and perform digital operations such as adders, decoders, counters, flip-flops and multiplexers.
- Large Scale Integration or (LSI) – between 100 and 1,000 transistors or hundreds of gates and perform specific digital operations such as I/O chips, memory, arithmetic and logic units.
- Very-Large Scale Integration or (VLSI) – between 1,000 and 10,000 transistors or thousands of gates and perform computational operations such as processors, large memory arrays and programmable logic devices.
- Super-Large Scale Integration or (SLSI) – between 10,000 and 100,000 transistors within a single package and perform computational operations such as microprocessor chips, micro-controllers, basic PICs and calculators.
- Ultra-Large Scale Integration or (ULSI) – more than 1 million transistors – the big boys that are used in computers CPUs, GPUs, video processors, micro-controllers, FPGAs and complex PICs.

2.5 Pengetahuan Umum.

Cari tahu klasifikasi dari chip berikut: Buffer, Decoder, Memory, CPU lama (konvensional), Mikrokontroller, CPU core i-5, i-7.

3 Penyajian dan Transmisi Data Digital

3.1 Penyajian/Interpretasi data digital

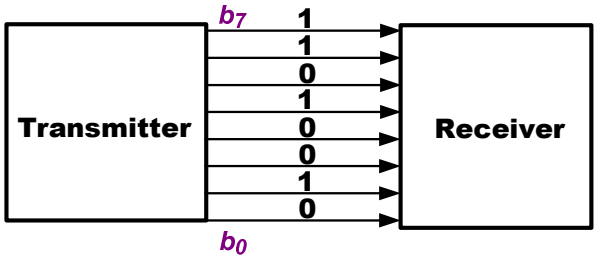


3.2 Kode desimal, biner, heksa desimal, integer.

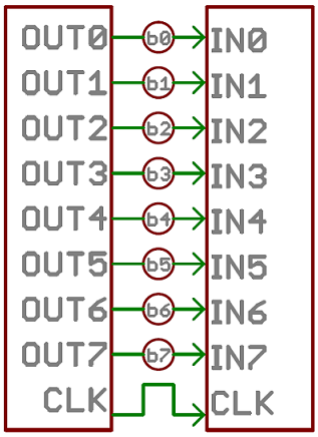
3.3 Data paralel dan data serial.

Data paralel untuk huruf K (0x4B atau 0b01001101)

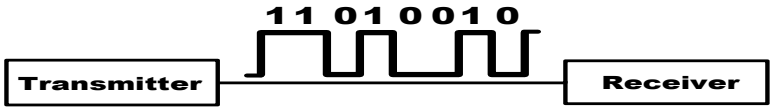
(Perbaiki!!! Pada gambar seharusnya b0 di paling atas, dan b7 di palaing bawah).

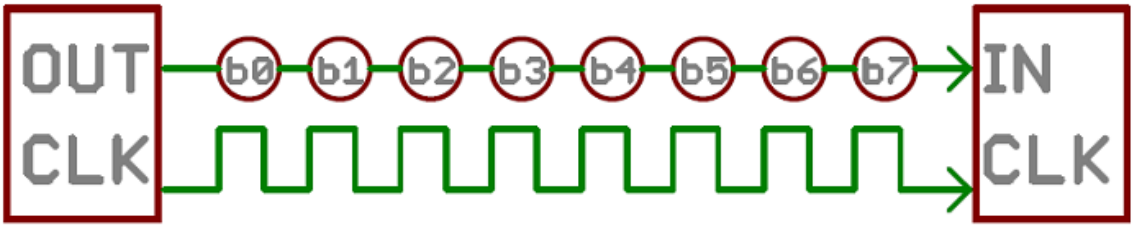


https://learn.sparkfun.com/tutorials/serial-communication



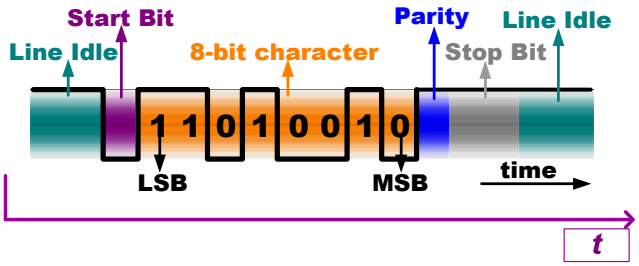
Data serial untuk huruf K (0x4B atau 0b01001101)





(Perbaiki!!! Pada gambar urutan bit serial masih keliru/terbalik. Kalau dalam kurva waktu, maka MSB ditempatkan setelah START bit).

(berikan sinyal clock, sesuaikan dengan perioda setiap bit data).



logic
0
1
z