

Digital Electronic

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2nd semester

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- 1 Digital Electronic Basics
 - Considering a real problem
 - Second subsection



Digital Electronics Basics

Considering a real problem

Problem

A tank is filled by 2 pipes : V_1 and V_2 . We consider 3 levels

- ▶ Warning (W)
- ▶ Bottom (B)
- ▶ top (T)

When level is behind W, V_1 et V_2 are opened.

When level is between W and B, only V_1 is opened.

When level is between B and T, only V_2 is opened.

When level is upper T, we close the pipe.



Digital Electronics Basics

Considering a real problem

How to do?

- ▶ Make a drawing



Digital Electronics Basics

Considering a real problem

How to do?

- ▶ Make a drawing
- ▶ Make the truth table



Digital Electronics Basics

Considering a real problem

How to do?

- ▶ Make a drawing
- ▶ Make the truth table
- ▶ Reduce complexity by using Karnaugh table and rules



Digital Electronics Basics

Considering a real problem

Implementation using Electronic component

- ▶ Which Family? CMOS or TTL technology?



Figure: TTL 7406



Digital Electronics Basics

Techno - information

TTL

- ▶ Input voltage 5V $\pm 5\%$
- ▶ 0 : 0.4V–0.8V
- ▶ 1 : 2.4V–2.8V
- ▶ TP : 10ns for "N" series
and 1.5ns for "AS"

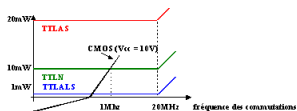
CMOS

- ▶ Input voltage 3 to 18v
- ▶ 0 : 0.05V_{cc}–0.45V_{cc}
- ▶ 1 : 0.55V_{cc}–0.95V_{cc}
- ▶ TP : depending of V_{cc}



Digital Electronics Basics

Techno - information





Digital Electronics Basics

Considering a real problem

Implementation using Electronic component

- ▶ Which Family? CMOS or TTL technology?
- ▶ Find components you need and corresponding datasheet



Figure: TTL 7406



Digital Electronics Basics

Considering a real problem

Implementation using Electronic component

- ▶ Which Family? CMOS or TTL technology?
- ▶ Find components you need and corresponding datasheet
- ▶ Make the wiring of the circuit



Figure: TTL 7406



A Kick-Ass Title

A Kick-Ass Title Subtitle

Block environment

✗ Cross item

✓ Tick item

$$f(x) = ax + b . \quad (1)$$