

Indian Institute of Information Technology - Vadodara

EL - 101

Digital Logic Design

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Lecture # 1
Autumn 2014

Our Aim

Learning & Advancing

EL – 101 Digital Logic Design (DLD)

- Type: Core course
- Credits: 3 - 0 - 4 - 5
- Lecture timings: Mondays and Tuesdays
(11.00 am to 12.30 pm)
- Lab timings: Mondays and Tuesdays
(02.00 pm onwards)
- Evaluation:
 - i) Mid-sem & Final exams; a surprise test !
 - ii) Labs: continuous & final practical test
 - iii) Attendance & disciplinary records

EL – 101 Digital Logic Design (DLD)

- Reference books:

1. Digital Fundamentals, *Floyd T L*, Prentice Hall, 2009.
2. Digital Design-Principles and Practices, *J F Wakerly*, Prentice Hall, 2006.
3. Digital Design, *Morris Mano*, Prentice Hall, 2002
4. Digital Systems: Principles and Applications, *Ronald J. Tocci, Neal S. Widmer, Gregory L. Moss*, Pearson Education Limited, 2011.
5. Fundamentals of Digital Logic with Verilog Design, *S. Brown and Z. Vrsanec*, McGraw Hill, 2007

Direction -->>

is more important than

... speed ...

Major sections in BTech CSE/IT

DLD is cross-sectional



Logic

Mathematics

Algorithms & Software

Programming

Hardware & Networking

Systems & Organization

Aspects of Electronics

Current topics in CSE/IT

Let's understand this..

Digital Logic Design



Finite

Comprises of finite
set of elements



Rules

A set of rules
governed by
some algebra



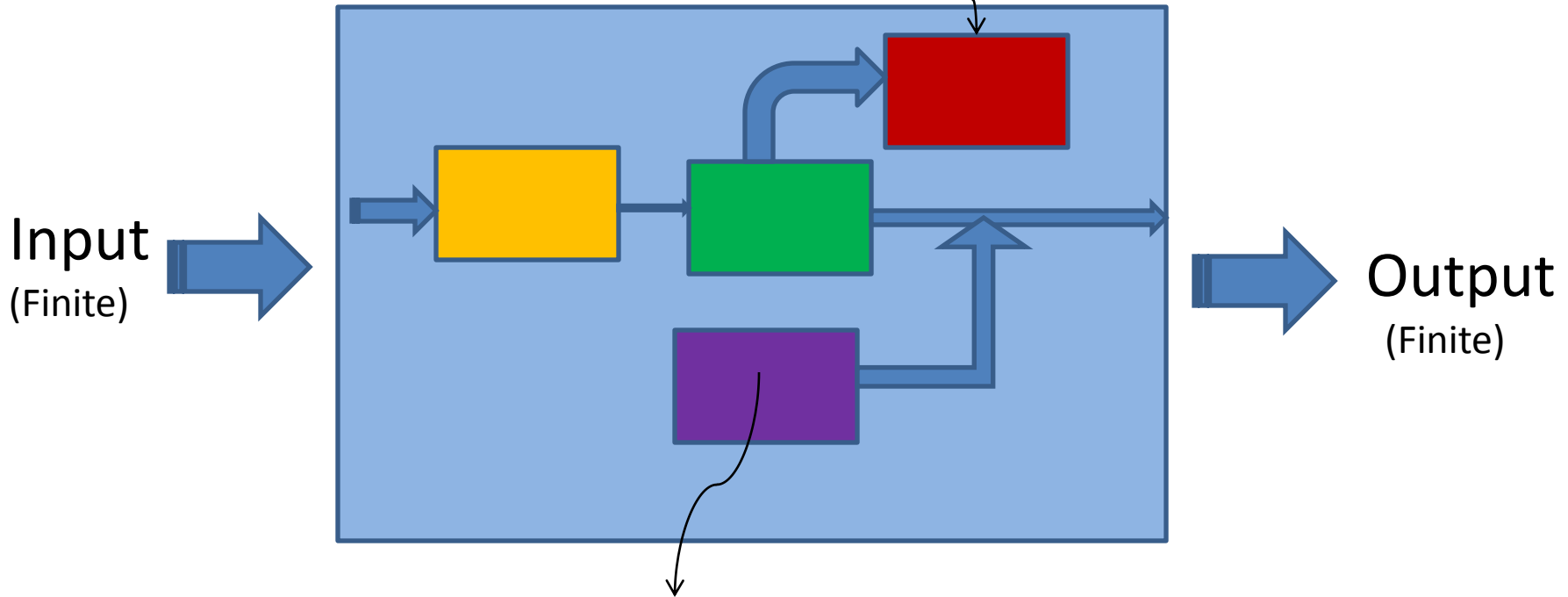
Create

For betterment of
humanity

An example: Written text, say English language.

What is a Digital System ?

An interconnection of “digital modules”



“Logic circuits” or “Digital circuits”

- Builds using **Logic gates**
- Based on **Boolean Algebra**

Examples of Digital Systems

- Cell phones
- MPEG Players
- Digital cameras
- Data servers
- GPS displays

& the most general purpose device is ...

- Computer

Why Digital ?

- Real world is analog !
(resolution of a real line ?)
- Sampling & Analog-to-Digital converters (ADC)
- Filtering & Digital-to-Analog converters (DAC)
- Major advantages by digital systems:
 - > Reusability (programmable devices)
 - > Cost effective
 - > More speed
 - > Increased reliability
 - > Controllable

Course objectives

1. How *hardware* works ?
2. How *hardware* is designed ?

A simple digital system: Binary (2-state) logic

- 0 - Low and 1- High
- Example:
Transistor as a Switch.