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INTRODUCTION

EGCO231 Digital Circuit Design

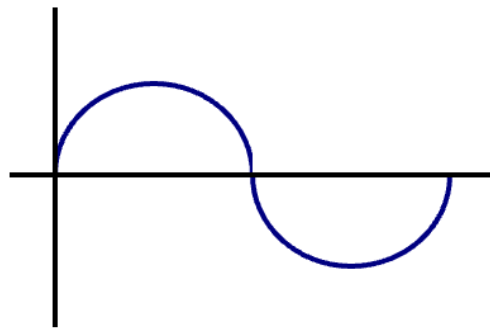


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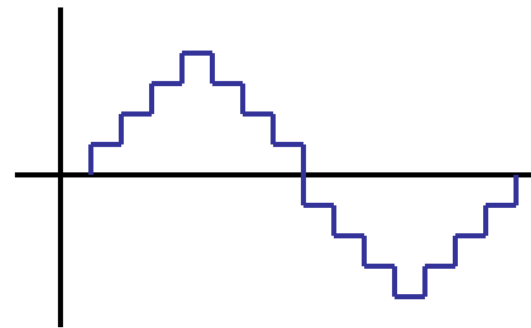
Digital and Analog Systems

Analog = Continuous

Digital = Discrete (Step by Step)



Analog



Digital



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Advantages of Digital Techniques

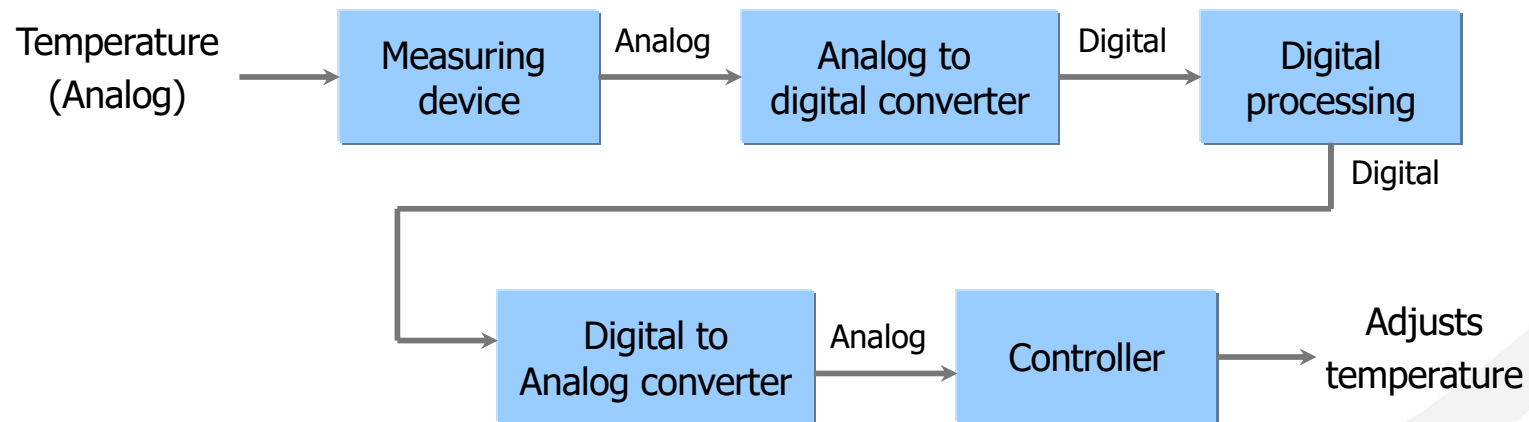
- Digital systems are generally easier to design.
- Information storage is easy.
- Accuracy and precision are greater.
- Operation can be programmed.
- Digital circuits are less affected by noise.
- More digital circuitry can be fabricated on IC chips.



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Limitations of Digital Techniques

The real world is mainly analog.



*See on ADC/DAC after midterm.



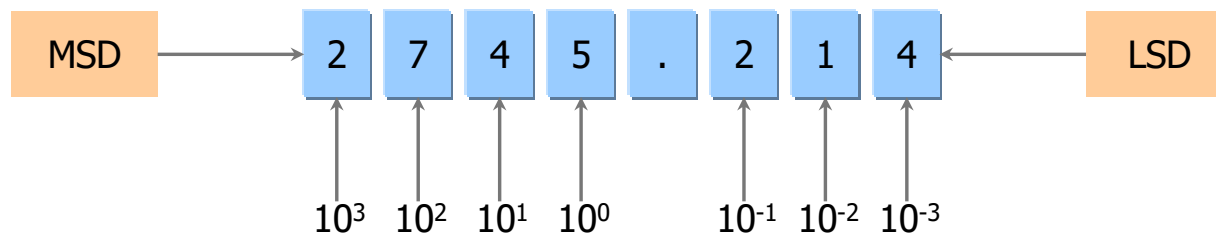
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Digital Number Systems (1)

- Decimal Systems

Symbols : 0,1,2,3,4,5,6,7,8,9

Example : 2745.214



MSD = Most Significant Digit
LSD = Least Significant Digit

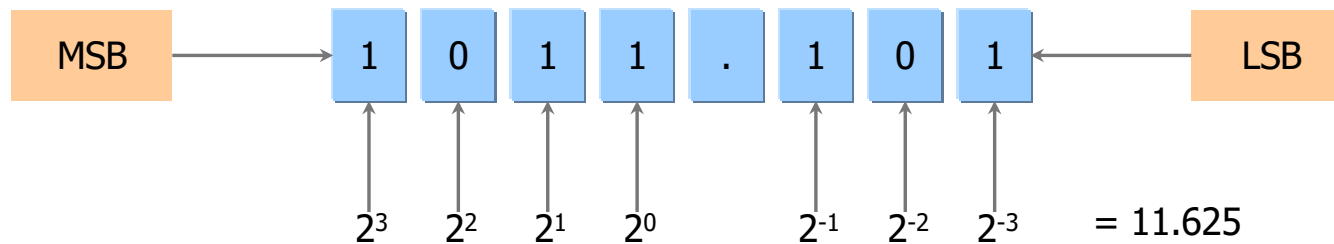


Digital Number Systems (2)

- Binary Systems

Symbols : 0,1

Example : 1011.101



MSB = Most Significant Bit
LSB = Least Significant Bit



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Text via Binary Numbers

A	1	0 0 0 0 1
B	2	0 0 0 1 0
C	3	0 0 0 1 1
D	4	0 0 1 0 0
E	5	0 0 1 0 1
F	6	0 0 1 1 0
G	7	0 0 1 1 1

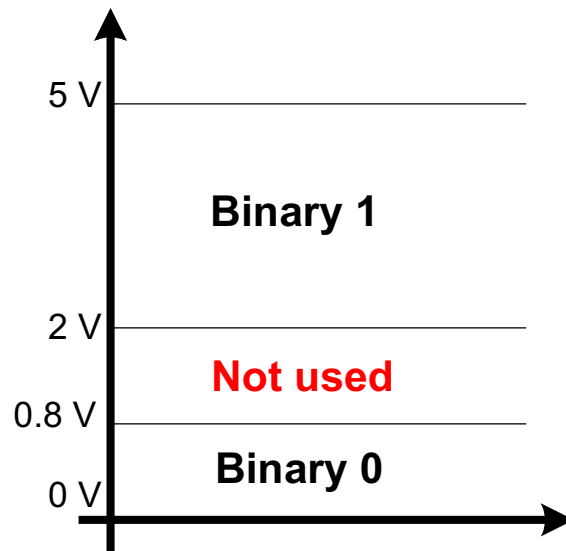
D	O	G
4	15	7
00100	01111	00111

*See on Number Systems and Codes.

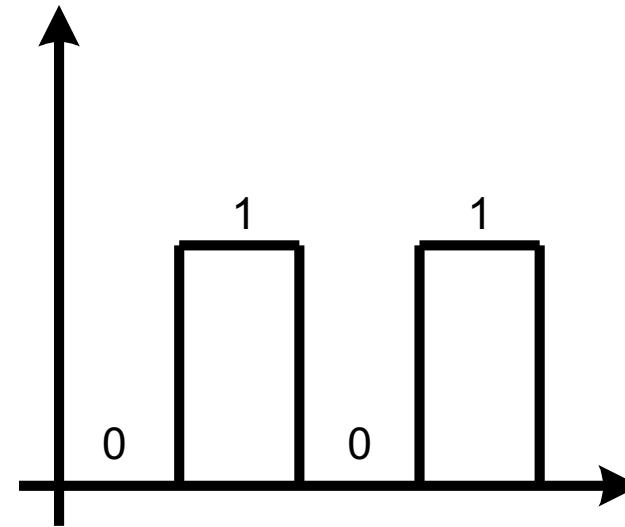


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Digital Signals and Timing Diagrams



(a)

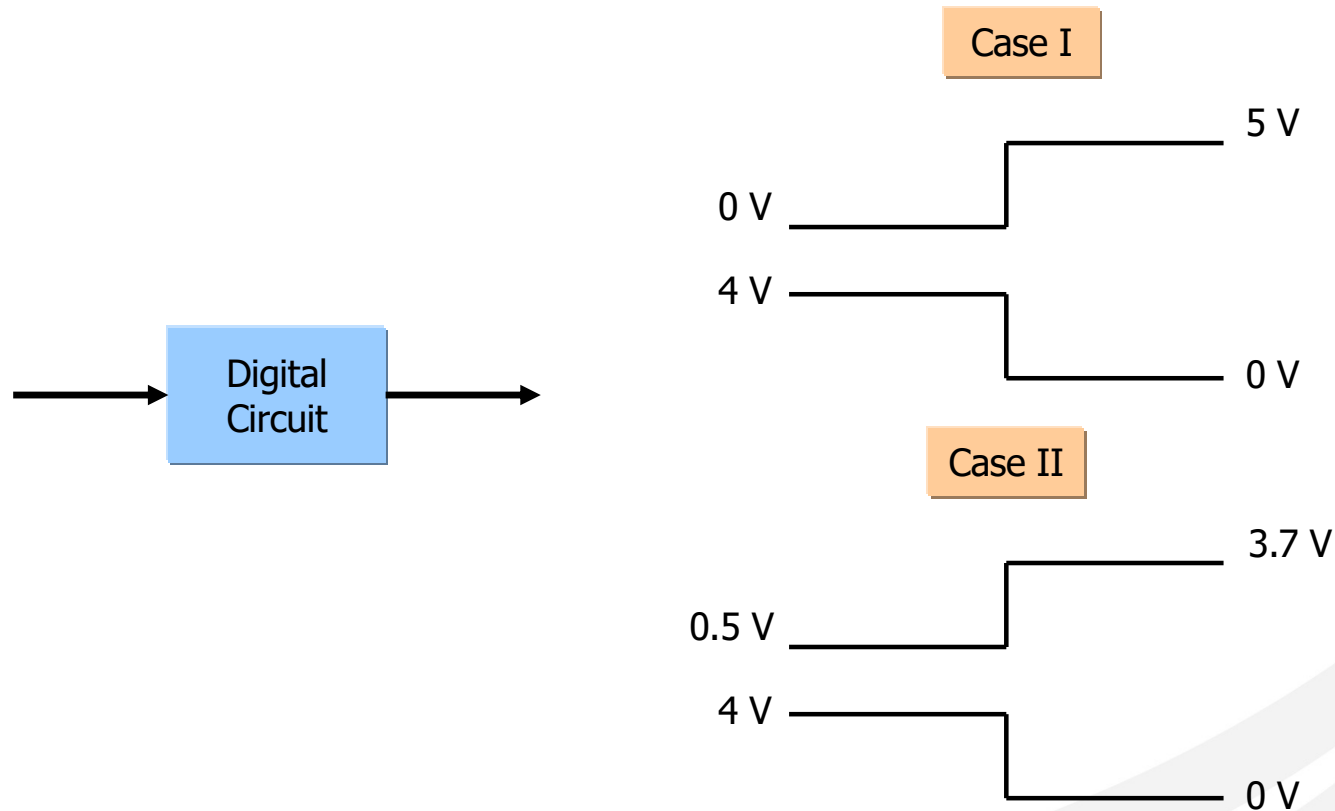


(b)



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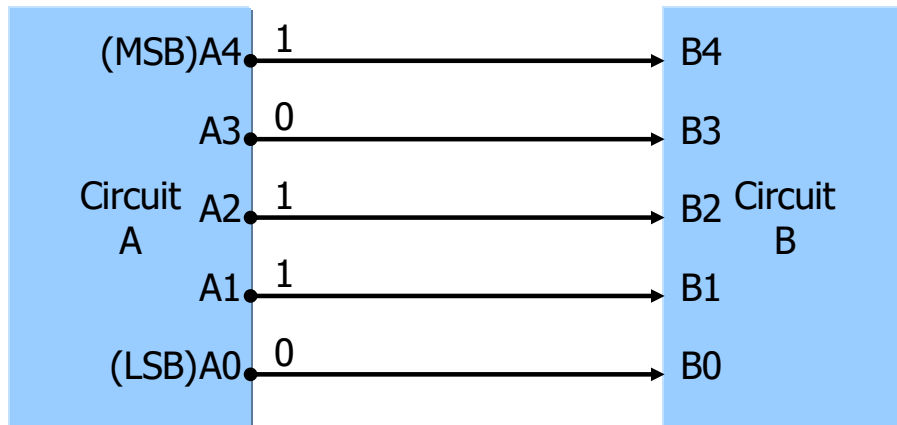
Digital Circuits / Logic Circuits



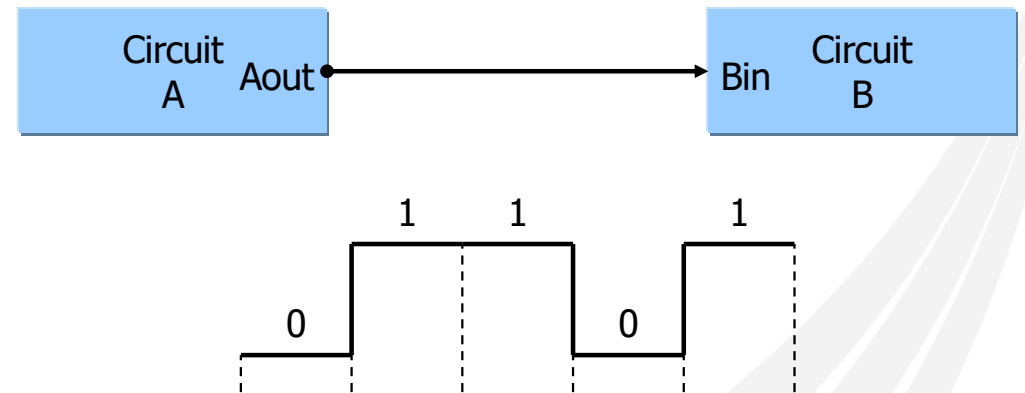


Parallel and Serial Transmission

Parallel Transmission



Serial Transmission

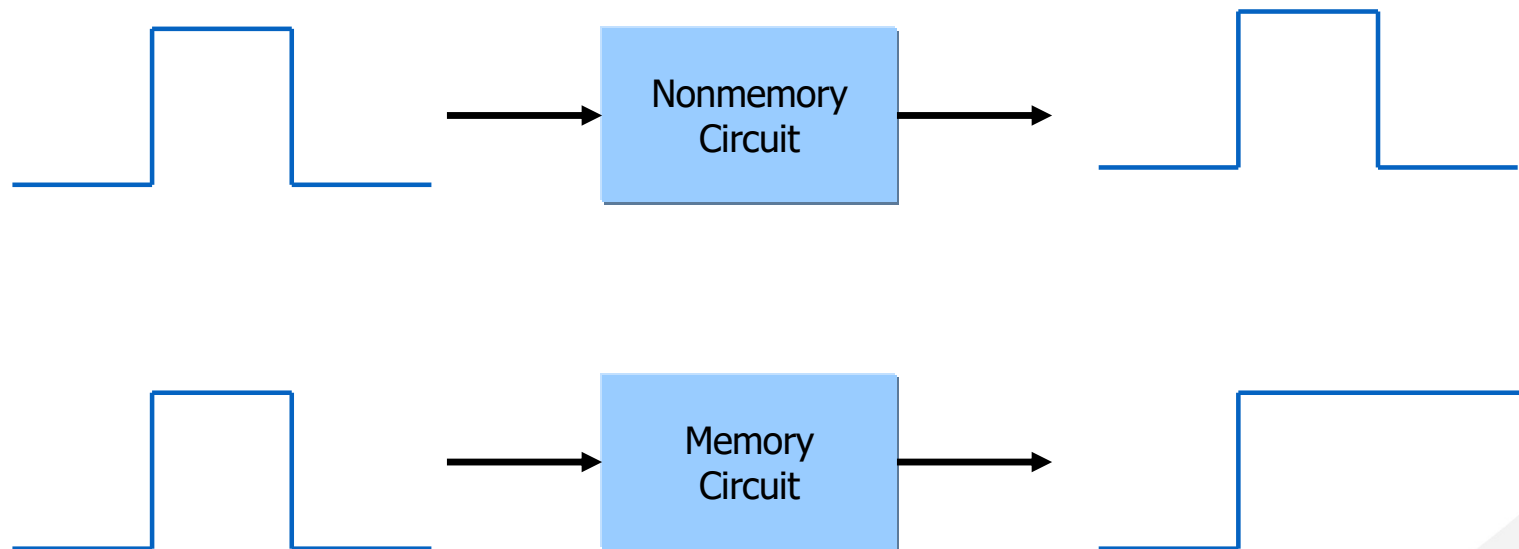


*See on Shift Registers after midterm.



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Memory Circuit



*See on Latch and Flip-Flops after midterm.



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Digital Computer

