



UNIVERSITÀ DEGLI STUDI DI MILANO
FACOLTÀ DI SCIENZE E TECNOLOGIE

Lab Report:
Logic Gates

Lorenzo LIUZZO

Bachelor's Degree:	Physics
Course:	Electronics Laboratory
Academic Year:	2022/2023

Instructor:	Professor Valentino LIBERALI
Partners:	Jiahao MIAO Riccardo SALTO

Date Performed:	May 24, 2023
-----------------	--------------

Abstract

In the realm of modern electronics, logic gates serve as the basic building blocks that underpin the entire digital landscape. Composed of transistors and various electronic components, these devices form the core of digital circuits. They enable the manipulation and processing of binary information, the driving force behind computers, smartphones, and numerous other digital systems.

This report embarks on a journey to unveil the principles governing logic gates, their operations, and practical applications. We will explore various types of logic gates — NOT, NAND, NOR, AND, OR, and XOR — each characterized by its distinct behavior and role within digital circuits.

Contents

1	Introduction	2
2	NOT	3
3	NAND	4
4	NOR	5
5	AND	6
6	OR	7
7	XOR	8
	Appendix	9

1 Introduction

2 NOT

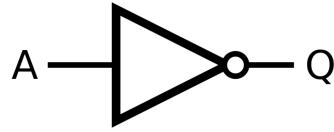


Figure 1: NOT symbol.

Input	Output
0	1
1	0

Table 1: Truth table for the NOT gate.

3 NAND



Figure 2: NAND symbol.

Input A	Input B	Output
0	0	1
0	1	1
1	0	1
1	1	0

Table 2: Truth table for the NAND gate.

4 NOR

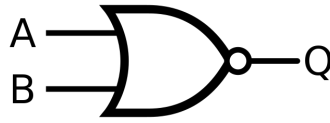


Figure 3: NOR symbol.

Input A	Input B	Output
0	0	1
0	1	0
1	0	0
1	1	0

Table 3: Truth table for the NOR gate.

5 AND



Figure 4: AND symbol.

Input A	Input B	Output
0	0	0
0	1	0
1	0	0
1	1	1

Table 4: Truth table for the AND gate.

6 OR

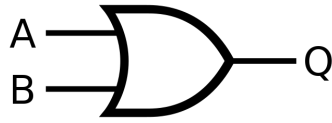


Figure 5: OR symbol.

Input A	Input B	Output
0	0	0
0	1	1
1	0	1
1	1	1

Table 5: Truth table for the OR gate.

7 XOR

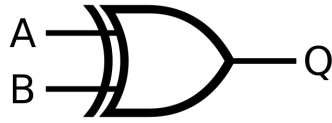


Figure 6: XOR symbol.

Input A	Input B	Output
0	0	0
0	1	1
1	0	1
1	1	0

Table 6: Truth table for the XOR gate.

Appendix