

Project 4 Digital Logic Gates

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Dive into Project 4, a hands-on exploration of fundamental digital logic gates. This project guides you through the essential principles of digital circuit design, from understanding basic boolean algebra to implementing various logic gate functions. Perfect for students and hobbyists, this electronics project offers practical experience in building and analyzing the core components of digital systems.

Each file is designed to support effective teaching and structured learning.

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Project 4 Digital Logic Gates

Logic Gates, Truth Tables, Boolean Algebra AND, OR, NOT, NAND & NOR - Logic Gates, Truth Tables, Boolean Algebra AND, OR, NOT, NAND & NOR by The Organic Chemistry Tutor 1,775,814 views 3 years ago 54 minutes - This electronics video provides a basic introduction into **logic gates**, truth tables, and simplifying boolean algebra expressions.

Binary Numbers

The Buffer Gate

Not Gate

Or Circuit

Nand Gate

Truth Table

The Truth Table of a Nand Gate

The nor Gate

Nor Gate

Write a Function Given a Block Diagram

Challenge Problem

Or Gate

Sop Expression

Literals

Basic Rules of Boolean Algebra

Commutative Property

Associative Property

The Identity Rule

Null Property

Complements

And Gate

And Logic Gate

Understanding Logic Gates - Understanding Logic Gates by Spanning Tree 527,445 views 3 years ago 7 minutes, 28 seconds - We take a look at the fundamentals of how computers work. We start

with a look at **logic gates**,, the basic building blocks of **digital**, ...

Transistors

NOT

AND and OR

NAND and NOR

XOR and XNOR

Building a 4-Bit Adder using Logic Gates - Building a 4-Bit Adder using Logic Gates by Valandi Allulis 97,948 views 9 years ago 21 minutes - Building a **4**,-Bit Adder using **Logic Gates**,,

Drawing Logic Gates From Boolean Expressions | Important Questions 4 | Digital Electronics -

Drawing Logic Gates From Boolean Expressions | Important Questions 4 | Digital Electronics by ENGINEERING TUTORIAL 204,852 views 3 years ago 8 minutes, 23 seconds - In this video, we are going to discuss some more questions on drawing **logic**, circuits from boolean expressions. Check out the ...

DIY ELECTRONIC CODE LOCK | 4 DIGIT PASSWORD CIRCUIT - DIY ELECTRONIC CODE LOCK | 4 DIGIT PASSWORD CIRCUIT by How To Technical 4,374 views 1 year ago 6 minutes, 39 seconds

- Hi Friends ! In this **electronics project**,, we will make an **electronic**, code lock or a **four**, digit password system. In this **circuit**,, we are ...

Digital Electronics: Logic Gates - Integrated Circuits Part 1 - Digital Electronics: Logic Gates -

Integrated Circuits Part 1 by Derek Molloy 1,415,501 views 13 years ago 8 minutes, 45 seconds

- This is the Integrated Circuits Experiment as part of the EE223 Introduction to **Digital Electronics**, Module. This is one of the circuits ...

Making logic gates from transistors - Making logic gates from transistors by Ben Eater 2,610,377 views 8 years ago 13 minutes, 2 seconds - Support me on Patreon: <https://www.patreon.com/beneater>.

Intro

What is a transistor

Inverter circuit

NAND gate

XOR gate

Other gates

Using Basic Logic Gates - With & Without Arduino - Using Basic Logic Gates - With & Without Arduino by DroneBot Workshop 544,575 views 3 years ago 1 hour, 3 minutes - Learn how to use basic **logic gates**,, both with and without an Arduino. We'll work with some basic gates and we'll add one to an ...

Introduction

Basic Logic Gates

Online Logic Gate Simulator

Buffers & Schmitt Triggers

Logic Gate Families

Logic Gate Test Demo

3-State Logic Demo

Arduino Logic Gate Emulator

Intruder Alarm

Logic Gates | Visual Learners - Logic Gates | Visual Learners by 3DSage 46,488 views 5 years ago 2 minutes, 49 seconds - While I was teaching myself the fundamentals of **electronics**, and computers, I was surprised that I couldn't find a simple handheld ...

How computers understand programs: From transistors to a CPU (1/3) - How computers understand programs: From transistors to a CPU (1/3) by Enrage Entertainment 169,698 views 4 years ago 13 minutes, 49 seconds - In the first episode of this three-part long series about computers, we will take a look at the construction and functionality of a ...

Abstraction

The Arithmetic Logic Unit

Buffer Overflow

#1099 How I learned electronics - #1099 How I learned electronics by IMSAI Guy 1,086,021 views 1 year ago 19 minutes - Episode 1099 I learned by reading and doing. The ARRL handbook and National Semiconductor linear application manual were ...

How How Did I Learn Electronics

The Arri Handbook

Active Filters

Inverting Amplifier

Frequency Response

How a Computer Works - from silicon to apps - How a Computer Works - from silicon to apps by Improbable Matter 1,100,932 views 3 years ago 42 minutes - A whistle-stop tour of how computers work, from how silicon is used to make computer chips, perform arithmetic to how programs ...

Introduction

Transistors

Logic gates

Binary numbers

Memory and clock

Instructions

Loops

Input and output

Conclusion

How Do Computers Remember? - How Do Computers Remember? by Sebastian Lague 5,509,779 views 3 years ago 19 minutes - Exploring some of the basics of computer memory: latches, flip flops, and registers! Series playlist: ...

Intro

Set-Reset Latch

Data Latch

Race Condition!

Breadboard Data Latch

Asynchronous Register

The Clock

Edge Triggered Flip Flop

Synchronous Register

Testing 4-bit Registers

Outro

Light detector project using NAND gate (Turn on the caption for better understanding) - Light detector project using NAND gate (Turn on the caption for better understanding) by Raian Shahrear 86,828 views 6 years ago 6 minutes, 1 second - Project, name: Light detector. Made by: Raian Shahrear (Student of EEE department from AIUB) Equipments: [1] Breadboard.

Digital 12 hrs clock from digital logic IC | without Microcontroller - Digital 12 hrs clock from digital logic IC | without Microcontroller by EE Wave 57,762 views 3 years ago 20 minutes - In this video, I've explained how to make a 12 hours **digital**, clock without microcontroller. Here, I've used crystal oscillator to ...

How TRANSISTORS do MATH - How TRANSISTORS do MATH by In One Lesson 2,111,364 views 12 years ago 14 minutes, 22 seconds - EDIT: At 00:12, the chip that is circled is not actually the CPU on this motherboard. This is an older motherboard where the CPU ...

Motherboard

The Microprocessor

The Transistors Base

Logic Gates

Or Gate

Full Adder

Exclusive or Gate

Logic Gates from Transistors: Transistors and Boolean Logic - Logic Gates from Transistors: Transistors and Boolean Logic by Physics Videos by Eugene Khutoryansky 506,294 views 8 years ago 14 minutes - How to make all the **logic gates**, from a field effect transistor, or from other **logic gates**,.

Field Effect Transistor

Or Logic Gate

Create an Xor Logic Gate

Logic Gates To Create Memory

I Made A Water Computer And It Actually Works - I Made A Water Computer And It Actually Works by Steve Mould 6,889,525 views 2 years ago 16 minutes - Computers add numbers together using **logic gates**, built out of transistors. But they don't have to be! They can be built out of ...

• - AND gate OR gate NOT gate || hsc ict chapter 3 || logicgate || • - AND gate OR gate NOT gate || hsc ict chapter 3 || logicgate || by HSC ICT CLASS 703,395 views 1 year ago 14 minutes, 28 seconds - Through this video you can learn all the **logic gates**, of **digital**, devices in ICT book III Chapter II. All **logic gate**, symbols, outputs, truth ...

Logic Gate Combinations - Logic Gate Combinations by Computer Science 540,792 views 4 years ago 12 minutes, 12 seconds - This computer science video follows on from the video that introduces **logic gates**,. It covers creating truth tables **for**, combinations ...

The Building Blocks

Or Gate

Example Involving 3 Logic Gates

Truth Table

Solution

Final Example

Visualizing Data with 7-Segment Displays - Visualizing Data with 7-Segment Displays by Sebastian Lague 1,173,727 views 1 year ago 34 minutes - Displaying numbers is trickier than I expected! In this video we explore how to visualize the data inside of our simulated **4**,-bit ...

Intro

Two's Complement Refresher

Seven-Segment Display + Truth Table

Boolean Algebra Basics

Simplifying the Equation

Converting Algebra to Logic Gates

Computer-Assisted Design

Testing the Digit Display Design

A Real-World Version (the 74LS248)

Visualizing the Data in a 4-bit Register

All Ten Digits

Binary Coded Decimal

The Double Dabble Algorithm

Dabbling with Logic Gates

Implementing Double Dabble

Displaying an 8-bit Number

Ripple Blanking

Displaying Negative Numbers

Testing the Final Design

Outro

Digital Logic - implementing a logic circuit from a Boolean expression. - Digital Logic - implementing a logic circuit from a Boolean expression. by Mathematics First 475,169 views 13 years ago 8 minutes, 3 seconds - More videos: <https://finallyunderstand.com/05e-combinational-logic,.html> ...

Switch based NAND gate and 7400 integrated circuit IC demonstration beginner learning electronics - Switch based NAND gate and 7400 integrated circuit IC demonstration beginner learning electronics by electronzapdotcom 19,363 views 4 years ago 11 minutes, 23 seconds - NAND **gate**, basics. IC from <https://amzn.to/2SHdW2L> **Electronics**, -Salon 30 Types 74LSxx Series **Logic**, IC Assortment Kit, TTL, ...

digital logic design DLD project (4 ways traffic light) - digital logic design DLD project (4 ways traffic light) by Amalina Hamat 5,011 views 2 years ago 5 minutes, 48 seconds

4 bit Adder Circuit (Digital Logic Design Project) - 4 bit Adder Circuit (Digital Logic Design Project) by Ali Raza 6,101 views 7 years ago 49 seconds - This is a simple Calculator Design by using ,AND,OR,XOR, ADDER chips, no programming is used here, and the results is ...

Logic Car Parking Counter | Digital Logic Design | Term Project - Logic Car Parking Counter | Digital Logic Design | Term Project by Tanveer Riaz 21,895 views 2 years ago 2 minutes, 21 seconds - The **project**, was designed by: 2020-MC-307 2020-MC-309 2019-MC-315 2020-MC-321 Students of BSc Mechatronics ...

Exploring How Computers Work - Exploring How Computers Work by Sebastian Lague 3,335,385 views 3 years ago 18 minutes - A little exploration of some of the fundamentals of how computers work. **Logic gates**,, binary, two's complement; all that good stuff!

Intro

Logic Gates

The Simulation

Binary Numeral System

Binary Addition Theory

Building an Adder

Negative Numbers Theory

Building the ALU
Outro
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