4-Bit Counter (0-15) Using 8085 Microprocessor

In the world of digital electronics and microprocessors, creating a digital counter is a fundamental and exciting project that demonstrates the practical applications of microprocessors and the manipulation of binary numbers. The "Counter 0-15 Using 8085 Microprocessor" project, enhanced with 4 LEDs and a 1-kilohm resistor, is designed to provide a hands-on learning experience and a visual representation of binary counting.

Project Overview:

The core of this project is the 8085 microprocessor, a widely used and versatile microprocessor in the early days of computing. The 8085 microprocessor processes data in binary format, making it ideal for implementing a binary counter. In this project, we will use the 8085 microprocessor to create a 4-bit binary counter, capable of counting from 0 to 15 (in binary, 0000 to 1111).

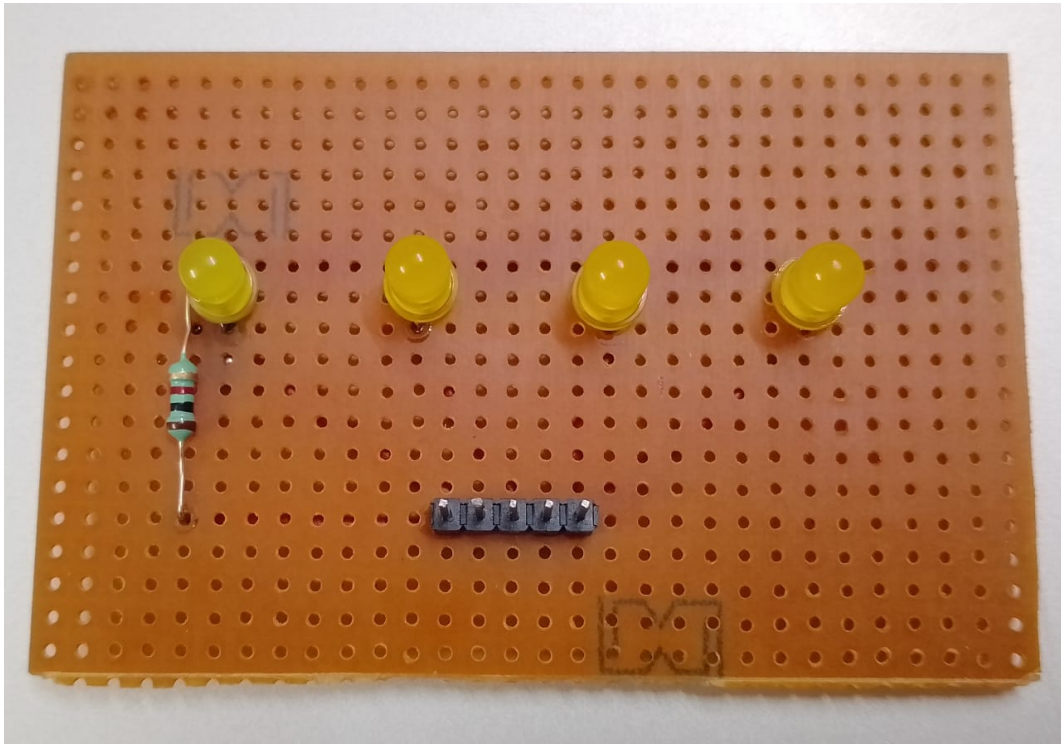
Components Used:

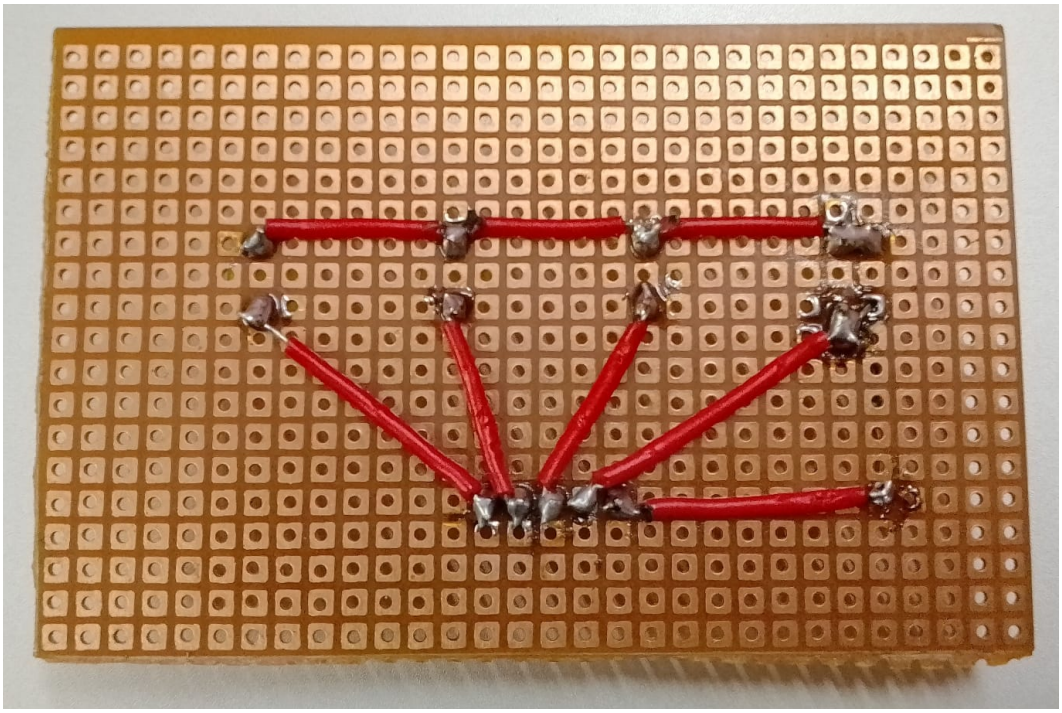
1. 8085 Microprocessor: The brain of our project, responsible for processing and controlling the counting operation.
2. 4 LEDs (Light Emitting Diodes): These LEDs represent the 4 bits of the binary count. Each LED will be associated with one bit, allowing us to visualize the binary count as it progresses.
3. 1-Kilohm Resistor: Used to limit the current flowing through the LEDs and protect them from burning out.
4. Power Supply: The project requires a stable power supply to operate the 8085 microprocessor and light up the LEDs.

Project Functionality:

The 8085 microprocessor will be programmed to count from 0 to 15 in binary. As it counts, the appropriate LEDs will light up to display the binary value currently held in the counter. For example, when the counter is at 3, the LEDs will represent "0011," and as it progresses, the LEDs will change to reflect the binary value of the count. This provides a visual representation of the binary counting process and allows for easy verification of the counter's operation.

4-BIT COUNTER (0-15) USING 8085 MICROPROCESSOR





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EIC SECTION Microprocessor interfacing workshop

Name :

Program : Fabrication of PCB - (Counter 0-15) Project

Trainer Kit : 8085 Trainer kit

Date : Page :

Label	Address	Instructions	Opcode	Comments
loop3	2000	MVI A,	3E	Move content 80 to Register A
	2001	80H	80	
	2002	OUT	D3	Give o/p to control Register
	2003	03	03	
	2004	MVI C	0E	Move content OF to Register C
	2005	OFH	0F	
loop	2006	MOV A to C	79	Move A to C
	2007	OUT	D3	~~Move~~ Give
	2008	00	00	o/p to control Register
	200A	Delay	CD	Introduce Delay
	200B		BC	
	200C		03	
	200D	Delay	CD	"
	200E		BC	
	200F		03	
	2010	DCR C	0D	Decrement C
	2011	JNZ loop	C2	Jump if not zero
	2012		06	to 2006
	2013		20	
	2014	MVI A,00	3E	Move the content
	2015		00	00 to Register A
	2016	OUT,00	D3	Give output
	2017		00	
	2018	Delay	CD	Introduce Delay
	2019		BC	
	201A		03	
	201B	JMP	C3	Jump to loop 2
	201C	loop2	60	to 2060
	201D		21	
	201E	HLT	76	Halt.
	201F			
	2020			

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Name

Program

Trainer Kit ..... Date: ..... Page: .....

Label	Address	Instructions	Opcode	Comments
loop2	2160	MVI A,	3E	Move the content
	2161	80	80	80 to Register A
	2162	OUT, 03	D3	Give o/P to control
	2163		03	Register
	2164	MVI C, 0F	0E	Move the content
	2165		0F	0F to Register C
	2166	MVI B, 00	06	Move the content
	2167		00	00 to Register B
loop1	2168	Mov A, B	78	Move A to B
	216A	OUT 00	D3	OUTPUT
	216B		00	
	216C	Delay	CD	Introduce Delay.
	216D		BC	
	216E		03	
	216F	INR B	04	Increment B by 1
	2170	DCR C	0D	Decrement C by 1
	2171	JNZ loop	C2	Jump if not zero
	2172	1	68	2006
	2173		21	
	2174	JMP	C3	Jump not to
	2175	loop3	00	2000
	2176		20	
	2177	HLT	76	HALT