PRESENTATION ON

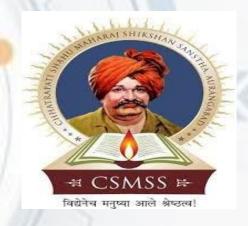
"8051 DEVELOPMENT BOARD"

Project Guide

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INTRODUCTION OF PROJECT



Introduction:

- In the Basic electronics field whenever we need to perform multiple Tasking according to our suitability, There 8051 microcontroller provides a very easy platform to perform all the tasks in an effortless way. Sometimes For any development in 8051, we always need to buy an 8051 Development board. Sometimes this is easily available in the market, and sometimes it takes time to get it through the market.
- So Friends overall it always creates a problem to make a project without Development Board as well as this is costly also, So here we come with solution through our Project

To be continue....



INTRODUCTION OF PROJECT



- Microcontroller development boards, also called as "8051 development kits", which help the system
 designers and student of Electronic and Telecommunication Engineering to develop and test projects
 easily and speedily.
- We also provide some sample Program and User manual

Aim

Aim of this project is that make a 8051 Development board which is cheaper and easy to use specially for students of Electronic And Telecommunication Engineering.

LITERATURE SURVEY

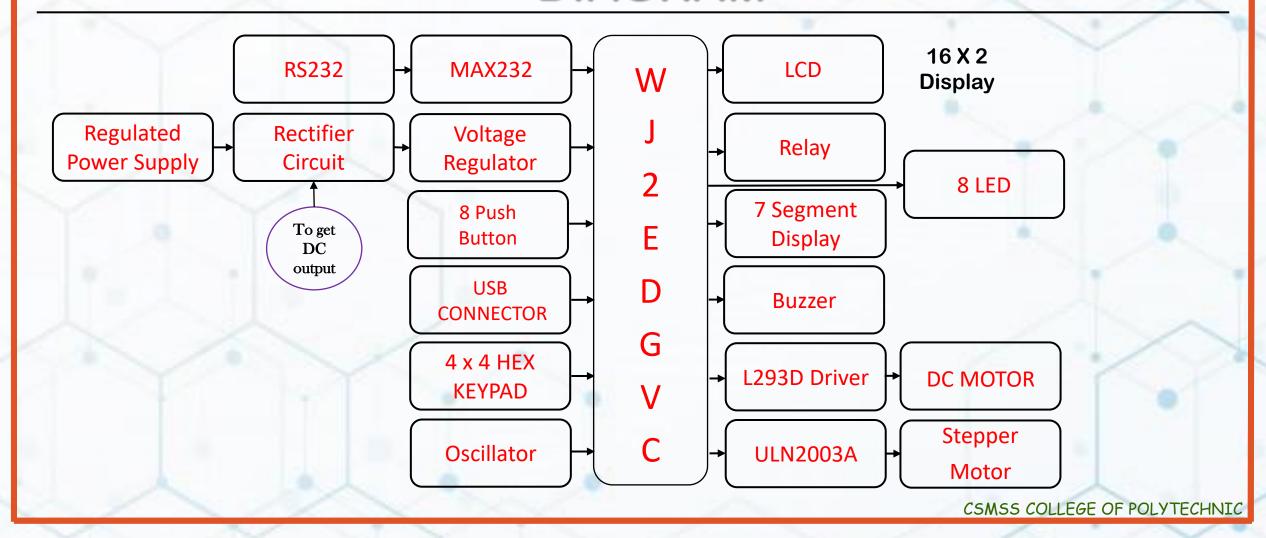


- 1. Paper on 8051 Development board Published by Prayog India Tech.
- 2. Every thing about Development Board by Raj
- 3. 8051 development board by Saurabh
- 4. Reports of Pantech Solution on 8051 Development Board



PROPOSED BLOCK DIAGRAM







REQUIRED COMPONENTS



Sr. No.	Name of Components with Specification	Qty	Approx. Cost (Each)	Total
1	Microcontroller of Nuvoton (WJ2EDGVC)	1	90/-	90/-
2	40 Pin Microcontroller DIP / ZIF Socket	1	13/-	13/-
3	Buzzer	1	20/-	20/-
4	3mm LED Red, Green, White	3	2/-	06/-
5	Crystal Oscillator 12MHz	1	10/-	10/-
6	Hand Drill	1	100/-	100/-
7	RS232 Serial port	1	20/-	20/-
8	MAX232 IC	1	30/-	30/-
9	Reset Switch	1	5/-	5/-
10	LM7805 I <i>C</i>	1	7/-	7/-

To be continue....

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REQUIRED COMPONENTS



Sr. No.	Name of Components with Specification	Qty	Approx. Cost (Each)	Total
11	Capacitor (Electrolytic & Ceramic)	10	2/-	20/-
12	Push Button	1	18/-	18/-
13	Resistor (33K, 1K)	10	1/-	10/-
14	16 X 2 LCD Display	1	150/-	150/-
15	Stepper Motor	1	180/-	180/-
16	L293D Motor Driver	1	160/-	160/-
17	4 X 4 Keypad	1	75/-	75/-
18	Double Sided Copper Clad Board	1	60/-	60/-
19	Wires and Connectors		50	50/-
			Total	844/-

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Procedure to make Development Board



- 1. Draw the schematic of Development Board in Easy EDA.
- 2. Convert schematic into PCB Layout on Easy EDA.
- 3. Arrange all the component in your PCB as per your need.
- 4. Provide Connection to all the component as per circuit diagram and decide where it will either TOP Layer, Bottom Layer or Dual Sided
- 5. Check all the connection
- 6. Take print on Glossy Paper (Photo Paper) at 100% scale



Procedure to make Development Board

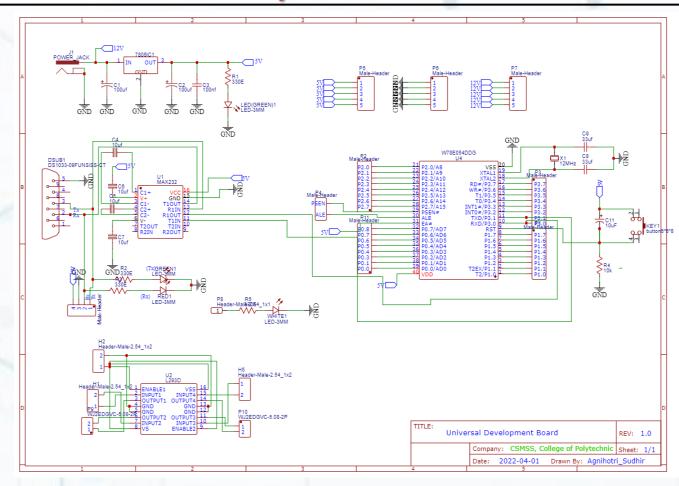


- 7. Flip Horizontally the bottom layer and then print it.
- 8. Carefully Print PCB layout from glossy paper to Dual Sided Copper Clad Board with the help of Iron for 20-30 min.
- 9. Pour copper clad board in water for 3-5 min & then peal off the glossy paper slowly and carefully.
- 10. Pour Printed Copper clad board in Ferrous Chloride to remove excess copper on copper clad board, it is very slow process it will take 3-4 hrs.
- 11. Wash it and remove print of copper clad board.



Schematic of 8051 Development Board



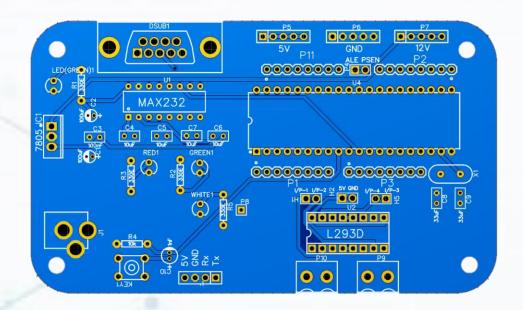


Schematic is made with the help of Easy EDA Online Software it is similar to NI Simulation



PCB Design Layout





It is an 3D model of actual PCB, it was made with the help of Easy EDA

Online Software which provides us Editor to Edit or Create Different PCB

Layout to make Desire Circuit

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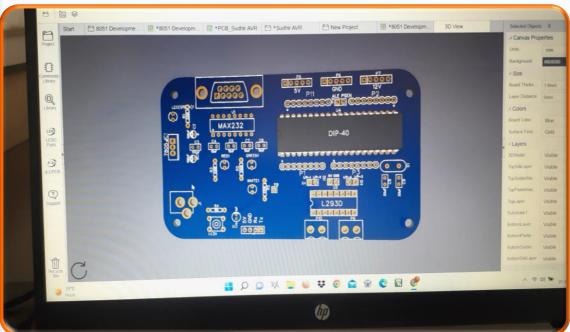


Making of PCB Layout









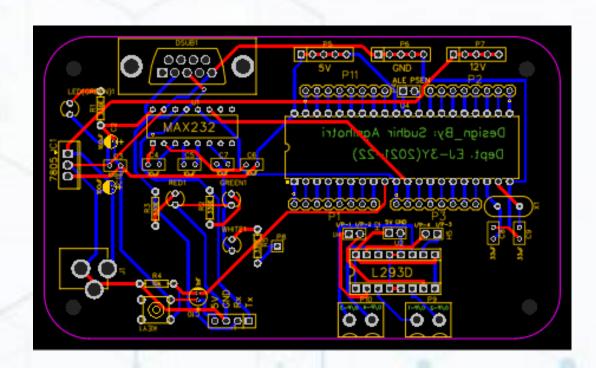






PCB Design Layout





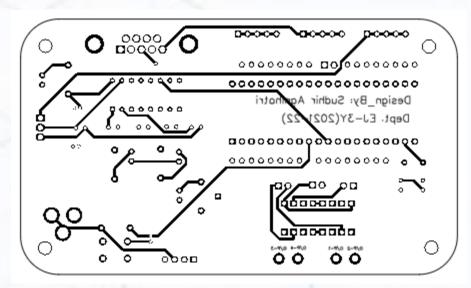
Colours	Layer		
Red Wire	Top Layer		
Blue Wire	Bottom Layer		
Green	Bottom Silk Layer		
Yellow	Top Silk Layer		

We designed our development board in double sided copper clad board



PCB Design Printing





Bottom Layer

Top Layer

This is the actual Layout of Development board which is to be printed on Dual Sided Copper Clad Board



PCB Design Printing





1.Iron The Layout on Copper Clad Board (20-25 min)



Dip the Board into the water (3-5 min)

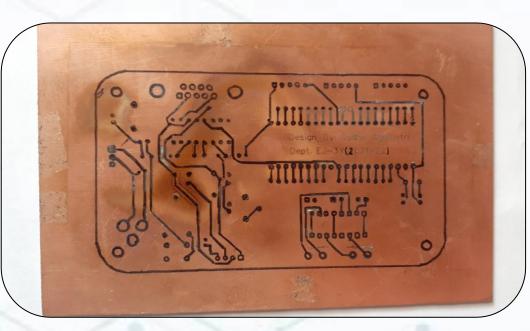


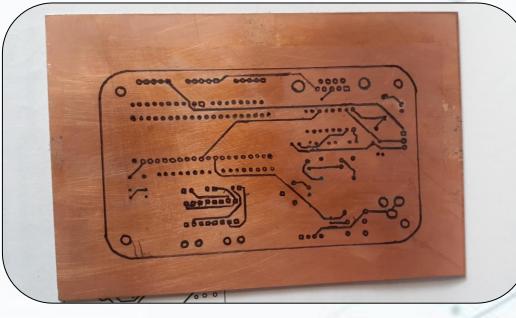
4. Take out from water and peal paper carefully



PCB after Etching







Bottom Layer

Top Layer

Actual Images of Dual Sided Copper Clad Board, after Etching PCB Layout from Glossy paper(Photo Paper)



Removal Of Excess Copper









This Process is very Slow you have to be patience and continue stir it in chemical until your PCB Turns Greenish or Yellowish





Pour Printed Copper Clad Board in Ferrous Chloride Note: Wear Hand Gloves and other Safety Gears



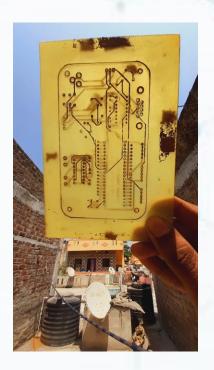
Actual PCB











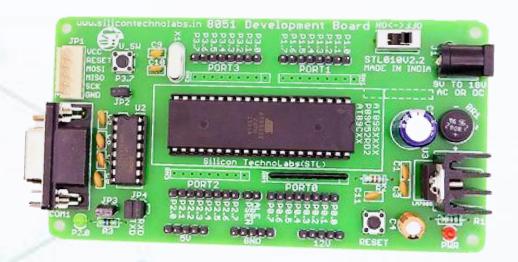
This is the actual PCB of Development Board after etching and poured out from Chemical



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3-D Model of 8051 Development Board





Note: It is Proposed 3D Model of 8051 Development Board

Microcontroller



- o 8051 microcontroller is designed in 1981. It is an 8-bit microcontroller.
- It is built with 40 pins DIP (dual inline package), 4kb of ROM storage and 128 bytes of RAM storage, 2 16-bit timers.
- It consists of four parallel 8-bit ports, which are programmable as well as addressable as per the requirement. An on-chip crystal oscillator is integrated in the microcontroller having crystal frequency of 12 MHz
- A microcontroller is a small and low-cost microcomputer, which is designed to perform the specific tasks of embedded systems like displaying microwave's information, receiving remote signals, etc.
- The general microcontroller consists of the processor, the memory (RAM, ROM, EPROM), Serial ports, peripherals (timers, counters), etc.

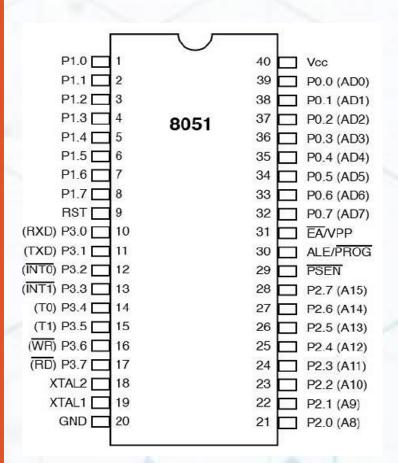
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Pin Diagram of Microcontroller







- Pins 1 to 8 These pins are known as Port 1. This port doesn't serve any other functions. It is internally pulled up, bi-directional I/O port.
- Pin 9 It is a RESET pin.
- Pins 10 to 17 These pins are known as Port 3. This port serves some functions like interrupts, timer input, control signals, serial communication signals RxD and TxD, etc.
- Pins 18 & 19 These pins are used for interfacing an external crystal to get the system clock.
- Pin 20 This pin provides the power supply to the circuit.



Pin Diagram of Microcontroller



- o Pins 21 to 28 These pins are known as Port 2. It serves as I/O port.
- Pin 29 This is PSEN pin which stands for Program Store Enable. It is used to read a signal from the external program memory.
- Pin 30 This is EA pin which stands for External Access input. It is used to enable/disable the external memory interfacing.
- Pin 31 This is ALE pin which stands for Address Latch Enable. It is used to demultiplex the address-data signal of port.
- Pins 32 to 39 These pins are known as Port 0. It serves as I/O port. Lower order address and data bus signals are multiplexed using this port.
- Pin 40 This pin is used to provide power supply to the circuit.



Features of Development Board



- The most important feature of the microcontroller development board is that ROM based built-in machine language monitor
- User Programable and Easy to use through Keil or any other IDE.
- No need to use any external programmer
- o High quality Nuvoton microcontroller development board.
- The DIP40 locking device, easy to remove the Microcontroller for reuse.
- o 8 independent LED.
- o 16*2 LCD display.
- 4 X 4 keypad matrix.

ADVANTAGES



- 1. Low time required for performing operation.
- 2. The processor chips are very small and flexibility occurs.
- 3. Portable
- 4. Cost and size of the system is less.
- 5. The microcontroller is easily to interface additional RAM, ROM and I/O ports.
- 6. It is easy to use, troubleshooting and systems maintain is simple.
- 7. At the same time many task can be performed so human effect can saved

DISADVANTAGES



- 1. It is generally used in micro equipment.
- 2. It has a complex structure.
- 3. The microcontroller cannot interface high power devices directly.
- 4. It only performed limited number of executions simultaneously.

APPLICATION



- It is used for general purpose application
- It is used to interface 7 Segment LCD
- o It is used to interface Stepper motor
- It is used to interface Relay
- o Alarm clock-how to beep buzzer on the selected time
- Temperature Monitoring and Control
- It is used in Lab for practical

CONCLUSION



- In 8051 Development board at an equivalent time, many tasks are often performed therefore the human effect and time are often saved.
- It is Easy to use.
- Due to their higher integration, cost and size of the system is reduced.
- Interfacing of LCD and Steeper Motor is easy due to inbuild drivers.

REFERENCES



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- https://exploreembedded.com/wiki/8051_Development_Board_Setup



