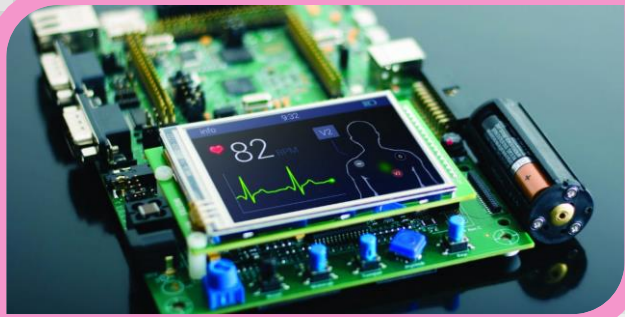# Embedding the world with Embedded Systems

A Hands on training on 8051 Microcontroller
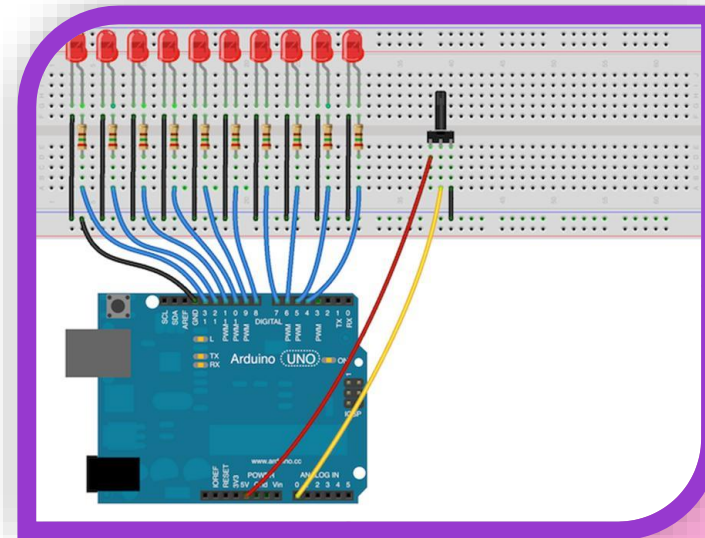

Session Expert

Mr.Ganesh R, Hardware Engineer, Microchip

RMK COLLEGE OF ENGINEERING AND TECHNOLOGY

RS.M NAGAR, PUDUVOYAL – 601 206, GUMMIDIPOONDI TALUK, TIRUVALLUR DIST

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Objective

- ▶ Introduction to 8051 Microcontroller

- ▶ Comparison of block diagram with Edsim51 simulator

- ▶ Execution of Instructions

- ▶ Knowledge Check with www.menti.com

Invitation & Agenda

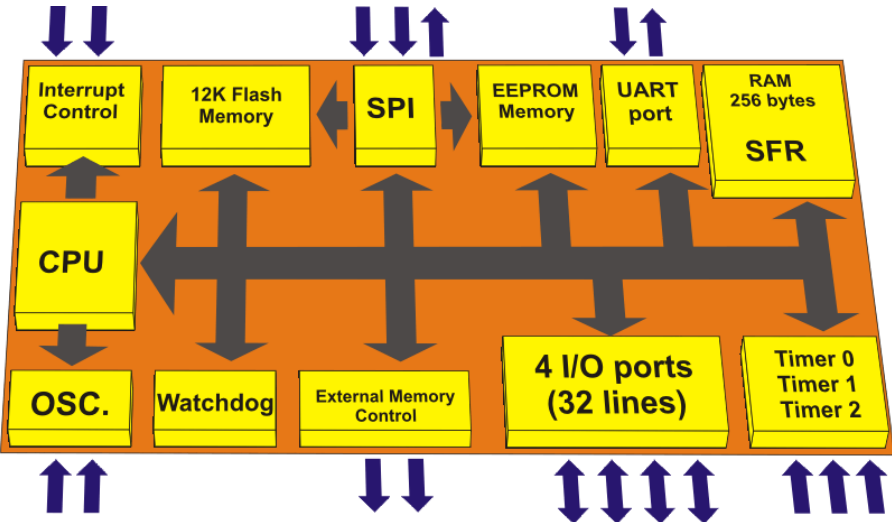| Program Schedule	
Welcome Address:	Mr.Hariharan N AP/EEE
Introduction about Session Expert	Mr.Gunalan K ASP/EEE
Key note Speaker :	Mr.Ganesh R Hardware Engineer, Microchip, Chennai
Felicitation by:	Dr.Kalaiarasi N HOD/EEE
Vote of Thanks	: Dr.Catherine T J ASP/EEE

Introduction to Microcontroller

▶ Microcontroller is an electronic device belonging to the microcomputer family. These are fabricated using the VLSI technology on a single chip. There are microcontrollers available in the present market with different word length starting from 4 bit, 8 bit, 64 bit to 128 bit

Microcontroller

▶ In a broader sense, the components which constitute a microcontroller are the memory, peripherals and most crucially a processor. Microcontrollers are present in devices where the user has to exert a degree of control. They are designed and implemented to execute a specific function such as displaying integers or characters on an LCD display module of a home appliance. Application of microcontrollers is myriad. In simpler terms, any gadget or equipment which has to deal with the functions such as measuring, controlling, displaying and calculating the values consist of a microcontroller chip inside it. They are present in almost all the present day home appliances, toys, traffic lights, office instruments and various day-to-day appliances.

Comparison of block diagram with Edsim51 simulator

Here block diagram components are compared with simulator

Execution of Instructions

8051 instruction set

DATA TRANSFER	ARITHMETIC	LOGICAL	BOOLEAN	PROGRAM BRANCHING
MOV	ADD	ANL	CLR	LJMP
MOVC	ADDC	ORL	SETB	AJMP
MOVX	SUBB	XRL	MOV	SJMP
PUSH	INC	CLR	JC	JZ
POP	DEC	CPL	JNC	JNZ
XCH	MUL	RL	JB	CJNE
XCHD	DIV	RLC	JNB	DJNZ
	DA A	RR	JBC	NOP
		RRC	ANL	LCALL

00000101 Number 5 in binary

10010010 Number 5 mask

dp g f e d c b a

8 x 2K4

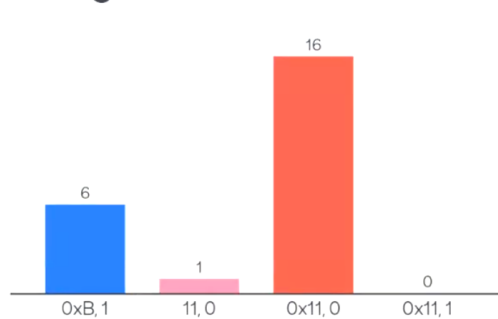+5V

Microcontroller

PORT

a b c d e f g dp

Low current common anode display
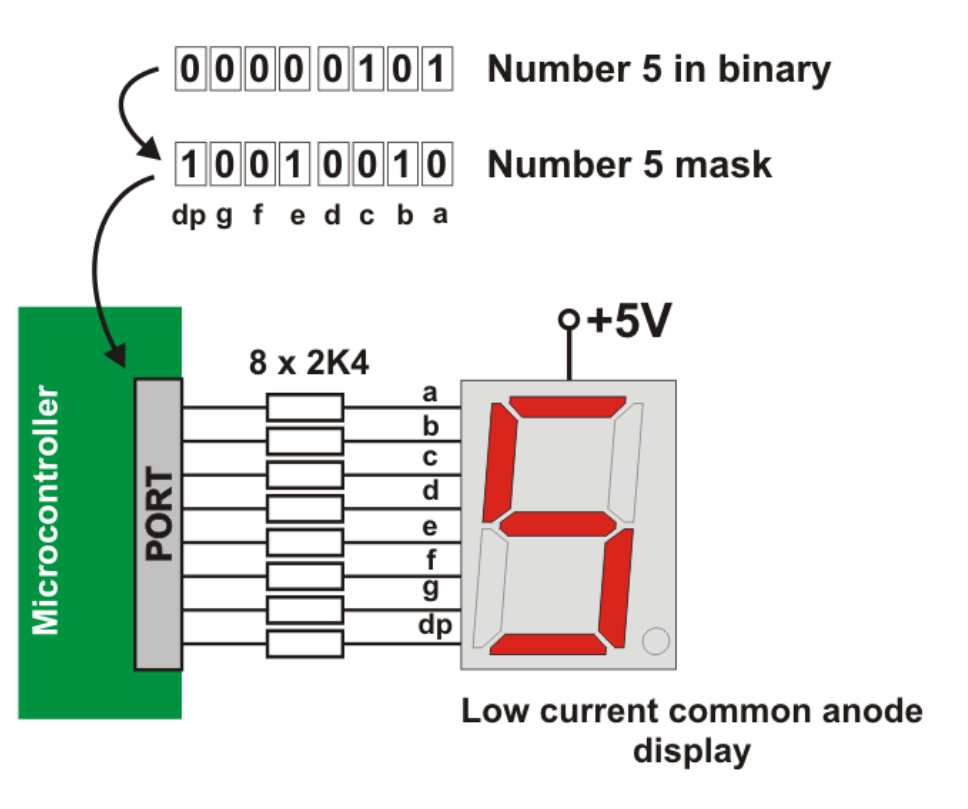
Explains how instruction are executing in microcontroller

Knowledge Check With WWW.Menti.com

Go to www.menti.com and use the code 16 78 33

ADD in 8085, ADD H, A --> 0x33 and HL --> 0x2233, select the result and carry2
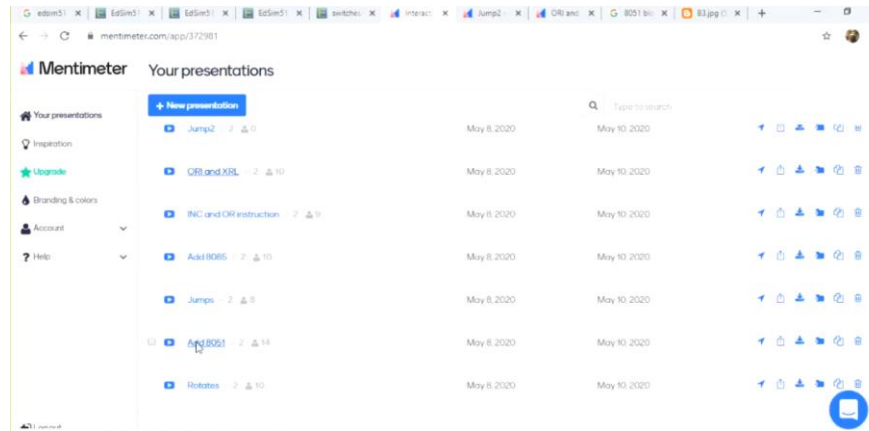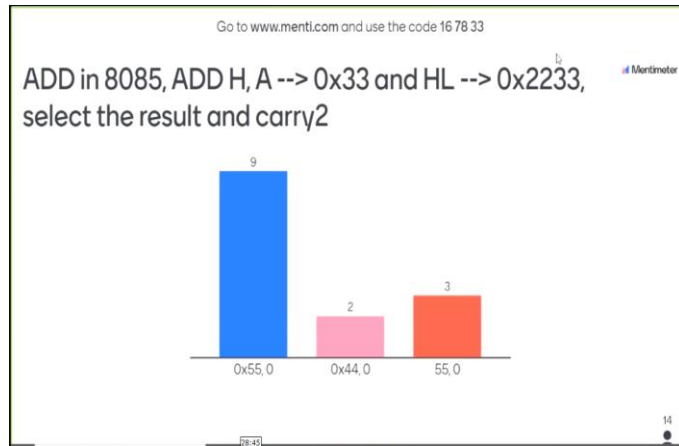
Go to www.menti.com and use the code 53 22 65

ADD instruction, guess value at A and Carry bit

➢ Here speaker introduced a platform called Menti.com, where question can be posted online and students answer can be viewed in live

➢ This is very interactive with students

Thank You

Watch the Video here

https://www.youtube.com/watch?v=QAni93aVeXY&t=416s