


SKU-Microprocessor and Microcontroller

The goal of SKU- Microprocessor and Microcontroller is to provide basic information about microprocessor and Microcontroller and their peripherals. It develops the basic concept for a full understanding of microprocessor, Microcontroller and its peripherals in a manner that is clearer, interesting, and easier to understand through innovative graphical user interface which is easy to learn and extremely efficient to use. The course is developed as a self-study package with easy-to-navigate interface, explaining difficult electronics concepts by analogies, flash animations and examples.


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Pin Diagram of 8085 Microprocessor

X1	1
X2	2
Reset Out	3
SID	4
SOD	5
TRAP	6
RST 7.5	7
RST 6.5	8
RST 5.5	9
INTR	10
INTA	11
AD7	12
AD6	13
AD5	14
AD4	15
AD3	16
AD2	17
AD1	18
AD0	19
V _{ss}	20

8085

40	V _{cc}
39	HLDA
38	HOLD
37	CLK OUT
36	RESET IN
35	READY
34	IO/M
33	S1
32	RD
31	WR
30	ALE
29	S ₀
28	A15
27	A14
26	A13
25	A12
24	A11
23	A10
22	A9
21	A8

X1 & X2

- These are also called Crystal Input Pins
- 8085 can generate clock signals internally
- To generate clock signals internally, 8085 requires external inputs from X1 and X2

[Next](#)

Topics covered in SKU- Microprocessor and Microcontroller

Architecture of 16-Bit Microprocessor

Topics Covered: Internal organization of 8086, Signal descriptions, Physical memory organization, BIU, EU, Minimum mode 8086 system and timings, Maximum mode 8086 system and timing, Evolution of microprocessors, Architecture of 8086(Register structure, ALU, Bus Organization, Timing and Control).

Assembly Language Programming

Topics Covered: Addressing modes, Instruction set, Assembler directives and Operators, Data movement instructions, Arithmetic and logic instructions, Program control instructions, and Recursive procedures.

Special Architectural Features and Related Programming

Topics Covered: Stack structure, Interrupts and Interrupt service routine, Interrupt programming, Macros, Timings and delays. Basic Peripherals and Their Interfacing: Memory interfacing, Interfacing I/O ports, Programmable Interval Timer (8253/8254), Programmable Peripheral Interface (8255), Programmable Interrupt Controller (8259), Interfacing A/D and D/A converters.

8051 Microcontroller and Interfacing

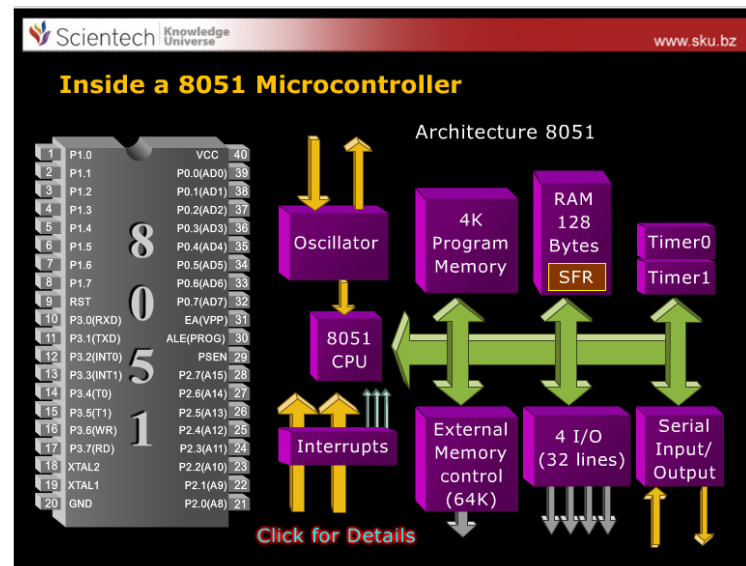
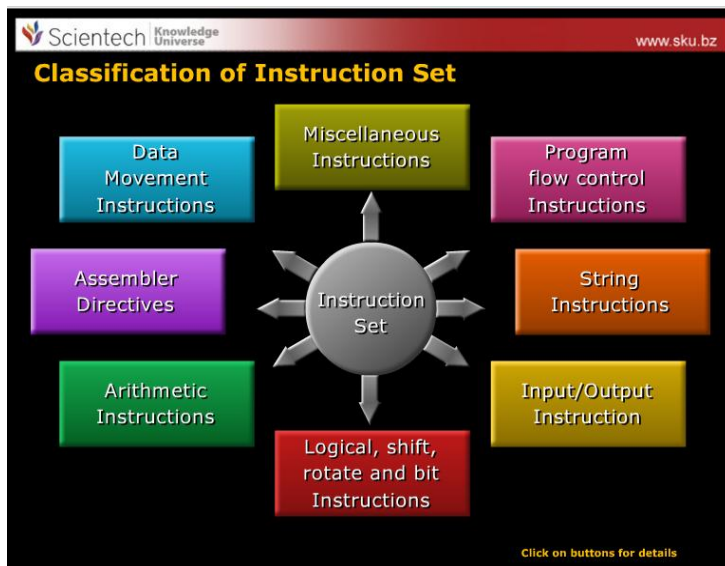
Topics Covered: Microcontroller 8051- Architecture, Pin Diagram, I/O Ports, Internal RAM and Registers, Timer, Counter, Interrupts, Addressing Modes, Memory Organization and External Addressing, Instruction Set, Assembly Language Programming, Real Time Applications of Microcontroller- Interfacing with LCD, ADC, DAC, Stepper Motor, Key Board and Sensors.

Embedded System and its Application

Topics Covered: Introduction, Classification, Processors, Hardware Units, Software Embedded into System, Applications and Products of Embedded Systems, Structural Units in Processor, Memory Devices, I/O Devices, Buses, Interfacing of Processor Memory and I/O Devices, Case Study of an Embedded System for a Smart Card.

References:

Print shots of SKU- Microprocessor and Microcontroller



Pin description Of The 8051

Port 1 (Pin 1-8):-
 Port 1 occupies a total of 8 pins. Each of these pins can be used as either input or output. Upon reset, Port 1 is configured as an input port. This port does not need any pull-up resistors since it already has pull-up resistors internally.

Next

8051 C program to interface with keypad and LCD

```

#include <regx52.h>
#include <lcd.h>
#include <type.h>
#include "delay.h"

unsigned char Scan_keypad(void);
unsigned char keyVal;
unsigned char keyPad [4][4] =
{ '0', '1', '2', '3',
  '4', '5', '6', '7',
  '8', '9', 'A', 'B',
};
    
```

2 → #include <lcd.h>

Include lcd.h for LCD data and command functions

LCD pin diagram

Pin	Symbol	I/O	Description
8	DB1	I/O	The 8 - bit data bus
9	DB2	I/O	The 8 - bit data bus
10	DB3	I/O	The 8 - bit data bus
11	DB4	I/O	The 8 - bit data bus
12	DB5	I/O	The 8 - bit data bus
13	DB6	I/O	The 8 - bit data bus
14	DB7	I/O	The 8 - bit data bus

Application of Embedded Systems

Medical Electronics

Almost every medical equipment in a hospital is an embedded system. Like Diagnostic aids such as ECG, EEG, blood pressure measuring devices, X-ray Scanners; equipment used in blood analysis, radiation, colonoscopy, endoscopy etc. Developments in medical electronics have paved way for more accurate diagnosis of diseases.