Question: (a) Briefly explains three reasons for the importance of micro c…

(a) Briefly explains three reasons for the importance of micro controllers-based systems

(b) Compare and contrast three architectures in Microcontrollers.

(c) Briefly describe how you (as an engineer) benefits from microcontrollers-based systems, according to your study field (Ex. Electrical, Electronic, Mechanical, Mechatronics, and Computer).

(d) List the standards applicable to the serial communication protocols with their usage/applications.

[Q2]

(a) List down the software and hardware tools that help develop 8051 based microcontroller systems and state their usage in embedded system designs.

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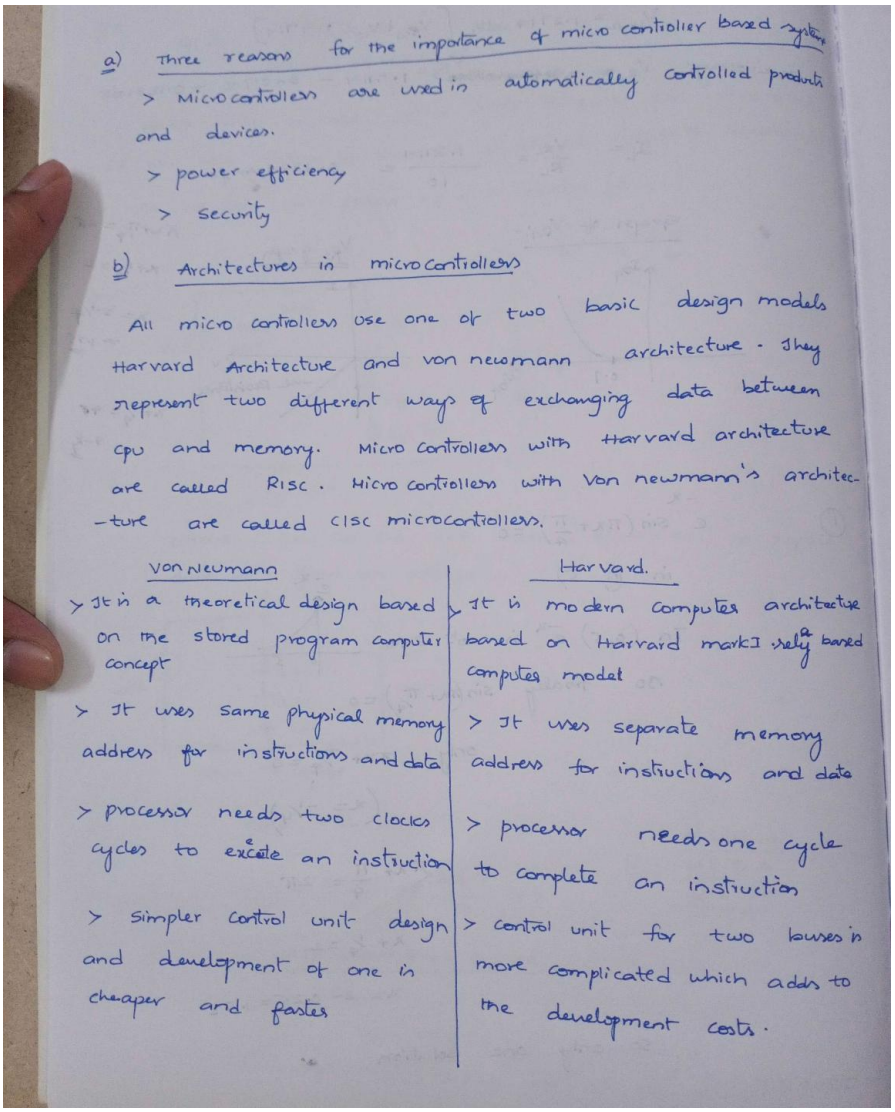
Expert Answer

Anonymous answered this
37 answers

Was this answer helpful? 0 0



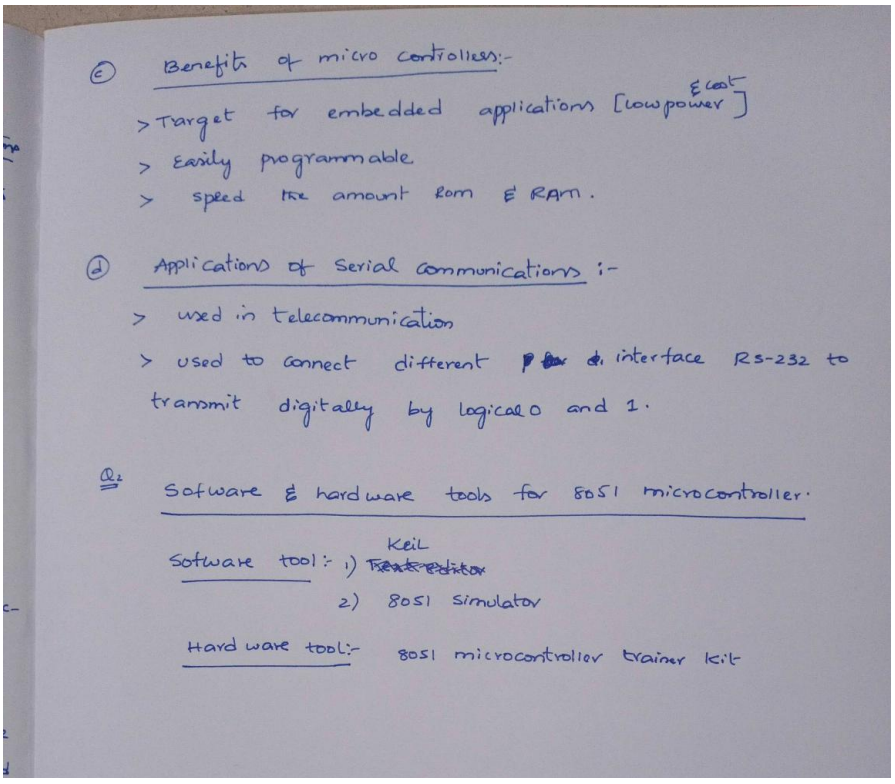
a) Three reasons for the importance of micro controller based systems

> Microcontrollers are used in automatically controlled products and devices.
> power efficiency
> security

b) Architectures in microcontrollers

All micro controllers use one of two basic design models Harvard Architecture and von neumann architecture. They represent two different ways of exchanging data between cpu and memory. Micro controllers with Harvard architecture are called Risc. Micro controllers with von neumann's architecture are called cisc microcontrollers.

Von Neumann	Harvard
> It is a theoretical design based on the stored program computer concept	> It is modern computer architecture based on Harvard mark I relay based computer model
> It uses same physical memory address for instructions and data	> It uses separate memory address for instructions and data
> processor needs two clocks cycles to execute an instruction	> processor needs one cycle to complete an instruction
> simpler control unit design and development of one is cheaper and faster	> control unit for two buses is more complicated which adds to the development costs.



c) Benefits of micro controllers:-

> Target for embedded applications [low power & cost]
> Easily programmable
> speed the amount Rom & RAM.

d) Applications of Serial communications :-

> used in telecommunication
> used to connect different interface RS-232 to transmit digitally by logical 0 and 1.

Q2 Software & hardware tools for 8051 microcontroller.

Software tool :- 1) Keil
2) 8051 simulator

Hard ware tool:- 8051 microcontroller trainer kit

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Questions viewed by other students

Q: (a) List down the software and hardware tools that help develop 8051 based microcontroller systems and state their usage in embedded system designs. (b) List down the different manufacturers that produce 8051 derivatives with their proprietor names with cost. (c) Compare and contrast the followings with the 8051 microcontrollers (choose a microcontroller from each category) FPGA...

A: See answer

Q: Compare and contrast the Harvard vs. Princeton microcontroller architectures. Be sure to address these points in your initial response: -Explain each type of architecture and its current applications in computer systems. -Provide and explain diagrams of the general structure of the CPU considering each type of architecture. (Use your word processor's drawing tools.) -Identify at...

A: See answer

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