



INTERNATIONAL JOURNAL OF PURE AND APPLIED RESEARCH IN ENGINEERING AND TECHNOLOGY

A PATH FOR HORIZING YOUR INNOVATIVE WORK

REVIEW PAPER ON MICROPROCESSORS

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Accepted Date: 15/03/2016; Published Date: 01/05/2016

Abstract- Microprocessor is a semiconductor chip, which controls various appliances right from microwave to wristwatches. This paper involves the history of microprocessor from the beginning to the recent trend, as well as it contains the applications and the future scope.

Keywords:- Microprocessor,



PAPER-QR CODE

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Access Online On:

www.ijpret.com

How to Cite This Article:

Samiksha Vilasrao Nichat, IJPRET, 2016; Volume 4 (9): 595-599

INTRODUCTION

First microprocessor was developed by Intel in 1971 is 4004. Intel 4004 was 4 bit processor with 44 instruction, P-channel MOSFET technology and speed of 50k instruction per second.

Later microprocessor was 8008 as an 8 bit microprocessor. Then 8080 and Motorola 6800 were developed. 8080 was 10 times faster than 8008 and TTL compatible.

MITS Altair was developed 8800 in 1974. The basic entrepreneur was written by Bill Gate There is more number of manufacturers who produce microprocessor like

- Intel
- AMD
- Via Technologies
- Motorola
- DEC
- Transmeta
- MIPS
- Texas Instruments
- National Semiconductor
- NEC

TABLE 1.1: Historical perspective of Intel microprocessors

Sr No.	Processor	Year of introduction	Addressable memory
1.	4004	1971	640bytes
2.	8008	1972	16K
3.	8080	1974	64K
4.	8085	1976	64K
5.	8086	1978	1M
6.	8088	1979	1M
7.	80286	1982	16M
8.	80386	1985	4G
9.	80486	1989	4G
10.	Pentium	1993	4G
11.	Pentium pro	1995	64G
12.	Pentium 2	1997	64G
13.	Pentium3	1999	64G
14.	Pentium 4	2000	64G

I. NEED OF PROCESSORS:

In the beginning, system did not pass any intelligence. Those early days system used vaccum tubes and hence they could carry out only arithmetic operations. It was a difficult task to operate these machines, even difficult to maintain them and yes, it was only the food-of-the-rich!

Machines started developed into organized system & human expected more from these systems but gave less space to these devices to inhale the pressure.

In order to prove this, system became more intelligent and more efficient. Now, a small chip can handle the work that 50,000 or more vacuum tubes would do in fraction of a time taken by those tubes.

These chips are termed as "Microprocessors". Microprocessors are the heart of the computer system. As well as it is also used in washing machines, televisions etc.

II. SPECIFICATION:

- It is 8 bit processors.
- 40 pin DIP structure.
- Requires 5 volts to operate.
- 16 bit address to access memory up to 64 KB.
- Five hardware interrupts.
- Eight software interrupts.

III. FEATURES:

- Power supply (VCC)
- VSS
- Crystal (X1 and X2)
- Clock signals (CLOCK IN & CLOCK OUT)
- Address bus & data bus signal(AD0 to AD7, A8 to A15)
- ALE
- Read and write signal (RD/WR)
- IO/M
- S0 & S1
- READY
- Interrupt signals(TRAP, RST7.5, RST6.5, RST5.5 & INTR)
- Interrupt acknowledgement signal(INTA)
- Serial input signal (SID & SOD)
- DMA signal(HOLD & HLDA)
- RESET signals (RESET IN & RESET OUT)

IV. ADDRESSING MODES:

- Register addressing mode
- Immediate addressing mode
- Direct addressing mode
- Indirect addressing mode
- Implicit/implied addressing mode

V. CLASSIFICATION OF INSTRUCTION SET OF 8085:

- a) Data transfer group
- b) Arithmetic group
- c) Logical group
- d) Branch group
- e) Stack / input, output group

VI. TYPES OF INSTRUCTIONS:

- a) 1 byte instruction
- b) 2 byte instruction
- c) 3 byte instruction

VII. ARCHITECTURE OF 8085:

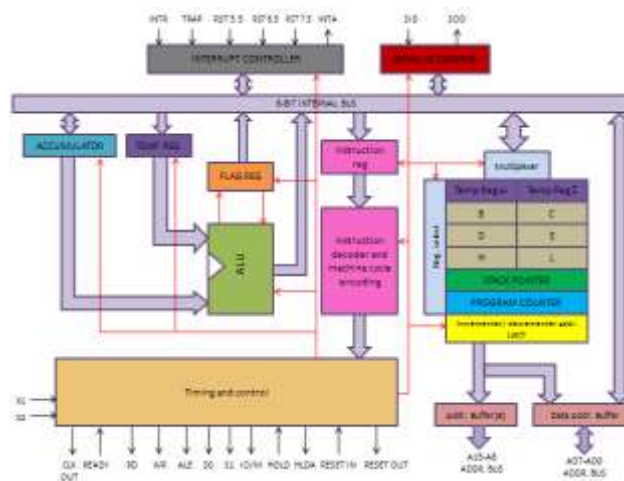


Fig 1. architecture of 8085

VI. RECENT TREND:

The latest microprocessor of Intel is i7 3960X. It has 15M cache and it operate in 3.30 GHz. It has a more complex structure as compared to earlier microprocessors.

The specifications of recent microprocessors are shown below (see fig.2).

All New 2nd Gen Intel® Core™ Desktop Processor Lineup

	Intel Core i5	Intel Core i5	Intel Core i5	Intel Core i7	Intel Core i7
Processor Number	i5-2400	i5-2500	i5-2500K	i7-2600	i7-2600K
Price (1K€)	\$184	\$205	\$216	\$294	\$317
TDP	95W	95W	95W	95W	95W
Cores/Threads	4/4	4/4	4/4	4/8	4/8
CPU Base Freq (GHz)	3.1	3.3	3.3	3.4	3.4
Max Turbo Freq (GHz)	3.4	3.7	3.7	3.8	3.8
DDR3 (MHz)	1333MHz	1333MHz	1333MHz	1333MHz	1333MHz
L3 Cache	8MB	6MB	6MB	8MB	8MB
Intel® HD Graphics 2000/3000	2000	2000	3000	2000	3000
Graphics Max Dynamic Frequency	up to 1100MHz	up to 1100MHz	up to 1100MHz	up to 1350MHz	up to 1350MHz
Intel® Hyper-threading Technology	No	No	No	Yes	Yes
Intel® Advanced Vector Extensions (AVX)	Yes	Yes	Yes	Yes	Yes
Intel® Quick Sync Video	Yes	Yes	Yes	Yes	Yes
Intel® vPro / TXT / VT-d / Intel® SIPP	Yes	Yes	No	Yes	No
Intel® AES-NI	Yes	Yes	Yes	Yes	Yes
Intel® Virtualization Technology	Yes	Yes	Yes	Yes	Yes
Package	LGA-1155	LGA-1155	LGA-1155	LGA-1155	LGA-1155

Fig 2. Specifications of microprocessors.

VII. APPLICATIONS:

- Automatic testing product.
- Speed control of motors.
- Traffic light control.
- Light control of furnaces.
- Frequency counters / generators.
- Washing machine.
- Microwave oven.
- LAN
- WAN
- Military application.

VIII. FUTURE SCOPE:

By the year of 2020, you won't need a keyboard and mouse to control your computer, instead, user will open document and surf the web using their brain waves.

The computers will not use the cooling fan, the coolant will be placed below the microprocessor itself.

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