Lecture-1 Wednesday 9/8/23

Overview

- Problem:

CSE 2203: Mieno processom and Miero controllers

Introduction + course profile

114-1 8008 - 1445 808 10445 808 10845 8008 10145

S-pit bliocéssons nabliagessons

Lecture-2

Mienocomputer History

Monday

14/8/23

Different mienophocesson with features:

What is n-bit mieno phocesson ? 900119011911116

mienophoeesson size = Alusizeonan. A -

toll your bosed steel design movint itself

neads binony instructions from them there elected

colled manony, accepts binany dotal Fell topput

-y-bi-1 mierroprocessor

→4-bit data bus, 12-bit address bust

· turture => we we'y wine lines for data computation.

=) n-bit address = 2n address can be define.

-14-KB of memory (outside)

- 45 instruction.

Lecture-1 Wednesday 0/19/193

→ Problem:

6091V119V0

POS 2203: Mieno processono man Microbassas.

2 word width + collaborate Intel 8008 → Intel 8080 → Intel 8085 → 8086/8088 => First modern => last 8-bit 8-bit processor uprocessor

*** Particular generation & difference.

Different mickers) nocesson (***) in themself

-> mierroprocesson and cru are med interchangeably.

-> A upnocessor is a multipunpose, Programmable, clock-diriven, negisters based electronic device that neads binary instructions from a storage device called memony, accepts binary data as snput and process data according to those motionimetions and provides results as output.

. on I bil address on address com be deline.

(abistuo) Momony to By-PE

- 46 infinuetion.

Leetune-3 wednesday 23/8/23

Introduction of to bull 2000

Mienophocessor

Assignment lecture-3 Topies 0002

-> Submission : Hext class 1710 0707

why we need to leann mienophocesson?

General pumpose, no special pumpose, we use it
in any device.

Difference between uprocesson & montrollers:

| Miero processor mos | Mieno controllen |
|--|--|
| i/o separate. | in one single chip. |
| the amount of ROM, RAM | 2. Fixed amount of on-chip Rom, RAM, 100 Points. 3. For application in which cost, power are criffical. |
| 4. General pumpose. | 4. Single pumpose. |
| 5- High processing power. 6. High power consumption 7 Customizable | 5. Low 6. Low 7. Not customizable. |

relune-3 Wednesday 23/3/23

8086 Anchitecture subonicit.

1. Clock Speed 32330113011311

THER Second a ROBLAT Clock chole buggare

Speed. Speed. Fasten the processing

* 800 WHS = 800 × 106 6 106K 16 16 162 500 5

2. Uses of tramistors in computer:

-> Building Block of computers

memony-location = Pain of tramistoris.

3. Moone's law:

integrated einevits double every two years.

4.8088/86 Pipelining: Mag Mog to trooms out

19160 11 8085 (not) pipelined upnocesson.

| | อ้ากลังสูง | 9-1-200 | Sept. | | ak EMANY 4.6 |
|-----------|------------|---------|----------------------------|-------|---------------|
| 8685 | nf 1910 | nE.W | T2 | F.2 | 4. General |
| 8086 | FI | E | Marine Section of the Con- | | E. fligh Mico |
| emirchle. | 18079 F | 72 | TO HAME | 2 16 | wo9 /18111.2 |
| | a regar ac | | + | 3 911 | 5.E3/570, L |

8086 mierroprocessor:

Featuries:

- 1. 20 bit address bur, 16 bit data bur.
- 2. multiplexed address and data bun.

inteleiged hold were

- (03.) + 5 N needed 1 = 82/7) 1 = 12 . Boil 13/2
 - 4. 40 pin dual in package

address bun Same bun data bun Thru-

0 = 15 ROH 21103

* HMI - Hon Muskable

intennupt 1 1 = 74 BOT Problem

even

8086 internal Anchitecture: Draw + explain (***)
Block Diagram

Main Unit:

- OBIU
- (2) EU

Registern:

*** Flag Registern

Sign flag, SF=1 (MSB=1 -2(MT), 712(MO))
Panity flag, PF=1 (even no 1)

8086 michalphacesson in

canny flag, cf = 0

Auxiliany flag, Af = 1 (first nibble u canny

evisi(m 1)

Zeno flag, 2f = 0

8086 internal Inchitectures Drace & expicin

isold show and a show might

0 /8 (f)

UI(1)

Lecture-4 Wednesday 30/8/23

STEP 8086 Miertoprocessor collaborated state

Bus Intenface Unit (Blu): ? WILL 1815 960109100

- contain 6 byte intruction queue
 - -> Segment Register (cs. Ds. Es. ss) -> Special
 Punpose register
 - Summation Block. , \(\sum = \text{ offset +}
- Jimtruetion point = cument immuetion location address.
- * Prefetched bytes in a FIFO called Queue.
- * FU is neady then call instruction from queup.

Pipelining (19800) 119100)

* pipelining is kind of farallel processing.

Memory Segmentation

→ 20 bit address bus -> can address 2

* OFFSET Size 16 bit p honed out works to

30/8/23

*** Influetion us sphysical address solution -Calculate DAI 214 ? (UB) Hardware 0 # starting address 10000 leade segment 10029 10019 Propose 10029 10029 - 10029

Example: + 192770 = Z . Apola nothamina -

HEBEY 15 1985 AND CHEEFE SOUTH IS 438EH

@ physical addres

TEASOO Mi reful bubbble # . 9 DA F Tready then 38,15 Party effor Tuent 4

(b) Lower Range: → starting duiss 33011 - H200+ 0000 = AFA201 8minilonia *

@Uppen Range of Ds: -> Ending

7FA20 +FFFF = 8FA1FZ2911010 41 00 C

@ Show the logical additess: 5578 THEATO &

7FA2: 438E

Lecture-5 wednesday 13/0/23

| A CONTRACTOR OF THE PARTY OF TH | The second secon | the state of the s | | | the same of the same | | | |
|--|--|--|----------|-------|----------------------|------------------|----------------|-----------|
| | Programm | ing langu | lage | S | 15,000 | | * | |
| | * Machine language | - Binany | (0 | (1) | 0=1 | 1 | | |
| | * Assembly " | 000 | 1 | XA | JA | | | |
| | * High-level " | . 110 | Con | ВХ | 18 | | | |
| | | 100 | | χý | 13 | | | |
| | Machine language: | 010 | 1 | XO | Jg | | | |
| | => Deals with machine | dinectly | => { | 10 | need - | ton the | amlation | |
| | => Fast | 1-11 | >) | Но | extna | Space | needed. | |
| | Assembly language: | 101 | | 99 | h Ho | - | | |
| 719 | >Uses Hemonies (MUL, A | DD, MOV, DI | lv) | IP | , etiq | | | |
| | =) Faster than high le | | | 90. | | | | |
| | | CAMPA) 1 | Jini C | | | | | |
| | 回 4 Parts: | | |) | | COMIZ | 7 | |
| 10 | (1) Level 2) Opeode | 3) Overan | d | | Go cor | nments | | |
| | | 1 | | ***** | | MA | 1 | |
| 1 | Heils the | कार्य है। | on . | H | [[8x]+[6 | 0.00 | | |
| | Processor what to | operation | | | | 175.0 | | |
| | | F | | | 到于11 | 100 | | |
| X | fligh-level language: 7 | Morre elo | ser | 70 | huma | n. | | |
| ×8 | MOVE Instruction | n Coding | Form | nat | and | Exampl | es | |
| | Byte-1 X | 3410-2 | | -> | By- | le-3 | Byte-4 | |
| dS. | | 1 1 1 1 | T | T | م ا | (a) | Fligh | _ |
| 98 | 100010 | | | - | DISP | acement | Displacemen | + |
| | | | 7/5 | | Tradi | 10/01 | | <u>~~</u> |
| - | OP CODE TO W MOD | | 16 3 1 1 | 1311 | Dine | HAddress Byte | Dinect Address | :>> ! |
| 4.7 | 0-Byte 5 D=0 Find | egister | 10 | | (000 | 111 | (digit 2) | |
| W = | 1-100110 | (20 01012 | | , | | . v . | | |

ieclure - 5 wednesdoy 13/2/23

| | 3000 | na langua | intint | nyon | 18 8 | | |
|------------------|-------|-----------|--------|---|--------|---------|-----------|
| Regis | sterc | CODE | - | 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | |
| ω=0 ⁴ | w=1 | Clows - | 98 | CHBRI | y 9 | Machin | 2 |
| AL. | AX | 000 | 4 | 1871 | · Vla | MSSem! | |
| BL | BX | 011 | | 'e. '7 i | lavel | -ARIH | 2 |
| GL | ex | 0 01 | | | | | |
| DL | XQ | 010 | i i | 3600 | (Buto) | ehine | <u>oj</u> |
| AH | SP | M1000 | 9лн | moel | dHW | eals | J |
| BH | DI 🤆 | -[]-1 | * | | | 450 | 7 |
| CH | ВР | 101 | | Mage | RMO | Vlame | 38 |
| DH | SI | 10,119,00 | | | | len Tro | |

Memory Tramfer ARIA

| | MoD | 03 00 | | © 10 950 | ं शेनि भेग | |
|----------------------------|---------|------------------------|--------------|--------------|------------|------|
| | R/M | | To Amelo | (3), 950 | M=0 000 | (W=1 |
| | 000 | [Bx]+[sI] | d8 | +916 | SHAL | AX |
| | 001 | 11+[DI] | 10)20 | 11 | el .05 | ex |
| | 010 | [BP]+[SI] | 7,500,72 .9. | 1017 i 21622 | | DX. |
| K-9418 | 011 | n+[DI] | 0 - 2- c | the Thinton | BL - | BX |
| High | (10,000 | [si] | | ч | AH | SP |
| | IOI | [Id] | 1. 1 | 1 | och o | BP |
| ashida fourt Sylva mili | 110 | d 16 Dinert Address | [86]+98] | [BP] + die | DHIOS 90 | SI |
| | 144 | [BX] | Makeigh | S of 1=0 | BH SHA | DIO |

mov er [Bx] # MOV SP, BX 0 peopF = 100010 D=17 W=000 gno! sindish Longuages. It coord = dom binney coall=(w, 10) = a that directly connellog the hondwarett = 00M Forch imprue-john in machine (anglue-go) = M/A/A ap les en ed as e affor stigith MOVOY3H[SI] DH # MOV SP, BX OPCODE = 1000101 has 0 D=W, Ol=Q Specific 100001= 30090 en festime. MOD = 01 , REG = 110 Machine of 0.00, 1 = 1 M/2 Mons bloshow Led 1.00 M directly with a computer's nandward CaloMents. Jenego 1 = 1238 Specific including cpu, memony and ito ment - Move instruction all exercise + 911 ** Assignment example. 18/9/23 - WISTAINT Submission. mokes it to need and waite hand in not need any ossemblen. Takes less time to execute a Program Debugging of code is trailed as it contains plyonly sequence.

Lecture-6 181.9123 Monday

| and the second s |
|--|
| # MOV cs:[8x], DL - UT 16 9/200157 117 |
| O SEGMENTO OVERRIDE PREFIX |
| 0100 1000 0 0 0 0 0 |
| Segment Registers 11 2008, XA UT |
| # ADD AL, O1H Segreg code |
| " " " O 1 |
| The Foremat is- Hear Had HDS 11 |
| $\frac{29 \times 109 \times 10^{10}}{100 \times 10^{10}} = \frac{ES}{10}$ |
| 10 0 0 0 00 0 000 Morio W, 2-10/55/2 10 |
| The wall stay atta morte, afata phite xopus (Diss. |
| 0000011000,0000,0001 |
| # ADD Ax, 3201 H |
| 0000101, |
| # ADD AL, OSH |
| |
| # IN AL, 05H - Appendix A TO STUPE instruction |

*** MON, ADD, IH

Lighter E

| 団 formale for IN- | # MOV cs:[8:], DL |
|--|-----------------------|
| 1/1/1/0/0/1/0/0 | Jaja brite, data |
| 111001000000 | 01010 |
| # JN AX, 3205 H 519/21899 HO | Segger Control Segger |
| 10 1100101 | # NOD ALLOTH |
| | neefives lab us detar |
| -2(4(2) Syndax, Explanation, examination, ex | myle Assignment. |
| ত । । ত । । ত | # ADD Ax, 3201 H |
| | Hap All gan H |
| moifeantain There or a xibregal - | Hao on MIH |
| H1 | LICAN IVOM TON |

Lecture-7 Wednesday 4/10/23

Institution Timing and Delay Loops

EN GORDS - Kaclock Cyeles

Mov ex, N; 4= Co -> clock cycle overhead

KILL TIME: NOP ; 3 1 Jump TO SLOT , 3

LOOP KILL TIME: 17 OR 5- Jump al arta

: CT = C687 H (C1) 1- 12 21+4-000.01

=> H = $\frac{c_{T}-c_{0}+12}{c_{L}} = \frac{5000-4+12}{23} = 218=0DAH$

团 1ms delay = 1000 us delay

中 8086 μp , clock Speed = $5MH_{7} = 5\times10^{6} H_{7}$ $\eta = \frac{1}{T}$ $\eta = \frac{1}{5\times10^{6}} = 0.2 M_{5}$

) 0.2 Ms - 16.6110 CHT

 $: 1 \quad " \rightarrow \frac{1}{0.2} \quad "$

 $1000 " \rightarrow \frac{1000}{0.2} c.c$ = 5000 c. e

4 2.5 ms Delay ban popular not a mile miles 2.5 ms delay = 2.5 x103 us $G.2:MS \rightarrow 1.CC$

 $\frac{1}{0.2} \text{ cc} \qquad \frac{1}{0.2} \text{ cc} \qquad \frac{1}{0.00} \text{ and } \frac{1}{0$

:N= 12,600 -4+12 \$544D \$ 220H-70:

Thested roob: -) Coldso si time rasors 子(叶

MON BX, COUNTI'S CYOTE TOLES and 151.

ENTD1: MON ex, COUNT 2; 4 (COUNT 1)

CHID 5: 5 ((114000 × 11)); 6 HOLHS 4007 : 6 OLHS COUNTI

DEC BX ; 2 (COUNT I)

JH2 CHTDH1; 16 (COUNT1)-12

団 30s delay

Lecture-8 5/10/23 Thurnday

| de la | Inuly duy |
|--|---|
| | 8086 Additessing Modes mollibro |
| | \rightarrow slide, $\times 3 < \times 9$ |
| | 0. x3 x x9 |
| the second named to be seen | It some important topies: |
| April territoria | 1) Editor (9) Locator |
| Water Control of the Park | 2) Assembler Debuggeron Assignment |
| CONTRACTOR STATE OF | 3 Linker @ Emulatorios lamilibrimorio |
| Company Carpendary | Sin: what is can taken and ances given |
| | CT College 1-8 Lecture - 9 |
| Description (1997) | CI SYMMON), LECTURE 10 OCI |
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