**Q) You add 9+9 through a 4 bit integer unit. This state of the OF and CR flags after the add will be** A)01 (OF, CF)

**Q) Moore's law has accurately predicted the growth rate in the number of transistors perdie for the last 25 years. What is that rate.** A) Doubling every 18-24 mths.

**Q) In x86 architecture, ALU stands for which of the following?** A) arithmetic Logic Unit

**Q) The number of nibbles in a word are:** A) 4

**Q) The instruction MOV BX, [2BAD] is what addressing mode?** A) Direct

**Q) What is the hexadecimal encoding for adding DX with BX and storing the result in BX?** A)03CB

**Q) A microprocessor with a 32-bit address bus could access how much memory?** A) 4GB

**Q) You add 7+6 through a 4 bit integer unit. The state of the OF and CF flags after the add will be:** A) OF=0, CF = 0

**Q) Which of the following DOS Debug instructions would be used change the IP register to 100?** A) RIP

**Q) What are the contents of CX after this program has been run:** A)D800

**Q) Given:** AX=FFD0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY **What is the signed decimal value of the number in the AX register?** A) -48

**Q) How many Bytes are there in this short sequence of code? B815B400CD16CD20** A)8

**Q) In using INT 10h to set the video mode to 640x350, what value must be in the AH register?** A) 00h

**Q) int 21h, function 09h requires three things set up before calling in order to correctly print a string, Hello\_msg. They are:** A) DS = SEG Hello\_msg, DX = OFFSET Hello\_msg, Hello\_msg terminated with 24h

**Q) Given:** 13A7:0110 CD 20 32 20 54 68 69 73-20 69 73 20 74 68 65 20

13A7:0120 66 69 72 73 74 20 4D 69-64 74 65 72 6D 0D 24 D9 13A7:0130 00 C6 00 00 00 00 00 00-00 00 00 00 00 00 00 00 **An input buffer is at memory location 0112, what is the size of the buffer in decimal?** A) 50

**Q) Here is a short sequence of code: 7413CD18EB157D213C04EBF0A3C6. All of the instructions are two bytes long. The third instruction operator is:** A) JMP

**Q) What is the hexadecimal encoding for loading DX with a word (value) from memory location 0820h?** A) 8B162008

**Q) Given:** 1D72:010D JGE 0116 **How many bytes will the processor jump if the conditions for a jump were met?** A) 9

**Q) F6 in 2's complement equals \_\_ in base 10?** A) -10

**Q) Given:** OV UP EI NG NZ NA PO NC 1D72:010D JNLE 0116 **What is the IP value after a “t” command is executed in DOS debug?** A) 0116h

**Q) Determine the contents of register BH after the following instructions have executed:** Mov BX, 70BAh Mov AX, E4E7h Mov BL, F0h AND AH, BL Mov [0202],AX A) 70h

**Q) Given:** 0106 JMP 0118 **What will the IP value be after a”t” command is executed in DOS Debug?** A) 0118h

**Q) Which of the following DOS Debug instructions would set a break point at memory location 010E?** A) G=100 10E

**Q) Given:** 0B0E:0200 57 65 6C 63 6F 6D 65 20-74 6F 20 41 73 73 65 6D 0B0E:0210 62 6C 79 20 4C 61 6E 67-75 61 67 65 00 00 00 00 A) Welcome to Assembly Language

**Q) Given:**

NV UP EI NG NZ NA PE NC 1D72:0104 JO(Jump if overflow) 0118 A) 0106h

**Q) Using DEBUG, which command should be used to change the flag settings?** A) RF

**Q) ANDing 20H and 1FH will result in which of the following?** A) 0

**Q) In MASM, with a “MOV CX, 12h” instruction, and a “LOOP” instruction, in decimal how many times will the program loop?** A) 18

**Q) What is the numeric sequence to address the key pad rows on the PPE board used in the lab?** A) 1,2,4,8

**Q) What is 14,4375 base 10 in binary?** A) 001110.01110

**Q) If the SP is F00F, what will the SP value be after a “POP CX” instruction?** A) F011

**Q) What type of program is this?** DS=1476 ES=1576 SS=1676 CS=1376 IP=0015 0100 ADD [BX+SI], AL (Since DS, ES, SS, CS are all diff = EXE) A) EXE

**Q) How many double words are in double IEEE floating point format numbers?** A) 2

**Q) How many bit(s) is/are required to represent a range of number from 0 to 255?** A) 8

**Q) A “NOP” instruction in a program will:** A) Perform a No Operation

**Q) You are trying to rebuild a HELLO project program in MASM and you get the following error; “LINK : warning L4021: no slack segment”. What would be the reason for such an error?** A) No project template for COM was selected.

**Q) A “PUSH” instruction:** A) Decrements the SP

**Q) If CX is 0000, what will CX be after a “LOOP” instruction?** A) FFFF

**Q) On the PPE board, what number(s) on the key pad is (are) pressed for an output port value of 02h and an input port value of 2Fh?** A) 5

**Q) With a POPAX instruction, what will be the order of the accumulator, base, count, and data registers restored from the stack?** A) AX

**Q) This section of memory represents a stack. What type of program is this?** BEEF:FFD0 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00 BEEF:FFE0 00 01 02 03 04 05 06 07-08 09 0A 0B 0C 0D 0E 0F BEEF:FFEF 11 22 33 44 55 66 77 88-99 AA BB CC DD EE FF A) Table 6-3: COM program

**Q) Determine the contents of register BL after the following instructions have been executed:** Mov BL, E2H Mov CL, 1000b ROL BL,CL A) E2H

**Q) What is – 1011.0101 base two in dec?** A) -11.31

**Q) Given the short code, what is the value in AX after the program is run?** Mov BX, 0500 Push BX Mov AX, 0100 POP AX A) 0500

**Q) For the instruction sequence below, determine the contents of the register AL after this program is executed:** Mov AL, 82h Add AL,68h DAA A) 50H

**Q) Which of the following is not a valid command for a number into a register in MASM?** A) MOV AX, AADH

**Q) The number of bits in single precision IEEE floating point format are:** A) 32

**Q) What is the numberic sequence of the key pad columns on the PPE board used in the lab?** A) 37, 2F, 1F

**Q) What command in DEBUG would be used to execute interrupts?** A) P

**Q) Which of the following is a valid x86 command for multiplying a number?** A) MUL BX

**Q) The number of bytes in extended precision IEEE floating point format are:** A) 10

**Q) With a POP DX, instruction, what will be the order of the accumulator, base count, and data registers.** A) DX

**Q) What flag does the “LOOPNZ” instruction look at the determine whether to loop or not?** A)ZF

**Q) DAS used for BCD operations, stands for which of the following?** A)Decimal Adjust for Subtraction

**Q) Double-precision IEEE FP standard uses \_\_\_\_ nibbles to represent data:** A) 16

**Q) A “PUSH” instruction:** A) decrements the SP

**Q) -10.25 in decimal converted to binary would be:** A) -1010.0100

**Q) Given the short code, what is the value in AX after the program is run?** Mov AX, 0200 Mov BX, 0300 Push BX POP AX A) 0300

**Q) Which of the following is not a valid command for a number in MASM?** A)MOV AL, C4H

**Q) What is the binary value of decimal 12.875?** A)1100.1110

**Q) If the SP is F00F, what is the SP value after a “POP BX” instruction.** A) F011

**Q) In MASM, with a “MOV CX, 10h” instruction, and a “LOOP” instruction, how many times will the program loop?** A) 16

**Q) Determine the contents of register Bl after the following instruction have been executed:** MOV BL,2EH MOV CL, 0100b ROL BL,CL A) E2H

**Q)What are the contents of AL, AH, AX, and EAX after the execution of the instruction, “MOV EAX, [30]”** A) 21,43,4321,87654321

**Q) If CX is 0001, what will CX be after a “LOOPNZ” instruction:** A)0000

**Q) With a POPA instruction, what will be the order of the accumulator, base, count, and data registers restored from the stack?** A) BDCA

**Q) The ASCII codes in decimal for space, space, carriage return, line feed, end of string are:** A) 32,32,13,10,36

**Q)** You are trying to rebuild a HELLO project program in MASM and you get the following error: “ LINK : fatal error L1089: HELLO.lrf: cannot open response file”. **What would be the reason for such an error?** A) No source file is identified (no .asm file)

**Q) On the PPE board, what number(s) on the key pad is(are) pressed for an output port value and an input port value of 1Fh?** A) 3

**Q) For the instruction sequence below** MOV AL, 83h ADD AL,45h DAA A) 28h

**Q) In string operations, register \_\_\_ is used to point to the source operand and register \_\_\_ is used to point to the destination operand.** A) SI,DI

**Q) A “POPA” instruction:** A) increments the SP

**Q) What flag(s) does the “LOOPNE” instruction look at to determine whether to loop or not?** A) ZF

**Q) Double-precision IEEE FP standard uses \_\_\_\_ nibbles to represent data.** A) 16

**Q) The “LOOPNE” instruction is equivalent to which of the following instructions?** A) DEX CX, JNZ

**Q) In MASM, with a “MOV CX, 18h” instruction, and a “LOOP” instruction, in decimal how many times will the program loop?** A) 24

**Q) The number of bytes in extended precision IEEE floating point format are:** A) 10

**Q) If CX is 0002, what will CX be after a “LOOP” instruction?** A) 0001

**Q) ANDing 2FH and 10H will result in which of the following** A) 0

**Q) With a POPAX instruction, what will be the order of the accumulator, base, count, and data register restored from the stack?** A) AX

**Q) What are the contents of AL, Ah, AX, and EAX after the excution of the instruction, “MOV EAX, 12345678H”** A) 78, 56, 5678, 12345678

**Q) On the PPE board, what number(s) on the key pad is (are) pressed for an output port value of 04h and an input port value of 2Fh?** A) 8

**Q) For the instruction sequence below, determine the contens of the register Al after the program is executed:** MOV AL, 72h ADD AL, 56h DAA A) 28H

**Q) What is 31. 4375 base 10 in binary?** A) 011111.0111

**Q) determine the contents of register BL after the following instruction have been executed:** Mov BL, E2H Mov Cl, 1000b ROL BL, CL A) E2H

**Q) Using DEBUG, which command should be used to change the flag settings?** A) RF

**Q) The instruction MOV BX, 2BAD is what addressing mode?** A) Immediate

**Q) What is the hexadecimal encoding for “JNL” for a jump back 10 bytes?** A) 7DF4

**Q) How many address lines would be required to address 64 MB directly?** A) 26

**Q) The number of nibbles in a double word are:** A) 8

**Q) Given:** IP = 010E OV UP EI PL NZ NA PO CY JNL 0118 A) 0110

**Q) What are the contents of DX after this program has been run:** MOV DX, 11h MOV, CX, [5512] MOV BX, 5511h SUB DX, [BX] 5514 24 5513 D8 5512 00 5511 21 A) FFF0h

**Q) In using INT 10h to move the screen curson to return on the same line, what value must be in the AX register?** A) 0E0Dh

**Q) Given:** IP = 010D OV UP EI PL NZ NA PO NC JNLE 0118 **what will be the IP value after a “t” command is executed in DOS Debug?** A) 010Fh

**Q) Which of the following DOS debug instructions would be used change the AX register?** A)RAX

**Q) IP = 0111** NV UP EI NG NZ NA PO CY JMP 0119 **after “t”** A) 0119h

**Q) Given:** IP = 010E OV UP EI NG NZ NA PO CY JNL 0118 A) 0118

**Q) How many bytes will the program jump for JNB instruction, given the following?** AX= 0000 BX=0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1376 ES=1376 SS=1376 CS=1376 IP=0100 NV UP EI PL NZ NA PO NC

1376:0100 73E0 JNB 00E2 A) -32

**Q) Given:** IP=010D OV UP EI PL NZ NA PO NC JNLE 0118 A)-0032

**Q) How many address lines would be required to address 512 MB directly?** A)29

**Q) What is the hexadecimal encoding for adding BX with CX and storing the result in BX?** A) 01CB

**Q) The binary number, 0111 1110, represents what values; in Hex, and as a BCD number?** A) 7E, 7 invalid

**Q)In using INT 10h to set the video mode to 640 x 200 what value must be in the AX register?** A) 0006h

**Q) how many bytes are there in this short sequence of code? CD15B400CD168A3C4A05** A) 10

**Q) What is the hexadecimal encoding for loading AH with a word for memory location 0520h?** A) 8A262005

**Q) What is the hexadecimal encoding for “JGE” for a jump back 10 bytes?** A) 7DF4

**Q)Given:** 13A7:0110 CD 30 48 20 54 68 69 73-20 69 73 20 74 68 65 20 13A7:0120 66 69 72 73 74 20 4D 69-64 74 65 72 6D 0D 24 D9 13A7:0130 00 C6 00 00 00 00 00 00-00 00 00 00 00 00 00 An input buffer is at memory location 0112, what is the size of the buffer in bytes in decimal? A)72 Look at 48 4\*16 + 8 = 72

Q) Given: IP = 0106 NV UP EI NG NZ NA PE NC JNO 0118 A) 0118 Jump if not overflow.

**Q) Refer to listing 5 of instructions and memory map determine the contents of registers AX, BX, and SP after the following instructions have been executed (assume SS=0000);** STD 0404 3A

Mov SP, 0400h 0403 DC POP, AX 0402 6E POP,BX 0401 5F A) AX= 5F48, BX= 0C6E, SP=0404

**Q) What is -13 in 2's compliment (8 bits)?** A) 11110011

**Q) If you want to use a DOS software interrupt function to print a string out to the screen what is the function code, start pointer, termination character, and interrupt you need to use?** A) ah= 09h, ds:dx, “$”, 21h

**Q) If CS-2DF6h and IP = 0BADh compute the physical address of the next 8086 instruction fetch.** A) 2EB0Dh

**MOV CX, [SI] is what addressing mode?**

a) Direct b) Register c) Scaled Index d) Register Indirect

**The IN & OUT instructioncan only transfer data between an I/O port and the \_\_\_\_\_\_ register.**

a) Only al b) Only cx c) cl, cx, or ecx d) al, ax, eax e) bl, bx, or ebx

**The 80x86 processors have two general-purpose hardware interrupts, called \_\_\_\_\_ and \_\_\_\_\_\_\_. Of these, interrupts on \_\_\_\_\_\_\_\_ can be blocked by giving the \_\_\_\_\_\_\_ instruction.**

a) INTR, NMI, NMI, STI b) NMI, INTR, NMI, CLI c) INT0, INT1, INT1, CLI d) INTR, NMI, INTR, CLI e) INTA, INTB, INTA, STI

**What are the contents of CX after this program:**

a) 3C7Ah b) 9002h c) 0038h d) 3038h e) F239h

Listing Memory Location Contents Contents MOV BX, 9002h 9003 F2 F2 MOV CX, 3C7Ah 9002 39 39 AND CX, [BX] 9001 4E 4E

**What is the binary value of -128?**

d) 1000 0000

**What is the status of overflow flag, carry flag, and sign flag, after the progam is run?** Listing Problem 2 MOV AL, FEH MOV CH, FBH ADD CH, AL

A) 0,0,1 **In string operation, register \_\_\_\_ is used to point to the source operand and register \_\_\_\_ is used to point to the destination operand.** SI, DI

**The \_\_\_ flag, bit \_\_\_\_\_ of the register, is used to tell the CPU whether to increment or decrement pointers in repeated string operations.** c) Directional flag, bit 11

**In the following program segment, what condition will cause the REPNZ to fail?** Listing Problem 5 MOV SI, OFFSET DATA1 MOV DI, OFFSET DATA2 MOV CX, LENGTH REPNZ CMPSE When CX=0 or the point at which DATA1 and DATA2 are not equal.

**What is the numeric sequence to address the key pad rows on the PPE board used in the lab?** 1,2,4,8

**When using DOS Debug, which command is used to execute INT instructions (to keep from changing the Code Segment)?**

P

**What must the value be and in what register, prior to executing a LOOPNE instruction, to discontinue looping?** 1 **The ASCII codes for carriage return and line feed are:** 0Dh, 0Ah

**With a POPA instruction, what will be the order of the registers (registers A~D) restored from the stack?** BDCA

**What is the 9.75 in Binary?** 3D A0 00 00

**Double-precision IEEE FP standard uses \_\_\_\_ bit to represent data:** c) 64

**What is the decimal value of 41 1C 00 00 in IEEE signal precision FP format?** 9.75

**What are the contents of BL, BH, BX, and EBX after the execution of the instruction, MOV EBX, 99FF77AAH:** AA, 77, 77AA, 99FF77AA

**What are the contents of BX after this program:** Listing for problem 17 Memory Location Contents MOV BX, 8002h 8003 4E MOV AX, 3C7Ah 8002 24 ADD [BX], AX 8001 F2 DAA 8000 39

8002h

**Determine the contents of register AL after the following instructions have been executed:** Listing for Problem 18 MOV AL, 2EH MOV CL, 8H ROR AL, CL

2EH **With a PUSHA instruction, what will be the order of the register (register A~D) contents on the stack?** ACDB

**The number of nibbles in a word are:** 4 **Assuming DS=100h, the instruction sequencein listing takes the last byte in the transfer from memory at:** 10250h

**The LOOPNE instruction performs which of the following?** Decrements the CX, tests the ZF flag, if it is not zero jumps to address specified

**For the instruction sequence below, determine the contents of the register AL after this program is executed:** Listing for Problem 24 MOV AL, 45 ADD AL, 65 DAA a) 10H

**The IN & OUT instruction can only transfer between an I/O port and the \_\_\_\_\_\_\_\_ register.**

e) AL, AX, or EAX

**What are the contents of BX after this program:** Problem #1 Program MEMORY LOCATION CONTENTS MOV BX, 9002h 9003 F2 MOV CX, 3C7Ah 9002 39

AND CX, [BX] 9001 4E

9002h

**The instruction sequence in listing 2 below outputs \_\_\_\_\_\_ consecutive bytes of memory.** 500h

**Assuming DS=1000h the instruction sequence in listing 3 below takes the last byte in the transfer** OFFDB0h

**Referring again to listing 3. The input switches are on port \_\_\_\_\_ and the output display is on port** 379h, 378h

**Outputs bytes from ES 1001 through ES: 100F to LO port 0A010h The IN & OUT instructions can only transfer data between an I/O port and the al, ax, or eax register.** True

**The 80x86 processors have two general-purpose hardware interrupts, called \_\_\_\_ and \_\_\_\_\_\_\_. Of these, interrupts on \_\_\_\_\_\_**

b) INTR, NMI, INTR, CLI

**Assume the interrupt service routine for the NMI input is stored at address 0x9A0:0100. What is the physical address and contents of the IVT What is the fastest possible data transfer rate to main memory for a Pentium III processor with 133 MHz Front Side Bus? Assume you transfer 8 bytes per data transfer and you require a single clock cycle per bus cycle.** 1.064 GB/s

**IRQ7 has which type code output by the PIC?** 0fh **Which of the following techniques does RAMBUS use to exceed DRAM access times:** Narrow bus topology with high clock rate.

**Of the memory addresses listed, which one is misaligned on a 486 processor, assuming a doubleword, access?** 90094005

**Refer to the following figure and determine the contents of registers AX, BX, and SP after the following instructions have been executed (assume SS=0000):** MOV SP, 0700h 0704 3A POP AX 0703 DC POP BX 0702 6E 0701 5F 0700 48 06FF 29 06FE 3C

06FD 34 06FC 12 AX=5F48, BX=DC6E, SP=0704

**The serial port interrupts on a standard PC (com1 & com2) are routed through the 8259 PIC to IRQ/INT:** IRQ3, IRQ4, Int Bh, Int Ch

**The mouse (IRQ12) will be serviced before the floppy drive (IRQ6) if both interrupts reach the 3259 PIC simultaneously:** False

**The third step in the DRAM read cycle is:** Turn on sense amps

**The number 1.101\*2^-3 is encoded in single precision format for the FPU as:** 3E500000h

**What is 40000000h in single precision real format? Note that both operands are assumed to also be in single precision real format.** 41000000h

**What is the opcode for mov bx, [est82]? Assume you’re in a 32-bit segment.** 668B1C7500000000

**Determine the contents of register BL after the following instructions have been executed:** E2H **What is -1011.0101 in decimal?** -11.31

**If CX is 0000, what will CX be after a “LOOP” instruction?** e)FFFF

**How many bit(s) is/are required to represent a range of numbers from 0 to 255?** 8 **What is 16.4375 in binary?** 010000.01110

**In Masm, with a “MOV CX, 12h” instruction, and a “LOOP” instruction, in decimal how many times will the program loop?** 18 **What is the binary value of decimal 12.875?** 1100.1110

**What is the numeric sequence of the key pad columns on the ppe board?** 37, 2F, 1F

**This section of memory represents a stack. What type of program is this?** BEEF: 0FD0 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00 BEEF: 0FE0 00 010 2 03 04 05 06 07-08 09 0A 0B 0C 0D 0E 0F BEEF: 0FF0 11 22 33 44 55 66 77 88 99 AA BB CC DD EE FF EXE

**Given the short code, what is the value in AX after the program is run?** Program Listing MOV BX, 0100 Push BX MOV AX, 0500 POP AX 0500

**What is -32.75 in binary?** 100000.11000

**What command in DEBUG would be used to change the IP value?** RIP **W hatt ypeo f programi s this?** AX=O000 BX=0000 CX=0000 DX=0000 SP=FIEE BP=0000 DS=1476 ES=1575 55=1676 CS=1376 IP=0015 NV UP EI L375:0015 0100 ADD [Bx+sI] AL

EXE

**16. What flag(s) does the "LOOPNZ" instruction look at to determine whether to loop or not?\**

ZF

**17. Which of the following is a valid x86 command for multiplying a number?**

c) MUL BX

**How many bytes are in double precision IEEE floating point format numbers?** 8 **What is -130 decimal in 2’s compliment (8bits)?**

a) 01111110

**lf the SP is F00F, what will the SP value be after a ‘'PoP cx" instruction?**

a) F011

**What is the decimal value of C5 5A 57 00 in IEEE single precision FP format?** -3493.4375

**On the PPE board, what number(s) on the key pad is (are) pressed for an output port value of 04h and an input port value of 2Fh?**

37,2F,1F

**23. You are trying to rebuild a HELLO project program in MASM and you get the following error:** “LINK: fatal error L1089: HELLO.lrf: cannot open response file”. What would be the reason for such an error? No source file is identified, no project was setup

**Which of the following will casue a program with a LOOP instruction to loop 48 times?** CX=30h

**If the SP is F00F, what is the SP value after a “Push CX” instruction?** F00D

**What is (are) the advantages of C Language over assembly language?** Hand assembly coding is much faster in C

The number of bits in single precision IEEE floating point format are: 32 Which of the following is not valid command for a number into a register in MASM? MOV AX, F8ADH

In the Hello MASM lab in the original code, what is the address of the byte used to start the string in the sequence “Hello World0”? 0200

You are trying to rebuild a HELLO project program in MASM and you get the following error. “LINK: warning L4021: no stack segment”.

b) No project template for COM was selected

How many nibbles are in double precision IEEE floating point format numbers? 16 A “pull down” resistor is used in digital circuits to do what? To keep the signal line “tied” low until the line is active (goes high)

The acronym PWM used for motor control, is defined as which of the following? Pulse Width Modulation Given: AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DS=1D72 ES=TD7Z SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA 1D72:01097 D06 JNL 0118 What is the signed decimal value of the number in the AX register? -16 What are the contents of BX after this program has been run: Memory location Contents 1103 24 1102 D8

1101 00 1100 21

1100h What is 16.4375 in binary? 010000.01110

Here is a short sequence of code: 7413A3EBCD167D213C04EBF0EB15. JGE Determine the contents of register BL after the following instructions have been executed: E2H Program Listing MOV BL, E2H MOV CL, 1000b ROL BL, CL

Which of the following DOS Debug instructions would set a break point at memory location 010E? G=100 10E

The “LOOPNZ” instruction is equivalent to which of the following instructions? DEC CX, JNE

AX=FFEOB X=3534C X=0000D X=0180S p=FFEEB p=0000 Sr=0000 Dr=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=OIOD OV UP EI PL NZ NA PO NC 1D72:010D 7D09 JGE 0116 How many bytes will the processor jump if the conditions for a jump were met? 9 A)(=0353 BX=0534c X=0000 DX=0180S P=FFEEB P.=0000S r=0000 Dr-0000 DS=TD7? ES=1D72 SS=1D72 CS=1D72 IP=0109 'OV/UP EI PL NZ NA FO CY 1D72:01097 D06 INL 0118 What will the IP value be after a “t” command is executed in DOS Debug? 010B

Int 21h, Function 09h requires three things set up before calling in order to correctly print a string, Hello\_msg. They are: DS= SEG Hello\_msg, DX=OFFSET Hello\_msg terminated with 24h

How many address lines would be required to address 64 MB directly? 26 NV UP EI NG NZ NA PE NC JMP 0118 What will the IP value after a “t” command is executed in DOS Debug? 0118h

In the Hello MASM lab in the original code, what is the address of the byte used to start the number in the sequence “Hello World 0”? 020E

What is the hexadecimal encoding for adding BX CX and storing the result in BX? 01D9

1010 0110 in 2’s complement equals \_\_\_\_ in base 10. -90 An input buffer is at memory location 0114, what is the size of the buffer in the decimal? 84 A “NOP” instruction in program will:

Perform a No Operation

If CX is 0002 what will CX be after a “LOOP” instruction? 0001

In x86 architecture, ALU stands for which of the following? Arithmetic Logic Unit

The instruction MOV CX, [DADD] is what addressing mode? Direct

In adding 5+7 through a 4 bit integer unit. The stat of the OF and CF flags afer the add instruction would be: OF=0, CF=0

What is the hexadecimal encoding for “JGE” for a jump back 12 bytes?

7DF2

In x86 architecture, BIU stands for which of the following? Bus interface Unit

F6 in 2’s compliment equals\_\_\_ in base 10 -10 A Microprocessor with a 32-bit address bus could access how much memory? 4GB

AND’ing 10H and 2FH will result in which of the following? 0 For the instruction sequence below, determine the contents of the register AL after this program 51H

The ASCII codes for space, space, carriage return, line feed, end of string in decimal are: 32, 32, 13, 10, 36

In MASM, with a “MOV CX, 18” instruction, and a “LOOP” instruction, in decimal how many times will the program loop? 24 In MASM, with a “MOV CX, 18” instruction, and a “LOOP” instruction, in decimal how many times will the program loop? 18 What command in DEBUG would be used to execute interrupts? P The number of nibbles in a double word are: 8 ❖ Determine the contents of register AH after the following instructions have been executed: MOV BX, BA70h //

MOV AX, 47E7h // MOV BL, 0Fh // AND AL, BL // MOV [0202], AX ➢ 47h ❖ In using INT 10h to move the screen cursor to return to the beginning of the line what value must be in the AX

register? ➢ 0E0Dh ❖ Given: 1376:0110 48 61 76 65 20 61 20 67-72 65 61 74 20 53 70 72

1376:0120 69 6E 67 20 52 65 63 65-73 73 21 00 00 00 00 00 An ASCII message begins at memory location 0110, what is the message? ➢ Have a great Spring Recess! ❖ Here is a short sequence of code: 7404CD15EB213C04EBF0A3C67513. All of the instructions are two bytes

long. The third instruction operator is: ➢ JMP ❖ You add 1+8 through a 4 bit integer unit. The state of the OF and CF flags after the add will be:

➢ OF = 0, CF = 0 ❖ Which BS:DX pair below is wrong when trying to access 2BAD2h in physical memory:

➢ 2900:DAD2 ❖ Given: AX=CCD0 BX=3534 CX=0000 DX=018 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72

SS=1D72 CS=1D72 IP=010C NV UP EI NG NZ NA PO CY 1D72:010C 7B06 JGE 0114

What will the IP value be after a “t” command is executed in DOS Debug? ➢ 010E ❖ The number of nibbles in a double word are:

➢ 8 ❖ 1011 1100 in 2’s complement equals \_\_\_\_ in base 10.

➢ -68 ❖ Which DS:AX pair below is WRONG when trying to access 335Dah in physical memory:

➢ 3220:04DA

❖ What is the hexadecimal encoding for “JNZ 15” where 15h is the relative offset?

➢ 21 ❖ Here is a short sequence of code: B400CD163C4A74043C6A7513. All of the instruction are two bytes long.

The sixth instruction operator is: ➢ JNZ ❖ You add 9+9 through a 4 bit integer unit. The state of the OF and CF flags after the add will be:

(First digit is the OF, second is the CF) ➢ 11 ❖ Moore’s law has accurately predicted the growth rate in the number of transistors per die for the last 25 years.

What is that rate? ➢ Doubling every 18-24 months ❖ Which instruction below loads register BX with the word beginning at physical address 30608h. Assume DS =

3050, BX=1000 ➢ MOV BX, [0308] ❖ Determine the contents of register AL after the following instructions have executed: MOV BL, 0Fh // MOV

AL, 6Ch // XOR AL, BL ➢ 62h ❖ A microprocessor with a 24-bit address bus could access how much memory?

➢ 16 MB ❖ The binary number, 1000 0110, represents what values as an Unsigned Binary, 8-bit signed binary, Odd Parity

ASCII, and BCD number (in that order)? ➢ 134,-122,ACK,86 ❖ The instruction MOV CL, SI is what addressing mode?

➢ Register ❖ A "PUSH" instruction: ➢ decrements the SP ❖ If CX is 0000, what will CX be after a "LOOP" instruction?

➢ FFFF ❖ You are trying to rebuild a HELLO program project in MASM and you get the following error:

"ERROR 4 line 1". What is the cause of the error? ➢ Not known--this error by itself isn't a problem, press the enter key to clear the error ❖ In MASM, with a "MOV CX, 18" instruction, and a "LOOP" instruction, in decimal how many times will the

program loop? ➢ 18 ❖ You are trying to rebuild a HELLO project program in MASM and you get the following error:

"LINK : warning L4021: no stack segment". What would be the reason for such an error? ➢ No project template for COM was selected ❖ In the Hello MASM lab in the original code, what is the address of the byte used to start the string in the

sequence "Hello World 0"? ➢ 0200 ❖ What is 14.4375 in binary?

➢ 001110.01110 ❖ How many bit(s) is/are required to represent a range of numbers from 0 to 63?

➢ 6 ❖ What type of program is this? AX=0000 BX-

0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000

DS=1376 ES=1376 SS=1376 CS=1376 IP=0100 NV UP EI PL NZ NA PO NC

1376:0100 0100 ADD [BX+SI],AL BP=0000 SI=0000 DI=0000 NV UP EI PL NZ NA PO NC DS:0000=CD ➢ COM ❖ What command in DEBUG would be used to change the code segment?

➢ RCS ❖ This section of memory represents a stack. What type of program is this? BEEF:FFD0

00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00 BEEF:FFE0 00 01 02 03 04 05 06 07-08 09 0A 0B 0C 0D 0E 0F BEEF:FFF0 11 22 33 44 55 66 77 88-99 AA BB CC DD EE FF ➢ EXE program ❖ Determine the contents of register BL after the following instructions have been executed: MOV BL, E2H //

MOV CL, 1000b //ROL BL, CL ➢ E2H ❖ What Hex values must be sent to address the key pad rows on the PPE board?

➢ 1,2,4,8 ❖ The ASCII codes for space, space, carriage return, line feed, end of string in hexadecimal are:

➢ 20,20,0D,0A24 ❖ Which of the following is a valid x86 command for multiplying a number?

➢ MUL BX ❖ What command in MASM-CodeView would be used to step through a program line by line?

➢ T (F8) ❖ 17. Given the short code, what is the value in AX after the program is run?

➢ 0500 ❖ A “POP” Instruction

➢ Increments the SP ❖ A "NOP" instruction in a program will:

➢ Perform a No Operation ❖ What is the numeric sequence of the key pad columns on the PPE board used in the lab?

➢ 2,4,6,8 ❖ For the instruction sequence below, determine the contents of the register AL after this program is executed:

MOV AL, 93h // ADD AL, 69h // DAA ➢ 62H ❖ Which of the following is not a valid command for a number into a register in MASM?

➢ MOV AX, F8ADH ❖ On the PPE board, what number(s) on the key pad is (are) pressed for an output port value of 04h and an input

port value of 2Fh? ➢ 8 ❖ AND'ing 20H and 1FH will result in which of the following?

➢ 0 ❖ With a POPA instruction, what will be the order of the accumulator, base, count, and data registers restored

from the stack? ➢ BDCA ❖ If the SP is F00F, what will the SP value be after a "PUSH CX" instruction?

➢ F00D ❖ Int 10h uses what function to write a character to the screen and advance the cursor by one character position?

➢ 0Eh ❖ Int 21h Function 09h requires three things set up before calling in order to correctly print a string, msg1. They

are: ➢ DS=SEG msg1,DX=OFFSET msg1, msg1 terminated with a 24h

❖ What are the contents of AX after this program: MOV AX, 0010h // MOV BX, 8011h // SUB AX, [BX]

Memory Locations: 8013: F2 8012: 00 8011: 21 ➢ FFEFh ❖ The instruction JGE compares which of the following?

➢ The sign flag and the overflow flag to see if they are equal ❖ What will the following program do?

➢ Takes in the keyboard input, “This is the first Midterm”

➢ ❖ Here is a short sequence of code: B400CD163C4A74043C6A7513. All of the instructions are two bytes long.

The sixth instruction operator is: ➢ JNZ ❖ How many nibbles are in this short sequence of code: B400CD163C4A74043C6A7513

➢ 24 ❖ What is the hexadecimal encoding for JGE for a conditional jump back 8 bytes?

➢ 7DF8 ❖ The binary number, 1011 0101, represents what values as an unsigned binary, 8-bit signed binary, odd parity

ASCII, and BCD number (in that order)? ➢ 181,-76,5,invalid5 ❖ 1000 0101 in 2’s complement equals \_\_\_ in base 10.

➢ -123 ❖ How many bytes will the program jump for “JNL 30” where 30h is the relative offset

➢ 48 ❖ You add 8+8 through a 4 bit integer unit. The state of the OF and CF flags after the add will be:

➢ OF=1, CF=1 ❖ In x86 architecture, ALU stands for which of the following?

➢ Arithmetic Logic Unit

❖ Determine the contents of register BL after the following instructions have executed: MOV DH, 7Eh // MOV

AL, E7h //MOV BL, F0h // AND AL, BL // MOV [0202], AL ➢ F0h

❖ What are the contents of CX after this program:

➢ 0000h ❖ Which instruction below loads register DX with the word beginning at physical address A0802h? Assume

DS=A010, DX=FF80 ➢ MOV DX, [0702] ❖ Looking at the following program, how many bytes are in the buffer?

➢ 19 ❖ In the following program, how many bytes will the buffer hold?

➢ 40 ❖ In using Int 10h to set the video mode to 80 x 25, what value must be in the A register?

➢ 00h ❖ 1100 1010 in 2’s complement equals \_\_\_ in base 10.

➢ -36 ❖ Which DS:DX pair below is wrong when trying to access 2BADDh in physical memory:

➢ 2000:DADD ❖ How many bytes will the program jump for “JNS 20” where 20h is the relative offset?

➢ 32 ❖ You add 9+8 through a 4 bit integer unit. The state of the OF and CF flags after the add will be: (First digit is

the OF, second is the CF) ➢ 11 ❖ Which instruction below loads register BX, with the word beginning at physical address 90802h? Assume

DS=9020, BX=2800

➢ MOV BX, [0602]

❖ Determine the contents of register AL after the following instructions have executed:

➢ E0h ❖ In x86 architecture, BJU stands for which of the following?

➢ Bus Interface Unit ❖ A microprocessor with a 28-bit address bus could access how much memory?

➢ 256 MB ❖ The number of nibbles in a byte are:

➢ 2 ❖ A microprocessor with a 26-bit address bus could access how much memory?

➢ 64 MB ❖ 1100 1011 in 2’s complement equals \_\_\_ in base 10.

➢ -50 ❖ Which DS:DX pair below is wrong when trying to access 2BADAh in physical memory:

➢ 2000:DADA ❖ How many bytes will the program jump for “JNS 12” where 21h is the relative offset?

➢ 18 ❖ The instruction MOV BX, [SI] is what addressing mode?

➢ Register Indirect ❖ What will the following program do?

❖

➢ Displays “This is the first Midterm” and returns to DOS. What is the advantage of Assembly Language over C Language? a) The Assembler creates much faster executable code

How many address lines would be required to address 128 MB directly?

a) 27

In the x86 lab part 3 Hello MASM program in the original code, what is the address of the byte used to start the number in the sequence “Hello World 0”?

a) 020E

Given: 0B0E:0200 57 65 6C 63 6F 6D 65 20-74 6F 20 41 73 73 65 6D 0B0E:0210 62 6C 79 20 4C 61 6E 67-75 61 67 65 00 00 00 00

As ASCII message begins at memory location 0200, what is the message?

a) Welcome to Assembly Language

Which of the following DOS Debug instructions would be used to change the IP register to 0110?

a) RIP

Moore’s law has accurately predicted the growth rate in the number of transistors per die for the last 40 years. What is that rate? a) Doubling every 18-24 months

Which of the following DOS Debug instructions would set a break point at memory location 010C?

a) G = 100 10C

AND’ing 1FH and 02H will result in which of the following?

a) 02

If CX is 0000 what will CX after a “LOOP” instruction?

a) FFFF

The number of bits in a word are:

a) 16

In x86 architecture, ALU stands for which of the following?

a) Arithmetic Logic Unit

Given: AX=0353 BX=0534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY 1D72:0109 7D06 JGE 0118 What will the IP value be after a “t” command is executed in DOS Debug?

a) 010B

What is the number 1010.01012 in decimal?

a) 10.31

How many cores does the propeller microcontroller have?

a) 8

What is the hexadecimal encoding for “JGE” for a jump back 12 bytes?

a) 7DF2

What command in DEBUG would be used to step through a program line by line?

a) T

Here is a short sequence of code: **7413\_EBA3\_CD16\_7D21\_3C04\_EBF0\_EB15** . All of the instructions are a word long. The third instructions operator is:

a) Int

In MASM, with a “MOV CX, 24” instruction, and a “LOOP” instruction, in decimal how many times will the program loop?

a) 24

Given: AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D NV UP EI PL NZ NA PO NC 1D72:010D 7DF6 JNL 0116 How many bytes in decimal will the processor jump if the conditions for a jump were met?

a) -10

Determine the contents of register BL after the following instructions have been executed: Program Listing MOV BL, E2H MOV CL, 08H ROL BL, CL

a) E2H

The ASCII codes for space, space, carriage return, line feed, end of string in decimal are:

a) 32, 32, 13, 10, 36

AND’ing 10H and 2FH will result in which of the following?

a) 0

A “NOP” instructions in a program will:

a) Perform a No Operation

Given: AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY 1D72:0109 7D06 JGE 0118 What is the signed decimal value of the number in the AX register?

a) -16

How many address lines would be required to address 64 MB directly?

a) 26

What command in DEBUG would be used to execute interrupts?

a) P

What high level language is the propeller programmed in?

a) Spin

Which of the following DOS Debug instructions would be used to change the IP register to 010C?

a) RIP

The acronym PWM used in the Parallax Propeller and MicroChip PIC18, is defined as:

a) Pulse Width Modulation

Which command would you use to execute another core in the propeller microcontroller?

a) Cognew

Given: AX=FFD0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0111 NV UP EI NG NZ NA PO CY 1D72:0111 EB08 JMP 0119 What will the IP value be after a “t” command is executed in DOS Debug?

a) 0119h

The instruction MOV CX, DADD is what addressing mode?

a) Immediate

In the PIC18 with TRISD = 0b00001111 and LATD = 0xAA, what value will be on Port D and shown on the LEDs?

a) A0

Given: AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010F NV UP EI NG NZ NA PO NC 1D72:010F 7D18 JGE 0128 How many bytes in decimal will the processor jump if the conditions for a jump are met?

a) 24

In the Propeller microcontroller, the command “dira[4..9] := %111111” would cause the processor to do which of the following?

a) Sets the Propeller pins P4 through P9 as output pins

What are the contents of DX after this program has been run: MOV DX, 11h MOV CX, [5512] MOV BX, 5511h SUB DX, [BX] AND BX, FFFF

Memory Location Contents 5514 24 5513 D8

5512 00 5511 21 5510 00

a) FFF0h

The number of nibbles in a word are:

a) 4

In the Propellor microcontroller, the command “waitcnt(clkfreq\*10 + cnt)” would cause the processor to do which of the following?

a) Create 10 second delay

The “LOOPNE” instruction is equivalent to which of the following instructions?

a) DEC CX, JNE

Given: AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D NV UP EI NG NZ NA PO NC 1D72:010D EB07 JMP 0114

a) 7

On the Arduino platform, what is the programming language used?

a) C

What is the hexadecimal encoding for loading AX with a word (value) from memory location 0820h?

a) A12008

Which of the following would be used to set the TRISA register to control the direction of the PIC18 Port to input?

a) 1

The acronym ADC in microcontrollers stands for which of the following?

a) Analog to Digital Converter In adding 5+5 through a 4 bit integer unit. The state of the OF and CF flags after the add

a) OF = 1, CF = 0

With a POPA instruction, what will be the order of the accumulator, base, count, and data registers restored from the stack?

a) BDCA

A “pull up” resistor is used in digital circuits to do what?

a) To keep the signal “tied” high the line is active (goes low)

Which of the following is not a valid command for a number into a register in MASM?

a) MOV AX, AADDH

Given the short code, what is the value in AX after the program is run? Program Listing MOV BX, 0005

PUSH BX MOV AX, 0100 POP AX a) 0005

A “pull down” resistor is used in digital circuits to do what?

a) To keep the signal line “tied” low until the line is active (goes high)

The Ladder Logic diagram would represent which of the following?

a) OR

What flag(s) does the “LOOPNE” instruction look at to determine whether to loop or not?

a) ZF

You are trying to rebuild a HELLO project program in MASM and you get the following error: “LINK : fatal error L1089: HELLO.lrf : cannot open responsefile”. What would be the reason for such an error?

a) No source file is identified (no .asm file)

A “POP” instruction:

a) Increments the SP

Ladder Logic is used in \_\_\_\_\_\_\_

a) PLCs What is the numeric sequence of the key pad columns on the PPE board?

a) 37, 2F, 1F

If CX is 0001, what will CX be after a “LOOPNZ” instruction?

a) 0000

What command in MASM-CodeView (debugging mode) would be used to step through a program line by line?

a) T (F8)

The Ladder Logic diagram would represent which of the following?

a) AND

If the SP is F00F, what is the SP value after a “POP CX” instruction?

a) F011

In the Propeller microcontroller, the term “Method” is (are) which of the following?

a) A block of executable commands that has variables, can receive parameters, and returns a value.

For the instruction sequence below, determine the contents of the register AL after this program is executed: Program Listing MOV AL, 83h ADD AL, 68h DAA

a) 51H

This section of memory represents a stack. What type of program is this? BEEF:FFD0 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00 BEEF:FFE0 00 01 02 03 04 05 06 07-08 09 0A 0B 0C 0D 0E 0F BEEF:FFF0 11 22 33 44 55 66 77 88-99 AA BB CC DD EE FF

a) COM program

On the PPE board, what number(s) on the key pad is (are) pressed for an output port value of 08h and an input port value of 2Fh?

a) 0

Given 13A7:0110 CD 20 30 20 54 68 69 73-30 69 73 20 74 68 65 20 13A7:0120 66 69 72 73 74 20 4D 69-64 74 65 72 6D 0D 24 D9 13A7:0130 00 C6 00 00 00 00 00 00-00 00 00 00 00 00 00 00 An input buffer is at memory location 0118, how many bytes are in the buffer (in decimal)?

a) 32

In the Propeller, how many values does a method return?

a) 1

Which of the following instruction would be used to set the LED to light on the Arduino platform?

a) digitalWrite(ledPin, HIGH);

Which of the following will cause a program with a LOOP instruction to loop 48 times (decimal)?

a) CX = 30h

What type of program is this? AX=0000 BX=0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1476 ES=1576 SS=1676 CS=1376 IP=0115 NV UP EI PL NZ NA PO NC 1376:0115 0100 ADD [BX+SI], AL DS:0000=CD

a) EXE

The letters “NC” labeled to relays and PLCs means which of the following?

a) Normally Closed

What is -130 decimal in 2’s complement (8 bits)?

a) 01111110

What type of program is this? AX=0000 BX=0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1376 ES=1376 SS=1376 CS=1376 IP=0115 NV UP EI PL NZ NA PO NC 1376:0115 0100 ADD [BX+SI], AL DS:0000=CD

a) COM

The acronym PLC, is defined as which of the following?

a) 32KB

You are trying to rebuild a HELLO project program in MASM and you get the following error: “LINK : warning L4021 : no stack segment”. What would be the reason for such an error?

a) No project template for COM was selected

On the PPE board, what number(s) on the key pad is (are) pressed for an output port value of 04h and an input port value of 2Fh?

a) 8

The Ladder Logic diagram would represent which of the following?

a) AND

In the PIC18 with TRISD = 0b01111111, what is the configuration of the Port D?

a) Bit 7 of Port D is set to output

How many nibbles are in double precision IEEE floating point format numbers?

a) 16

What is the decimal value of C5 5A 57 00 in IEEE single precision FP format?

a) MUL BX

The letters “NO” labeled on relays and PLCs means which of the following?

a) Normally Open

The instruction MOV CX, [SI] is what addressing mode?

a) Register Indirect

Pg47 What are the contents of BX after this program: Program #1 Program Memory Location Contents MOV BX, 5002h 5003 F2 MOV CX, 3C7Ah 5002 39 AND CX, [BX] 5001 4E

a) 5002h

With a PUSHA instruction, what will be the order of the register (registers A – D) contents on the stack?

a) ACDB

The number of nibbles in a doubleword are:

a) 8

Determine the contents of register AL after the following instructions have been executed: Listing 3 MOV AL, E2H MOV CL, 4H ROR AL, CL

a) 2EH

The instruction sequence in listing 2, outputs \_\_\_\_ consecutive bytes of memory. Listing 2 STD MOV CX, 500h

MOV DX, 100h MOV SI, 250h A1: LODSB OUT DX, AL LOOP A1 a) 500h

Assuming DS=1000h, the instruction sequence in listing 2 takes the last byte in the transfer from memory at:

a) 0FDB0h

Refer to listing 4. What does this code do? Listing 4 MOV DX, 0F010h MOV SI, 1001h MOV CX, 0Fh CLD REP OUTSB

a) Outputs bytes from DS:1001 through DS:100F to I/O port 0F010h

1010 0110 in 2’s complement equals in base 10 → **-90**

A microprocessor with a 32-bit address bus could access how much memory→ **4GB**

A6 in 2’s complement equals in base 10 → **-90**

A “POP” instruction: → **Increments the SP**

A “PUSH” instruction → **decrements the SP**

A “NOP” instruction in a program will → **Perform a No Operation**

AND’ing 1FH and 02H will result in which of the following → **02**

AND’ing 10H and 2FH will result in which of the following → **0**

A “**pull down**” resistor is used in digital circuits to do what? → **To keep the signal line “tied” low until the line is active (goes high)**

A “**pull up**” resistor is used in digital circuits to do what → **To keep singal “tied” high until the line is active (goes low)**

Determine the contents of register BL after the following instructions have been executed:→ **E2H** MOV BL, E2H MOV CL, 1000b ROL BL, CL **; rotate BL by 8 to left = same value**

For the instruction sequence below, determine the contents of the registers AL after this program → **51H** MOV AL, 73h ; 0111 0011 ADD AL, 78h ; 0111 1000 DAA if low nibble of AL > 9 or AF = 1 then: AL = **AL + 6** AF = 1 if AL > 9Fh or CF = 1 then: AL = **AL + 60h** CF = 1

For the instruction sequence below, determine the contents of the register AL after this program is executed → **51H**

MOV AL, 83h ADD, AL, 68h DAA

Given the short code, what is the value in AX after the program is run → **0100**

Mov BX, 0100 PUSH BX MOV AX, 0500 POP AX

Given the short code, what is the value in AX after the program is run →**0001**

MOV BX, 0001 PUSH BX MOV AX, 0500 POP AX

GIVEN: IP = 0106 Flags: NV UP EI NG NZ NA PE NC Instruction: JMP 011F What will the IP value be after “t” command is executed in DOS Debug? → **011FH** (Unconditional Jump)

GIVEN: IP = 0109 Flags: OV UP EI PL NZ NA PO CY Instruction: JGE 0118 What will the IP value be after a “t” command is executed in DOS Debug → **010B** (0109 + 0010 add two bytes)

GIVEN: IP=FFE0 Flags: OV UP EI PL NZ NA PO NC Instruction: JGE 0116: ID72:010D 7D**09** How many bytes will the processor jump if the condition for a jump were met? → **9**

GIVEN: AX= FFF0 IP = 0109 FALGS: OV UP EI PL NZ NA PO CY ID72: 010F **7D18** Instruction: JGE 0118. What is the signed decimal value of the number in the AX register? → **-16** Covert the number 7D18 into decimal.

GIVEN: IP= 010F Flags: NV UP EI NG NZ NA PO NC Instruction: JNL 0115. How many bytes in decimal will the processor jump if the conditions for a jump were met → **24**

GIVEN: 57 65 6C 63 6F 6D 65 20-74 6F 20 41 73 73 65 6D

62 6C 79 20 4C 61 6E 67-75 61 67 65 00 00 00 00 An ASCII message begins at memory location 0200, what is the message? → **Welcome to Assembly Language**

Here is a short sequence of code: 7413 EBA3 CD16 7D21 3C04 EBF0 EB15. All of the instructions are a word long. The third instruction operator is → **INT**

Here is a short sequence of code: 7413 A3EB CD16 7D21 3C04 EBF0 EB15. All of the instructions are a word long. The fourth instruction operator is →**JGE**

Here is a short sequence of code: B400 CD16 3C4A 7404 BC6A 7513. All of the instructions are two bytes long. The sixth instruction operator is →**JNZ**

How many cores does the propeller microcontroller have → **8**

How many bits(s) is/are required to represent a range of decimal numbers from **0** to **15** → **4**

How many bits(s) is/are required to represent a range of decimal numbers from **0** to **63** → **6**

How many bits(s) is/are required to represent a range of decimal numbers from **0** to **127** →**7**

How many bits(s) is/are required to represent a range of decimal numbers from **0** to **255** →**8**

How many bytes are there in this short sequence of code B4 00 CD 16 4C CD 20 → **7**

How many nibbles are there in this short sequence of code B4 00 CD 16 3C 4A 74 04 3C 6A 75 13 →**24**

How many bytes are in double precision IEEE floating point format numbers → **8**

How many nibbles are in double precision IEEE floating point format numbers → **16**

How many address lines would be required to address 128 MB directly → **27** (128 x 1048576 = 134217728 and 2^27 = 134217728)

How many address lines would be required to address 64 MB directly → **26** (64 x 1048576 = 67108864 and 2^26 = 67108864)

If CX is 0000, what will CX be after a “LOOP” instruction → **FFFF**

If CX is 0003, what will CX be after a “LOOPNZ” instruction →**0002**

If the SP is **F00F**, what is the SP value after a “**PUSH CX**” instruction → **F00D**

If the SP is **F00F**, what is the SP value after a “**POP CX**” instruction → **F011**

If the SP is **F00F**, what is the SP value after a “**POP SP**” instruction → **F011**

In adding 5+5 through a 4 bit integer unit. The state of the OF and CF flags after the add instruction would be → **OF = 1, CF = 0**

In x86 architecture, BIU stands for which of the following → **Bus Interface Unit**

In x86 architecture, ALU stands for which of the following → **Arithmetic Logic Unit**

In the x86 lab part 3 Hello MASM program in the original code, what is the address of the byte used to start the number in the sequence “Hello World 0”? → **020E**

In MASM, with a “MOV CX, **24h**” instruction, and a “LOOP” instruction, how many times will the program loop in decimal → **36**

In MASM, with a “MOV CX, **24**” instruction, and a “LOOP” instruction, how many times will the program loop in decimal → **24**

In MASM, with a “MOV CX, 12h” instruction, and a “LOOP” instruction, how many times will the program loop in decimal → **18**

In the Hello MASM lab in the original code, what is the address of the string to start the message “Hello World 0” → **0200**

In the PIC18 with TRISD = 0b10000000, what is the configuration of the Port D → **Bit 7 of port D is set to input**

In the PIC18 with TRISD = 0b01111111 and LATD = 0xAA, what value will be on Port D and shown on the LEDS → **Bit 7 of port D is set to output** (because the first bit is zero = output)

In the PIC18 with TRISD = 0b00001111, what is the configuration of the Port D → **A0 (First 4 are outputs and last four are inputs)**

In the PIC18 with TRISD = 0b11110000 and LATD = 0xAA, what value will be on Port D and shown on the LEDS → **0A**

In the Propeller microcontroller, the command “dira[9..4] := %000000” would cause the processor to do which of the following → **Sets the propeller pin P4 through P9 as output pins**

In the Propeller microcontroller, the command “dira[9..4] := %111111” would cause the processor to do which of the following → **Sets the propeller pin P4 through P9 as output pins**

In the propeller microcontroller, the command “waitcnt(clkfreq\*3 + cnt)” would cause the processor to do which of the following → **A 3 second delay**

In the propeller microcontroller, the command “waitcnt(clkfreq\*2 + cnt)” would cause the processor to do which of the following → **A 2 second delay**

In the Propeller microcontroller, the term “Method” is (are) which of the following → **A block of executable commands that has variables, can receive parameters, and returns a value.**

Int 10h uses what function code to write a character to the screen and advance the cursor by one character position → **0Eh**

Int 21h, Function 09h requires three things set up before calling in order to correctly print a string: **DS=SEG Hello\_msg, DX=OFFSET Hello\_msg, Hello\_msg terminated with 24h**.

Ladder Logic is used in? → **PLCs**

**Moore’s law** has accurately predicted the growth rate in the number of transistors per die for the last 40 years. What is the rate? → **Doubling every 18-24 months**

On the Ardino platform what is the program language used → **C**

On the **PPE board**, what numbers(s) on the key pad is(are) pressed for an output port value of 08h and an input port value of 2Fh → **0**

On the **PPE board**, what numbers(s) on the key pad is(are) pressed for an output port value of 04h and an input port value of 2Fh → **8**

The “LOOPNZ” instruction is equivalent to which of the following instructions → **DEC CX, JNE**

The acronym PWM used for motor control, is defined as which of the following → **Pulse Width Modulation**

The acronym PLC, is defined as which of the following? → **Programmable Logic Controller**

The ASCII codes for space, space, carriage return, line feed, end of string in **decimal** are → **32, 32, 13,10, 36**

The ASCII codes for space, space, carriage return, line feed, end of string in **hexadecimal** are:→ **20,20,0D,0A,24**

The binary number, 1011 0101, represents what values as a unsigned binary, 8 bit signed binary, odd parity ASCII, and BCD number (in that order) → **181, -76, 5, invlaid5**

The instruction MOV CX, DADD is what addressing mode → **Immediate**

The instruction MOV CX, [DADD] is what addressing mode → **Direct**

The number of bits in single precision IEEE floating pint format are → **32**

This section of memory represents a stack. What type of program is this → **EXE PROGRAM**

**BEEF:00D0** 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00 **BEEF:00E0** 00 01 02 03 04 05 06 07-08 09 0A 0B 0C 0D 0E 0F **BEEF:00F0** 11 22 33 44 55 66 77 88-99 AA BB CC DD EE FF

**BEEF:0FD0** 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00 **BEEF:0FE0** 00 01 02 03 04 05 06 07-08 09 0A 0B 0C 0D 0E 0F **BEEF:0FF0** 11 22 33 44 55 66 77 88-99 AA BB CC DD EE FF

This section of memory represents a stack. What type of program is this → **COM PROGRAM**

**BEEF:FFD0** 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00 **BEEF:FFE0** 00 01 02 03 04 05 06 07-08 09 0A 0B 0C 0D 0E 0F **BEEF:FFF0** 11 22 33 44 55 66 77 88-99 AA BB CC DD EE FF

Using MASM, which of the following will cause a program with a LOOP instruction to loop 48 times in decimal → **MOV CX, 48**

Which command would you use to execute another core in the propeller microcontroller→ **Cognew**

What command in DEBUG would be used to change the code segment → **RCS**

What command in DEBUG would be used to change the IP value → **RIP**

What command in DEBUG would be used to execute interrupts → **P**

What command in MASM-CodeView would be used to step through a program line by line → **T(F8)**

What flag(s) does the “LOOPNZ” instruction look at to determine whether to loop or not → **ZF**

What flag(s) does the “LOOPNE” instruction look at to determine whether to loop or not → **ZF**

What Hex values must be sent to address the key pad rows on the PPE board → **1,2,4,8**

What is the advantage of C Language over Assembly Language → **C is transportable to other microprocessor architectures**

What is the hexadecimal encoding for “JGE” for a jump back 10 bytes → **7DF4 (10 byes + 2 )**

What is the hexadecimal encoding for adding AX with BX and storing the result in AX → **01D8** ADD AX, BX 000 00W 11 reg1 reg2

What is the hexadecimal encoding for adding BX with CX and storing the result in BX → **01CB**

What is the hexadecimal encoding for adding BX with DX and storing the result in BX → **01D3**

What is -130 decimal in 2’s complement (8bits) → **01111110**

What is -32.75 in a base two number system → **-100000.110000**

What is 14.4375 in binary → **001110.0110**

What is 16.4375 in binary → **010000.01110**

What is the binary value of decimal 12.875 → **1100.1110**

What is 16.4375 in binary → **010000.01110**

What is number, 1011.0101 (2) in decimal? → **11.31**

What is the **numeric sequence** of the key pad columns on the PPE board → **37,2F,1F**

What is the decimal value of C5 5A 57 00 in IEEE single precision FP format → **-3493.4375**

What of the following instruction would be used to set the LED to light on the Arudino platform → **digitalWrite(ledPin, HIGH);**

What type of program is this → **EXE**

IP = **0115**, 1376:0115 0100 ADD [BX+SI], AL DS:0000=CD

What type of program is this → **COM**

IP = 0100, 1376:0100 0100 ADD [BX+SI], AL DS:0000=CD

Which of the following DOS Debug instructions would set a break point at memory location 010C → **G = 100 10C**

Which of the following would be used to set the **TRISA** register to control the direction of **PIC18** port to **input** → **1** and for **output** its → **0**

Which of the following DOS Debug instructions would be used to change the IP register to 110 →**RAX = 0110**

Which of the following will cause a program with a LOOP instruction to loop 48 times (decimal)→ **CX=30h**

Which of the following is a valid x86 command for multiplying a number → **MUL BX**

Which of the following is **not a valid** command for a number into a register in MASM → **MOV AX, BADH**

With a POP BX instruction, what will be order off the accumulator, base, count, and data registers restored from the stack → **BX**

With a POPA instruction, what will be the order of the accumulator, base, count, and data registers restored from the stack → **BDCA**

You are trying to rebuild a HELLO program project in MASM and you get the following error: "ERROR 4 line 1". What is the cause of the error? → **Not known—this error by itself isn’t a problem, press the enter key to clear the error.**

You are typing to rebuild a HELLO project program in MASM and you get the following error: “LINK : warring L4021: no stack segment”. What would be the reason for the such an error → **No project template for COM was selected.**

You are typing to rebuild a HELLO project program in MASM and you get the following error: “LINK : fatal error L1089: HELLO.lrf: cannot open response file”. What would be the reason for the such an error → **No source file is identified(no .asm file)**

**PPE Row Column Scan decoding** D7 D6 D5 D4 D3 D2 D1 D0

S7 S6 S5 S4 S3 S2 ^ ^ ^ 3 2 1 0 0 0 0 1 0 0 0 = 08h 0 0 0 1 0 0 0 0 = 10h 0 0 1 0 0 0 0 0 = 20h

0 0 1 1 1 1 1 1 = 3Fh -> Nothing pressed 0 0 1 1 0 1 1 1 = 37h -> Number 1 pressed 0 0 1 0 1 1 1 1 = 2Fh -> Number 2 pressed 0 0 0 1 1 1 1 1 = 1Fh -> Number 3 pressed

EEE 174 Midterm Study Guide

S2010 MT 1

1. Int 21h, Function 09h requires three things set up before calling in order to correctly print a

string, Hello\_msg. They are:

• **DS = SEG Hello\_msg, DX=OFFSET Hello\_msg, Hello\_msg terminated with 36** 2. Moore’s Law has accurately predicted the growth rate in the number of transistors per die for

the last 40 years. What is the rate?

• **Doubling every 18 – 24 months** 3. Given:

AX=0353 BX=0534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY 1D72:0109 7D06 JNL 0118

What will the IP value be after a “t” command is executed in DOS Debug?

• **010B** 4. A “NOP” instruction will:

• **Perform a No OPeration** 5. Given:

AX=F247 BX=0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0106 NV UP EI NG NZ NA PE NC 1D72:0106 EB0F JMP 0118

What will the IP value be after a “t” command is executed in DOS Debug?

• **0118h** 6. In x86 architecture, BIU stands for which of the following?

• **Bus Interface Unit** 7. 7. Determine the contents of register BL after the following instructions have been executed:

• **2EH**

8. 8. The number of bytes in a double word are:

• **4** 9. In x86 architecture, ALU stands for which of the following?

• **Arithmetic Logic Unit** 10. The “LOOPNE” instruction is equivalent to which of the following instructions?

• **DEC CX, JNE** 11. The instruction MOV CX, DADD is what addressing mode?

• **Immediate** 12. Here is a short sequence of code: 7413EBA3CD167D213C04EBF0EB15. All of the instructions

are a word long. The third instruction operator is:

• **INT** 13. Which of the following DOS Debug instructions would set a break point at memory location

010C?

Program Listing

MOV BL, E2H

MOV CL, 100b

ROL BL, CL

• **G = 100 10C** 14. How many bytes are there in this short sequence of code? B400CD164CCD21

• **7** 15. How many address lines would be required to address 128 MB directly?

• **27** 16. What are the contents of CX after this program has been run:

• **D800h**

17. 1010 0110 in 2’s complement equals\_\_\_\_ in base 10.

• **-90** 18. What is the hexadecimal encoding for adding AX with BX and storing the result in AX?

• **01D8** 19. What is 11.437510 in binary?

• **001011.01110** 20. If CX is 0000 what will CX be after a “LOOP” instruction?

• **FFFF**

21. What is the hexadecimal encoding for “JGE” for a jump back 12 bytes?

• **7DFA** 22. Given:

AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010E OV UP EI PL NZ NA PO NC 1D72:010F 7D08 JGE 0115

How many bytes will the processor jump if the conditions for a jump were met?

• **8** 23. What command in DEBUG would be used to execute interrupts?

• **P** 24. What is the advantage of C Language over Assembly Language?

• **C is transportable to other microprocessor architectures** 25. In adding 5+5 through a 4 but integer unit. The state of the OF and CF flags after the add

instruction would be:

• **OF = 1, CF = 0** 26. In MASM, with a “MOV CX, 24” instruction, and a “LOOP” instruction, in decimal how many

times will the program loop?

• **36** 27. Given:

AX=0353 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D NV UP EI PL NZ NA PO NC 1D72:010D 7DF6 JNL 0116

Memory Location Contents

1103 24

1102 D8

1101 00

• **-10**

28. AND’ing 1FH and 20H will result in which of the following?

• **0** 29. Given:

13A7:0110 CD 20 32 20 54 48 39 73-20 69 73 20 74 68 65 20 13A7:0120 66 69 72 73 74 20 4D 69-64 74 65 72 6D 0D 24 D9 13A7:0130 00 C6 00 00 00 00 00 00-00 00 00 00 00 00 00 00

An input buffer is at memory location 0115, what is the size of the buffer in decimal?

• **72** 30. A microprocessor with a 31-bit address bus could access how much memory?

• **2 GB** 31. For the instruction sequence below, determine the contents of the register AL after this

program is executed:

• **51H**

32. Given:

AX=FF00 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY 1D72:0109 7D06 JNL 0118

What is the signed decimal value of the number in the AX register?

• **-256** 33. The ASCII codes for space, space, carriage return, line feed, end of string in decimal are:

• **32, 32, 13, 10, 36**

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34. What is the advantage of assembly language over C language?

• The assembler creates much faster executable code 35. How many lines would be required to address 128 mb directly?

• 27 36. In the x86 lab part 3 Hello MASM program in the original code, what is the address of the byte

used to start the number in the sequence “Hello World 0”?

• 020E 37. Given

W e l c o m e \_ t o \_ A s s e m 0B0E:0200 57 65 6C 63 6F 6D 65 20-74 6F 20 41 73 73 65 6D 0B0E:0210 62 6C 79 20 4C 61 6E 67-75 61 67 65 00 00 00 00 b l y \_ L a n g u a g e

An Ascii message begins at memory location 0200, what is the message?

• Welcome to Assembly Language

Program Listing

MOV AL, 73h

ADD AL, 78h

DAA

38. Which of the following DOS Debug instructions would be used to change the IP register to 0110?

• RIP 39. Moore’s law has accurately predicted the growth rate in the number of transistors per ide for

the last 40 years. What is the rate?

• Doubling every 18 – 24 months 40. Which of the following DOS debug instructions would set a break point at memory location

010C? • G = 1000 10C 41. AND’ing 1FH and 02H will result in which of the following?

• 02 42. If CX is 0000 what will CX be after a “LOOP” instruction?

• FFFF 43. The number of bits in a word are:

• 16 44. In x86 architecture, ALU stands for which of the following?

• Arithmetic Logical Unit 45. Given:

What will the IP value be after a “t” command is executed in DOS DEBUG?

• 010B 46. What is the number 1010.01012 in decimal?

• 10.31 47. How many cores does the propeller microcontroller have?

• 8 48. What is the hexadecimal encoding for “JGE” for a jump back 12 bytes?

• 7DF2 49. What command in debug would be used to step through a program line by line?

• T 50. Here is a short sequence of code: 74 13 EB A3 CD 16 7D 21 3C 04 EB F0 EB 15. All of the

instructions are a word long The third instruction operator is:

• INT 51. In MASM, with a “MOV CX, 24” instruction, and a “LOOP” instruction, in decimal how many

times will the program loop?

• 24 52. Given:

How many bytes in decimal will the processor jump if the conditions for a jump were met?

• -10

53. Determine the contents of the register BL after the following

instructions have been executed:

• E2H

54. The ASCII codes for space, space, carriage return, line feed, end of string in decimal are:

• 20, 20, 0D, 0A, 24 55. AND’ing 10H and 2FH will result in which of the following?

• 0 56. A “NOP” instruction in a program will

• Perform a No Operation 57. Given:

What is the signed decimal value of the number in the AX register?

• -16 58. How many address lines would be required to address 64 MB directly?

• 26 59. What command in debug would be used to execute interrupts?

• P 60. What high level language is the propeller programmed in?

• Spin 61. Which of the following DOS debug instructions would be used to change the IP register to 010C?

• RIP 62. The acronym PWM used in Parallax Propeller and MicroChip PIC18, is defined as:

• Pulse width modulation 63. Which command would you use to execute another core in the propeller microcontroller?

• Cognew 64. Given:

What will the IP value be after the “t” command is executed in DOS debug?

• 0119h 65. The instruction MOV CD, DADD is what addressing mode?

• Immediate 66. In the PIC18 with TRISD = 0b00001111 and LATD = 0xAA, what value will be on Port D and shown

on the LEDs?

• F0 67. How many byte in decimal will the processor jump if the conditions for a jump are met?

• 24 68. In the Propeller microcontroller, the command “dira[4..9] := %111111” would cause the

processor to do which of the following?

• Sets the Propeller pins P4 through P9 as output pins

69. What are the contents of DX after this program has

been run:

• FFF0h.

70. The number of nibbles in a word are:

• 4 71. In the Propeller microcontroller, the command “waitcnt(clkfreq\*10 + cnt)” would cause the

processor to do which of the following?

• Create 10 second delay 72. The “LOOPNE” instruction is equivalent to which of the following instructions?

• DEC CX JNE 73. Given

How many bytes will the processor jump if the conditions for a jump were met?

• 7 74. On the Arduino platform, what is the programming language used?

• C 75. What is the hexadecimal encoding for loading AX with a word (value) from memory location

0820h?

• A12008 76. Which of the following would be used to set the TRISA register to control the direction of PIC18

Port to input?

• 1 77. The acronym ADC in microcontrollers stands for which of the following?

• Analog to Digital converter 78. In adding 5+5 through a 4 bit integer unit. The state of the 0F and CF flags after the add

instruction would be:

• 0F = 1, CF = 0 79. What is the advantage of Assembly Language over C Language?

• **The Assembler creates much faster executable code** 80. How many address lines would be required to address 128 MB directly?

• **27** 81. In the x86 lab part Hello MASM program in the original code, what is the address of the byte

used to start number in the sequence “Hello World 0”?

• **020E** 82. Given:

0B0E : 0200 57 65 6C 63 F 6D 65 20-74 6F 20 41 73 73 65 6D 0B0E: 0210 62 6C 79 20 4C 61 6E 67-75 61 67 65 00 00 00 00 An ASCII message begins at memory location 0200, what is the message?

• **Welcome to Assembly Language**

83. Which of the following DOS Debug instructions would be used to change the IP register to 0110?

• **RIP** 84. Moore’s law has accurately predicted the growth rate in the number of transistors per die for

the last 40 years. What is the rate?

• **Doubling every 18-24 months** 85. Which of the following DOS Debug instructions would set a break point at memory location

010C? • **G = 100 10C** 86. AND’ing 1FH and 02H will result in which of the following?

• **02** 87. If CX is 0000 what will CX be after a “LOOP” instruction?

• **FFFF** 88. The number of bits in a word are:

• **16** 89. In x86 architecture, ALU stands for which of the following?

• **Arithmetic Logic Unit** 90. Given:

AX=0353 BX=0534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000

DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 0V UP EI PL NZ NA PO CY

1D72:0109 7D06 JGE 0118

What will the IP value be after a “t” command is executed in DOS Debug?

• **010B** 91. What is the number, 1010.01012 in decimal?

• **10.31** 92. How many cores does the propeller microcontroller have?

• **8** 93. What is the hexadecimal encoding for “JGE” for a jump back 12 bytes?

• **7DF2** 94. What command in DEBUG would be used to step through a program line by line?

• **T** 95. Here is a short sequence of code: 74 13 EB A3 CD 16 7D 21 3C 04 EB F0 EB 15. All of the

instructions are a word long. The third instruction operator is:

• **INT** 96. In MASM, with a “MOV CX, 24” instruction, and a “LOOP” instruction, in decimal how many

times will the program loop?

• **24** 97. Given:

AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000

DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D NV UP EI PL NZ NA PO NC

1D72:010D 7DF6 JNI 0116

How many bytes in decimal will the processor jump if the conditions for a jump were met?

• **-10** 98. Determine the contents of register BL after the following instructions have been executed:

• **E2H** 99. The ASCII codes for space, space, carriage return, line feed, end of string in decimal are:

• **32, 32, 13, 10, 36** 100. AND’ing 10H and 2FH will result in which of the following?

• **0** 101. A “NOP” instruction in a program will:

• **Perform a No Operation** 102. Given:

AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY ID72:0109 7D06 JGE 0118 What is the signed decimal value of the number in the AX register?

• **-16** 103. How many address lines would be required to address 64 MB directly?

• **26** 104. What command in DEBUG would be used to execute interrupts?

• **P** 105. What high level language is the propeller programmed in?

• **Spin** 106. Which of the following DOS Debug Instructions would be used to change the IP register

to 010C?

• **RIP** 107. The acronym PWM used in the Parallax Propeller and MicroChip PIC18, is defined as:

• **Pulse Width Modulation** 108. Which command would you use to execute another core in the propeller

microcontroller?

• **Cognew** 109. Given:

AX=FFDO BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0111 NV UP EI NG NZ NA PO CY 1D72:0111 ED08 JMP 0119 What will the IP value be after a “t” command is executed in DOS Debug?

• **0119h** 2. The instruction MOV CX, DADD is what addressing mode?

• **Immediate** 110. In the PIC18 with TRISD = 0b00001111 and LATD = 0xAA, what value will be on Port D

and shown on the LEDs?

• **A0** 111. Given:

AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000

DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010F NV UP EI NG NZ NA PO NC

ID72:010F 7D18 JGE 0128

How many bytes in decimal will the processor jump if the conditions for a jump are met?

• **24** 112. In the Propeller microcontroller, the command “dira[4..9] := %111111” would cause the

processor to do which of the following?

• **Sets the Propeller pins P4 through P9 as output pins** 113. What are the contexts of DX after this program has been run:

• **FFF0h** 114. The number of nibbles in a word are:

• **4** 115. In the Propeller microcontroller, the command “waitcnt(clkfreq\*10 + cnt)” would cause

the processor to do which of the following?

• **Create 10 second delay** 116. The “LOOPNE” instruction is equivalent to which of the following instructions?

• **DEC CX, JNE** 117. Given:

AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D NV UP EI NG NZ NA PO NC 1D72:010D EB07 JMP 0114 How many bytes will the processor jump if the conditions for a jump were met?

• **7** 118. On the Arduino platform, what is the programming language used?

• **C** 119. What is the hexadecimal encoding for loading AX with a word (value) from the memory

location 0820h?

• **A12008** 120. Which of the following would be used to set the TRISA register to control the direction

of the PIC18 Port to input?

• **1** 121. The acronym ADC in microcontrollers stands for which of the following?

• **Analog to Digital Converter** 122. In adding 5+5 through a 4 bit integer unit. The state of the OF and the CF flags after the

add instruction would be:

• **OF=1, CF=0** 123. Given:

0B0E:0200 57 65 6C 63 6F 6D 65 20-74 6F 20 74 68 65 20 66

0B0E:0210 69 72 73 74 20 64 61 79-20 6F 66 20 74 68 65 20

0B0E:0220 72 65 73 74 20 6F 66 20-79 6F 75 72 20 6C 69 66

0B0E:0230 65 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

An ASCII message begins at memory location 0200, what is the message?

• **Welcome to the first day of the rest of your life** 124. The instruction MOV DX, BADD is what addressing mode?

• **Immediate** 125. Which of the following is the hexadecimal encoding for adding BX with CX and storing

the result in CX?

• **03CB** 126. What is the advantage of Assembly Language over C Language?

• **The Assembler creates much faster executable code** 127. What is 18.437510 in binary?

• **010010.01110** 128. For the instruction sequence below, determine the contents of the register AL after this

program is executed:

• **51H** 129. In x86 architecture, ALU stands for which of the following?

• **Arithmetic Logic Unit** 130. A microprocessor with a 33-bit address bus could access how much memory?

• **8 GB** 131. What is the hexadecimal encoding for “JGE” for a jump back 12 bytes?

• **7DF2** 132. Given:

AX=FFE0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010F NV UP EI NG NZ NA PO NC 1D72:010F 7D18 JGE 0128 How many bytes in decimal will the processor jump if the conditions for a jump are met?

• **24** 133. Moore’s law has accurately predicted the growth rate in the number of transistors per

die for the last 40 years. What is that rate?

• **Doubling every 18-24 months** 134. The number of bytes in a word are:

• **2** 135. Determine the contents of register BL after the following instructions have been

executed:

• **2EH** 136. How many bit(s) is/are required to represent a range of decimal numbers from 0 to

127? • **7** 137. What high level language is the propeller programmed in?

• **Spin** 138. In the Propeller microcontroller, the command “dira[4..9] := %000000” would cause the

processor to do which of the following?

• **Sets the Propeller pins P4 through P9 as input pins** 139. Which command would you use to execute another core in the propeller

microcontroller?

• **Cognew** 140. How many cores does the propeller microcontroller have?

• **8** 141. In the Propeller microcontroller, the command “waitcnt(clkfreq\*10 + cnt)” would cause

the processor to do which of the following?

• **Create 10 second delay** 142. The acronym ADC in microcontrollers stands for which of the following?

• **Analog to Digital Converter** 143. The acronym PWM used in the Parallax Propeller and Microchip PIC18, is defined as:

• **Pulse Width Modulation** 144. How many bits does the PIC18 microcontroller use in the PICkit 3 Debug Express have?

• **8** 145. Which of the following would be used to set the TRISA register to control the direction

of the PIC18 Port to input?

• **1** 146. In the PIC18 with TRISD = 0b01111111, what is the configuration of the Port D?

• **Bit 7 of port D is set to output** 147. In the PIC 18 with TRISD = 0b11110000 and LATD = 0xAA, what value will be on Port D

and shown on the LEDs?

• **0A** 148. On the Arduino platform, what is the programming language used?

• **C** 149. Given:

AX=FFD0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0111 NV UP EI NG NZ NA PO CY 1D72:0111 EB08 JMP 0119 What will the IP value be after a “t” command is executed in DOS Debug?

• **0119h** 150. How many bytes are there in this short sequence of code? B4 00 CD 16 4C CD 21 CD 20

• **9** 151. In x86 architecture, BIU stands for which of the following?

• **Bus Interface Unit** 152. Here is a short sequence of code: 74 13 EB A3 CD 16 7D 21 3C 04 EB F0 EB 15. All of the

instructions are a word long. The fifth instruction operator is:

• **CMP** 153. The ASCII codes for space, space, carriage return, line feed, end of string in decimal are:

• **32, 32, 13, 10, 36** 154. A “NOP” instruction in a program will:

• **Perform a No Operation**

155. Given:

AX=FFF0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=0109 OV UP EI PL NZ NA PO CY 1D72:0109 7D06 JNL 0118 What is the signed decimal value of the number in the AX register?

• **-16** 156. Which of the following DOS Debug instructions would set a break point at memory

location 010C?

• **G = 100 10C** 157. In adding 5+7 through a 4 bit integer unit, the state of the OF and CF flags after the add

instruction would be:

• **OF = 1, CF = 0** 158. Given:

AX=FFD0 BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1D72 SS=1D72 CS=1D72 IP=010D OV UP EI NG ZR NA PO NC 1D72:010D 7509 JNZ 0116 What will the IP value be after a “t” command is executed in DOS Debug?

• **010Fh** 159. What are the contents of DX after this program has been run:

• **FFF0h** 160. Which of the following DOS Debug instructions would be used to change the IP register

to 010C?

• **RIP** 161. What is the number, 1010.01012 in decimal?

• **10.31** 162. What command in DEBUG would be used to step through a program line by line?

• **T** 163. AND’ing 1FH and 02H will result in which of the following?

• **02** 164. How many address lines would be required to address 64 MB directly?

• **26** 165.

S2010 MT2

166. How many bit(s) is/are required to represent a range of decimal numbers from0 to 127?

• **7** 167. If CX is 0003, what will CX be after a “LOOP” instruction?

• **0002** 168. IN the Propeller microcontroller, the command “waitcnt(clkfreq\*5 + cnt)” would cause

the processor to do which of the following?

• **A 5 second delay** 169. What is the number 1011.01012 in decimal?

• **11.31** 170. This section of memory represents a stack. What type of program is this?

BEEF : FFD0 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00 00 BEEF : FFE0 00 01 02 03 04 05 06 07-08 09 0A 0B 0C 0D 0E 0F BEEF : FFF0 11 22 33 44 55 66 77 88-99 AA BB CC DD EE FF

• **COM program** 171. With a POPA instruction, what will be the order of the accumulator, base, count, and

data registers restored from the stack?

• **BDCA** 172. Determine the contents of register BL after the following instruction have been

executed:

• **2EH**

173. What Hex values must be sent to address the key pad rows on the PPE board?

• **1, 2, 4, 8** 174. What is the number 32.437510 in binary?

• **100000.01110** 175. In MASM, with a “MOV CX, 18h” instruction, and a “LOOP” instruction, in decimal how

many times will the program loop?

• **24** 176. The acronym PWM used for motor control, is defined as which of the following?

• **Pulse Width Modulation** 177. In the PIC18 with TRISD = 0b01111111, what is the configuration of the Port D?

• **Bit 7 of port D is set to output** 178. Given the short code, what is the value in AX after the program is run?

• **0500**

Program Listing

MOV BL, 2E

MOV CL, 10

ROL BL, CL

Program Listing

MOV BX, 0500

Push BX

MOV AX, 0100

POP AX

179. What flag(s) does the “LOOPNZ” instruction look at to determine whether to loop or

not? • **ZF** 180. How many nibbles are in double precision IEEE floating point format number?

• **16** 181. In the Hello MASM lab in the original code, what is the address of the byte used to start

the number in the sequence “Hello World 0”?

• **020E** 182. What type of program is this?

AX=0000 BX=0000 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1476 ES=1576 SS=1376 CS=1D72 IP=0015 NV UP EI PL NZ NA PO NC 1376:0015 0100 ADD [BI + SI], AL DS : 0000=CD

• **EXE** 183. If the SP is F00F, what is the SP value after a “PUSH CX” instruction?

• **F00D** 184. In the PIC18 with TRISD = 0b00001111 and LATD = 0xAA, what value will be on Port D

and shown on the LEDs?

• **A0** 185. What is the numeric sequence of the key pad columns on the PPE board?

• **37, 2F, 1F** 186. What is –130 decimal in 2’s complement (8bits)?

• **01111110** 187. Which of the following is a valid x86 command for multiplying a number?

• **MUL BX** 188. The number of bits in single precision IEEE floating point format are:

• **32** 189. You are trying to rebuild a HELLO project program in MASM and you get the following

error:

“LINK : warning L4021: no stack segment”. What would be the reason for such an error?

• **No project template for COM was selected** 190. A “pull down” resistor is used in digital circuits to do what?

• **To keep the signal line “tied” low until the line is active (goes high)** 191. A “POP” instruction:

• **increments the SP** 192. AND’ing 10H and 2FH will result in which of the following?

• **0** 193. In the Propeller microcontroller, the command “dira[4..9] := %111111” would cause the

processor to do which of the following?

• **Sets the Propeller pins P4 through P9 as output pins** 194. What commands in MASM-CodeView would be used to step through a program line by

line?

• **T (F8)** 195. If the SP is F00F, what will the SP value be after a “POP SP” instruction?

• **F011** 196. On the PPE board, what number(s) on the key pad is(are) pressed for an output port

value of 08h and an input port value of 2Fh?

• **0** 197. In the Propeller microcontroller, the term “Method” is(are) which of the following?

• **A block of executable commands that has variables, can receive parameters, and returns a value.** 198. Using MASM, which of the following will cause a program with a LOOP instruction to

loop 48 times in decimal?

• **MOV CX, 30H or MOV CX, 48** 199. A “pull up” resistor is used in digital circuits to do what?

• **To keep the signal “tied” high until the line is active (goes low)**

EEE 64 Exams

200. A “pull up” resistor is used in digital circuits to do what?

• To keep the signal “tied” high until the line is active (goes low) 201. How many Flip Flops would be required for a 5 state, State Machine?

• 3 202. 32 decimal would be what value in hexadecimal?

• 20 203. Which gate would be used for the function, F = /C/D + CD?

• XNOR 204. In 8 to 1 Multiplexer, show, if A = 1, B = 0, C = 0, D = 0; what would

the output be equal too?

• 0 205. How many bits would be required to count from 0 to 511 in

binary?

• 9 206. The Ladder Logic diagram would represent

which of the following?

• NAND

207. The number of nibbles needed for a 32 bit number are?

• 8 208. The Ladder Logic diagram would represent

which of the following?

• AND

209. XOR’ing 10Hex and 2FHex will result in which of the following numbers?

• 3F 210. The Ladder Logic diagram would represent which

of the following?

• NOR

211. What is the difference between a half adder and a full adder?

• The half adder is missing a carry in 212. In the truth table shown; how many Karnaugh maps

would be required to solve the truth table?

• 6 213. In the truth table shown; in mapping values to Karnaugh

map what value would be assigned to the states 10 to 15?

• 0 214. A Moore state machine:

• The output depends on the state; the next state depends on the input and current state. 215. F0 In 2’s complement equals \_\_\_ in base 10.

• -16 216. In 8 to 1 Multiplexer shown, with A = 0, B = 1, C = 0; what would the

value of output Y be equal to?

• 1

217. A “pull down” resistor is used in digital circuits to do what?

• To keep the signal line “tied” low until the line is active (goes high) 218. ADD’ing 10HEX and 2FHEX will result In which of the following Hex numbers?

• 3F 219. In the truth table shown; how many Karnaugh maps would

be required to solve the truth table?

• 4 220. In the truth table shown; in mapping values into the

Karnaugh map what value would be assigned to the states 10 to 15?

• X or D for don’t care

221. A Mealy state machine:

• The output depends on input and the current state; the next state depends on input and current state. 222. For a NAND RS Latch; if both R and S inputs are High, Q output would be in what state?

• Undefined state 223. XNOR’ing 2FHex and 10Hex will result in which of the following Hex numbers?

• 0 224. Given a 4 bit adder with carry out, S4, adding two four bit numbers A and B. If A = 7 and

B = 8, what would the values of S4, S3, S2, S1, S0 be?

• 01111 225. Which gate would be used for the function, F = /AB + A/B?

• XOR 226. For a NOR RS Latch, if both R and S inputs are High, Q output would be in what state?

• Undefined state

227. In 8 to 1 Multiplexer shown, with A = 0, B = 1, C = 1;

what would the value of output Y be equal to?

• 0

228. What would 6A Hex equal in base 2?

• 0110 1010 229. The number F6Hex in 2’s complement

equals what number in base 10.

• -10 230. For the Flip Flops in the Circuit

diagram notice that set and reset are active

low. If S1 = 1, R1 = 0, S2 = 1, R2 = 0, S3 = 0, R3 = 1, S4 = 0, R4 = 1; what is the output of the counter in hexadecimal.

• 3 231. If S and R in their inactive state, how many combination of Qs are available?

• 16

232. For the circuit shown, what is the equation for the next state of Q0,? • /Q1/Q0 + Q1Q0

233. What will this state machine do?

• Divide by 3 234. If Q1 is 1 and Q0 is 1, what is the next state of Q1 and Q0?

• 01 235. Using the Karnaugh map for minimum gates, would result in

which of the following equations:

• AB + CD

236. 36 decimal would be what value in hexadecimal?

• 24 237. NAND’ing 10Hex and 2FHex will result in which of the following Hex numbers?

• FF 238. How many bytes are there in this short sequence of hex numbers? **B400CD164CCD20**

• 7 239. How many nibbles are there in this short sequence of hex numbers? B400CD164CCD20

• 14 240. Using Karnaugh map for the least gates, would result in

which equation?

• /B C/D + /B/C/D

241. How many bits would be required to count for 0 to 1024 in binary?

• 10 242. AND’ing 8FHex and 02Hex will result in which of the following Hex numbers?

• 02

243. Which of the following equations were sued to map the values

into the Karnaugh map?

• /A/BCD + /ABCD + ABCD + A/BCD + AB/C/D + AB/CD + ABC/D

244. How many bits are there in this sequence of hex numbers?

**B400CD16CD20**

• 48 245. In 8 to 1 Multiplexer show, if A = 0, B = 1, C = 1; what would

the output be equal to?

• Not D (/D)

246. XOR’ing 1FHex and 09Hex will result in which of the

following Hex numbers?

• 16 247. In the truth table shown; how many

Karnaugh maps would be required to solve the truth table?

• 7 248. In the truth table shown; in mapping

values to Karnaugh map what value would be assigned to the states 10 to 15?

• 0

249. For the Karnaugh map shown, what equation was used to maps

the ones into the map?

• /A/C/B/D + /A/BC/D + A/B/C/D + A/BC/D

250. Which of the following gates would you use to output a one when the inputs have the

same value?

• XNOR

251. In 8 to 1 Multiplexer show, if A = 0, B = 1, C = 1; what would the

output be equal to?

• 0

252. How many Flip Flops would be required for a 12 state, state machine?

• 4 253. A “pull down” resistor is used in digital circuits to do what?

• To keep the signal line “tied” low until the line is active (goes high) 254. Using the Karnaugh map for the least number of gates, what

would the final equation be?

• /D

255. In 8 to 1 Multiplexer, show, if A = 1, B = 0, C

= 0; what would the value of output Y be equal to?

• 1

256. An NAND gate with its inputs inverted would be equivalent to which of the following?

• OR

257. If S1 = 1, R1 =

0, S2 = 1, R2 = 0, S3 = 0, R3 = 1, S4 = 1, R4 = 0; what is the output of the counter in hexadecimal.

• 2

258. If S and R are allowed to take on all values, how many combinations of Qs and the Next

state of Q, /Qs are available?

• 16 259. How many Flip Flops would be required for a 9 state, state machine

• 4 260. If 10Hex is XOR’ing with 2FHex would result in which of the following Decimal numbers?

• C0 261. For a NOR RS Latch, if both R and S inputs are Low, Q output would be in what state?

• Inactive state 262. The number of bytes needed for a 32 bit number are:

• 4 263. How many bits would be required to count from 0 to 1023 in binary?

• 10 264. What is the signed decimal value of the hex number, FFF0

• -16 265. If 10Hex is ADDed to 2FHex would result in which of the following Hex numbers?

• 3F 266. In 8 to 1 Multiplexer, show, if A = 1, B = 0, C = 0, D = 0; what

would the output be equal too?

• 1

267. Given a 4 bit adder with carry out, S4, adding two four bit

numbers A and B. If A = 8 and B = 8, what would the values of S4, S3, S2, S1, S0 be?

• 10000 268. What would 6A Hex equal in base 2?

• 106

269. For the circuit shown,

what is the equation for the next state of Q1,?

• Q0/Q1

270. What will this circuit

do? • Divide by 3

271. If Q1 is 1 and Q0 is 0,

what is the next state of Q1 and Q0?

• 00 272. The number F6Hex in 2’s complement equals what number in base 16.

• –A 273. In 8 to 1 Multiplexer show, if A = 1, B = 1, C =

1; what would the output be equal to?

• 1

274. 0F in 2’s complement equals (8 bits) \_\_\_\_ in base 10.

• 15 275. For the Flip Flops in the

Circuit diagram notice that set and reset are active low. If S1 = 1, R1 = 0, S2 = 1, R2 = 0, S3 = 0, R3 = 1, S4 = 1, R4 = 0; what is the output of the counter in hexadecimal.

• 2 276. If S and R are in their inactive

state, how many possible states could there be?

• 16 277. Using the Karnaugh map, would result in which of the

following equations:

• AB+BC+AC 278. ADD’ing 1FH and 20H will result in which of the following?

• 3F 279. SOP in logic design, would be defiend as

• The terms of the eqution are expressed in sum of products. 280. The expression (equation) for the circuit

shown would be:

• /((D+(AB))/(B+C))

281. Which of the gates would be used for the equation A/C

• AND 282. The equation F = ABD + CD + /C/D would be equivalent to which of the equations?

• (B + C + /D)(A + C+ /D)(/C + D) 283. The binary value 1111 0110 in 2’s comlplement equations \_\_\_\_\_ in base 10.

• -10 284. The number of bits in a Byte are:

• 8 285. Gray code, would be a code where

• Only one bit changes from one number to the next 286. The minterms for /A/BCD + /ABCD + ABCD + AB/C/D + A/BCD + AB/CD + ABC/D would

be? • m2, m7, m11, m12, m13, m14, m15 287. The equation for F(A,B,C) in the diagram would be

• /A/C + BC

288. Which of the following gates would be used for the equation /A/C

• AND 289. 24 hex would be what value in decimal?

• 36 290. The ASCII codes for space, space, carriage return, line feed, $ in decimal are:

• 32, 32, 13, 10, 36 291. Using the Karnaugh map (Kmap) for minimum gate reduction,

would result in which of the following equations (the “X” are don’t cares):

• /D

292. What is 166.437510 in binary

• 10100110.01110 293. The expression for the circuit shown would be:

• /C/D + ABD + CD

294. The binary number, 0110 1110, represents what values; in Hex, and as a BCD number?

• 6E, 6 invalid 295. Which of the gates would be used for the equation A/C + /AC

• XNOR 296. What is the signed decimal value of the hex number, 0F in 8bits?

• 15 297. Minimizing /A/B + /AB + AB would result in:

• /A + B 298. Minimizing the equation /A/BCD + /ABCD + ABCD + AB/C/D + A/BCD + AB/CD + ABC/D

would result in:

• AB + CD 299. What would hexadecimal A6 equal in base 2?

• 1010 0110 300. Minimizing the truth table would result in:

• AC + /A/B + ABD

301. Which of the gates would be used for the equation A + B?

• OR 302. OR’ing 1FHex and 02Hex will result in which of the following hexadecimal numbers?

• 1F 303. The equation used to populate Karnaugh map, would be which of

the following equations?

• AB + CD

304. The binary number, 0110 1110, would have what values for parity; even, odd, and no

parity bits?

• 100 305. Verilog is part of the HDL family, what is the definition of HDL

• Hardware Descriptive Language 306. Which of the gates would be used for the equation /A + /B?

• NAND 307. Reducing F = /ABC + A/BC + AB/C + ABC

• AC+AB+BC 308. Using the Karnaugh map for minimum gate reduction would result in

which of the following equations?

• /B/D

309. AND’ing 10H and 2FH will result in which of the following?

• 3F 310. How many bits would be required to to count from 0 to 127?

• 7

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**FIT**

**ZEE 174 Introducti**on to Mcroprocessors **EUR** 113, 12:00 - 1:15pm, Thursday, March 19, 2004 Midterm : Opah text Time allowed: 50 minutes

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10. Wlist are the stunts - Byt tidak

19

Nisman location

Wich instruction below laadá tegister BX wil th: War beginning alphysical address 30505h. Aume: DS-3430, EX=1300

a) ID 109] BY.

1) NDY BIL, 7060711

ADD EX, USH

13. Dammide the contents of 1egset AL atur the following instructions have

cute

MOVEL, UPM

XOR AL BL

13. Akroprocessor with a \_4-bit address bus dould asce bu

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uchumer

14. Th: binary nunbat; 1300 0110, represents what values as an Unsigned Binary, S-bit Ngns bima.

Ded Panty AS DIT and BCD number in that oder?

) SS, 194, AK, -11.

15. The instruction MOT OL. S

hat ning nu-i

10. Int 1oh use

hattetion code to write a character to the size and advance the pursu by onedlaeta position?

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h 24

17. itah, Function Boh tempiraz diree things eat up before caling in onzia to correctly pinta stang, meg 1. They are

) ES-STG meg, D7 = OFFSET mg), moyi terminated with St b) DA=Skimsal= OFFSIT maglinis terminated with 245

DE = Setmsg 1.237 = OEFSET mg 1,08g1 terminate iwth

IS - SEG 11941, D x = [FESET MISHI, 1 tanunated with 4) 2) = SEG neg 1, DN=OFFSET 115g 1, msgi terminated with 24h

AS cit

24h = 36d = $

18. What are the contents o A

tertius proyra

19. The instruction IGE compares which of the following?

a) Dagister values, and determine if it is greater

2) YAYIP afike sign ilag mi zaro flag wual to za d) The sign lag ud overflow flag la s if they are que

PER

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30. That will the allowing progran in

1370 0101

137D:0105

b)

buferior keyboard input of 54 58 62 73 Just Igaris DX with ulo and A with 19 Takes in the Kuyucard input. This the first

INT

d)

Displays, "Thin the first maderin" 211d ruturns te DOS

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The 251'1 aupugli suformation to determine

137D 0114

1371 DI 17

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137D UITB

AND

[BP+501 AE

137D 0125 137DDIRS

DIBD

237D:011

ADD

DH, ALL

**EEE 174 Introduct**ion to *M*icroprocessors

Name\_ MIN 3009, 12:00 - 1:15 pm, Wednesday, October 17, 2007 Midterm #1: Open text Time allowed: 50 minutes 1. What is the hexadecimal encoding for "UNL" for a jump back 8 bytes?

**a) 7DFA** b) 7DFO

0001 1000 **7DF4**

*11*1001*!!* **7016 7DF4**

TMG logo

2. In x86 architecture, ALU stands for which of the following?

a) A Logic User b) Address Logic Unit c) All Logic Unit d) Arithmetic Lining Unit e) Arithmetic Logic Unit *i*ndex

*1*6 3. The number of nibble**s in a word are:**

6 16

32

16-4

**4. The instruction MOV BX, [2BAD] is what addressing mode?**

**a) Direct**

*P*g *160* b) Register

**Immediate** d) Scaled Index **e) Register Indirect**

memory > register

**5. What is the hexadecimal encoding f**or adding DX with BX and storing **the result in BX?**

**a) 29DA**

w ! BX= 0 DI=010 03CB

ADD BX , DX

0000 001W 11 re*o 1*29 .

0 3 101 1010 **0108** е) 01CB DID3

C0*1*DA

**6. A microprocessor with a 32-bit address bus could access how much memory?**

**» 4 GB** b) 16 MB

2 > *1*6Mb **c) 4 MB** d) 128 MB

28 -> 256 kb e) 256 MB

2 >+Gь *7.* You add 7+6 through a 4 bit integer unit. The state of the OF and CF flags after the add will be:

)) OF = 0, CF = 0

og on! OF=1, the sign bit has *changed* **OF = 0, CF = 1**

QNO **OF** = 1, CF = 0

ollar CF = 0; there is the carry out of bit 7 **) OF = 1, CF = 1** e) OF = 0, CF = 0, ZF = 0

Which of the following DOS Debug instructi**ons would be used change the IP register to 100?**

RIP = [0110] b) RBX = 100 110 **c) RAX = 0110** 8 RIP e) GIP

EEE 174 Midterm 1 F07 Dahlquist

**Contents**

9. What are the contents of CX after this pro**gram has been run:**

a) 5511h b) FFF0h -0010h

**Memory Tocation** 0010h

**MOV DX, 11h** 5514 D800h

**MOV CX**, [5512] 5513 MOV BX, 5511h 5512

SUB DX, [BX] 5511 10. Given:

AX=FFDO BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1072 ES=1072 SS=1072 CS=1072 IP=010**9 OV UP EI PL NZ NA PO CY**

1072:0109 7006

**JNL 0118** What is the signe**d decimal value of the number in the AX register?**

**48** 1111 1111 11010000

0000 0000 **13**

0010 11

30

**اليبالا ]**

-0110000

11. How many Bytes are there in this short sequence of code? B815B400CD16CD20

Oo vo

AX

12. In using INT 10h to set the video mode to 640 x 350, what value must be in the AH register?

a) 10h

1000h c) 0E06h

<AH XAL 00h

00

e 0010h

13. Moore's law has accurately predicted the growth rate in the number of transistors per die for the

**last 25 years. What is that rate? a) Doubling every 6 months** b) Doubling every 36 m**onths**

**Doubling every 18 - 24 years** d) Doubling every 18 - 24 w**eeks** e Doubling every 18 - 24 months

DS: DX

14. Int 21h, Function 09h re**quires three things set up befo**re calling in order to correctly print a string,

Hello**\_msg. They are:** a) ES = SEG Hello\_msg, DX = OFFSET Hello\_msg, Hello\_**msg terminated w**ith "$"

DS = SEG Hello\_msg, DX = OFFSET Hello\_msg, Hello\_m**sg terminated** with 24h 2 *24h* c) DS = S**EG Hello\_msg, BX = OFFSET Hello\_msg, Hello\_msg terminated** with "$" **d) DS = SEG Hello\_msg, AX = OFFSET Hello\_msg, Hello\_msg terminated** with "$" **e) CS = SEG Hello\_msg, DX = OFFSET Hello\_msg, Hello\_msg terminated w**ith 24h

w 24h=36d=2"

EEE 174 Midterm 1 F07 Dahlquist

TO na **15. Given:** 13A7:0110 CD 20 32 20 54 68 69 73-20 69 73 20 74 68 65 20 **13A7:0120 66 69 *7*2 73 74 20 4D 69-64 74 65 72 6D OD 24 D9 13A7:01**30 00 C6 00 00 00 00 00 00-00 00 00 00 00 00 00 00 An input buffer is at memory location 0112, what is the size of the buffer in decimal?

a) 20 Y 50 BahX 1692

3x16 = 48 **d) 54** e) CD

5od.

32

16. Here is a short sequence of code: 7413CD16EB157D213C04EBF0A3C6. All of the instructions are

two bytes long. The third instruction operator is: a) CMP b) INT

EB 15 c) IGE E *B*

JMP TO 1011 by the displacement e) JNZ

16 bits = 2 bytes 17. What is the hexadecimal encoding for loading DX with a word (va**lue) from memory location**

0820h?

**A00820**

little indien

Penn*sy to register* **A10820** A12008\* \*

2008

1000 101W mod ng *M*M. **8A2*6*2008**

1000 1011 00 OT **881**62008

**18. Given: AX=FFEO BX=3534** CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1072 ES=1072 SS=1072 CS=1072 IP=010D OV UP EI PL NZ NA PO NC 1D72:010D 7*0*09

**JGE 0116**

Oven lar Post

a g. **How many bytes will the processor jump if the conditions for a jump were met?**

cov © PL) + Nzs

O + N2 3

Jum

merump if the conditions for a jump w

016D 010E 010F 0110 011 012 0113 011!

0115

>

**10F *1*0D 116**

**d*)***

19. F6 in 2's compl**ement equals\_in base 10.**

**1111 0110**

111 0110

**-6**

000 1010

10

**20. Given: AX=FFDO BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1D72 ES=1072 SS=1072 CS=1072 IP=010D OV UP EI NG NZ NA PO NC 1D72:010D 7D09**

**JNLE 0116**

Juma no longer What will the IP value be after a "t" command is executed in DOS Debug?

0116h

010Eh

ov O NG 010D 0100h **0009h**

010Fh

EEE 174 Midterm 1 F07 Dahlquist

BH BL.

*70% BA*h **21. Determine the contents of regist**er BH after the following instr**uctions have executed:**

OFh

**MO*V* BX***,* 70BAh **07h**

**MO*V A*X, E4E7h 4Eh**

**MOV BL, FOh** EOh

**AND AH, BL** 70h

MOV [O202], AX

**22. Gi*v*en:** AX=2247 BX=0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1072 ES=1D72 SS=1072 CS=1072 IP=0106 NV UP E**I NG NZ NA PE NC 1D72:0106 EBOF**

**JMP 0118**

u*ni*m*uditional* mms What will the IP value **be after a "t**" command is executed in DOS Debug?

0107h **0108h 0116h 0118h** -1072h

23. Which of the following DOS Debug instructions would set a br**eak point at memory loc**ation 010E?

**a) GOE10** b) B = 100 10E G = 100 10E

gloo 010E B = 010E e) G = [010E]

24. Given: Welcome (SP) to SP Assem OBOE: 0200 57 65 6C 63 6F 60 65 20-74 6F 20 41 73 73 65 6D **OBOE:0210 62 6C 79 20 40 61 6E 67-75 61 67 6**5 00 00 00 00

*b1 y. L*a 9. Uage lul *Mil Num* **An ASCII message begins at memory locatio**n 0200, what is **the message?**

**a) Have a great weekend break ! b) Welcome to the first day of the rest of your life c) Welcome to the first midterm d) Welcome to the first exam he) Welcome to Assembly Language**

**25. Given: AX=**FF*47* BX=0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000 DS=10*7*2 ES=1072 SS=10*7*2 CS=1072 IP=0104 NV UP EI NG NZ NA PE NC

**1D72:0104 7002**

**JO 0118**

sumpah Pe*n flow* What will the IP valu**e be after a "i" command is executed** in DOS Debug?

0106h b **0118h**

10104 **1072h** 0108h

0105 **0104**

0106

EEE 174 Introduction to Microprocessors

Name EUR 106, 12:00 - 1:15 pm, Thursday, March 15, 2007 Midterm #1: Open text Time allowed: 50 minutes

S2007 Dahlquist

1. Given:

*A*X=FFDO BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1072 ES=1072 SS-1D72 CS=1072 IP=010E OV UP EI PL NZ NA PO CY 1072:0109 7006

INL 0118 What will the IP value be after a "t" command is executed in DOS Debug?

a) 010B b) 010E O 0110 d) 0118 e) 1072

CF ®

SE

10V

og to

No

2. The instruction MOV BX, 2BAD is what addressing mode?

a) Direct b) Register c) Immediate d) Scaled Index e) Register Indirect

3. What is the hexadecimal encoding for "JNL” for a jump back 10 bytes?

a) 79F0 b) 7DFO

+2 d) EB16

12 e) EBF4

7DF4

MO100

4. How many address lines would be required to address 64 MB directly?

a) 512 b) 64

26

**24**

**e**

**)**

20

5. The number of nibbles in a double word are:

a) 32 **b) 16**

6. In using INT 10h to set the video mode to 640 x 350, what value must be in the AX register?

a) 10h b) 1000h COE06h

d) 00h e) 0010h

*7*. Int 21h, Function 09h requires three things set up before calling in order to correctly print a string,

Hello msg. They are:

a) CS = SEG Hello\_msg, DX = OFFSET Hello\_msg, Hello\_msg terminated with 24h b) DS = SEG Hello\_msg, AX = OFFSET Hello\_msg, Hello\_msg terminated with "$" c) DS = SEG Hello\_msg, BX = OFFSET Hello\_msg, Hello\_msg terminated with "$" d) DS = SEG Hello\_msg, DX = OFFSET Hello\_msg, Hello\_msg terminated with 24h e) ES = SEG Hello\_msg, DX = OFFSET Hello\_msg, Hello\_msg terminated with "$"

**Name**

**EEE 174** Midterm 1 S07 Dahlquist

**Page 4**

0001 0100

**21. What are the contents of DX after this program has been run:**

**a) 5511h** CD FFFON

11 - 21 10 **C** -0010h **0010h**

**MOV DX, 11h D800h**

**MOV CX, [5512)**

**MOV BX, 5511h** - (Crocini

**SUB DX, [BX]**

**Memory location Contents 5514**

**24 5513 5512**

**00 5511**

**D8**

**21**

**22. In using INT 10h to move the screen cursor to return on the same line, what value must be in the**

**AX register? a) EOh b\_12h** c) DEODO **d) OE0Ah e) 0012h**

ZETO

**23. Gi*v*en*:* AX=FFDO BX=3534 CX=0000 DX=0180 SP=FFEE BR=0000 SI#0000 DI=0000 DS=1072 ES=1072 SS=1072 CS=1072 IP=0100 *OV* UP EI PL NZ NA PO NC 1072:010D 7009**

**INLE 0118** What will the IP value be after a "t" command is executed in DOS Debug?

**aL0118h**

**0106 010Eh 0100h 0009h**

L

emon 13F CE! +7:D

**24. Which of the following DOS Debug instructions would be used change the AX register?**

**a) G AX ODRAX C) RAX = 0110 d) RBX = 100 110 e) RIP = [0110]**

| 1213;

45,6 718:9:12 **25. How many Bytes are there in this short sequence of code? B815B400CD168A3CCD20**

ceea

**UNDO**

Answer

should be

EEE 174 Introduction to Micropro**cessors**

Name BRH 101, 12:00 - 1:15 pm, Thursday, March 9, 2006 Midterm #1: Open text Time allowed: 50 minutes

S2006 Dahlquist

- 990-63

D 76-20 C mean » 65.89

. Given: AX=FFDO BX=3534 CX=0000 DX=0180 SP=FFEE BP=0000 SI=0000 DI=0000 3 DS=1D72 ES=1D72 SS=1072 CS=1D72 IP=0**111 NV UP EI NG NZ NA PO CY** 1D72:0111 EB08

**JMP** 0119 What will the IP value be after a "t" command is executed in DOS Debug?

**a) 8 bytes forward b) 0008d**

unconditional **0111h** d*)*-0119h **e) 0113h**

Max=80 min 544

c)

Jump

The number of nibbles in a double word are: **a) 2**

4 nibble **b) 4** c) 8

32 darble word a) 16 e) 32

SF=1

3. Which of the following DOS Debug instructions would set a break point at memory location 010E?

**a) B**-=-100 10E b)-G=-(-010E) e) B= 010E d)) = 100 10E

Y GOE01

07-1 **Given: AX=FFDO BX=3534 C**X=0000 DX=0180 SPOFFEE BP=0000 SIF0000 DI=0000 **DS=1D72 ES=1D72 SS=1072 CS=1072 IP=010E OV UP EI NG NZ NA PO CY**

**1D72:010E 7D06**

**JNL 0118** What will the IP value be after a "I" command is executed in DOS Debug?

a) 010E **b) 010F**

Jump Not less. (SFO OF)=0 Active Low C) 0118 U1D72 e) 0110

\*otes

*ing*?!o

In x86 architecture, ALU stands for which of the following? **a) A Logic User** b) All Logic Unit

) Address Logic Unit

Arithmetic Logic Unit Ley Arithmetic Lining Unit

CF50

*&* How many bytes decimal will the program jump for JNB instruction, given the following? AX=0000 BX=0000 CX=0000 DX=0000 SP=FFEE BP=0000 SI=0000 DI=0000 DS=1376 ES=1376 SS=1376 CS=1376 IP=0100 NV UP EI PL NZ NA PO NC

1376:0100 73EO

**JNB**

L OOE2 **a) 64** b) 20

230 c) -32

Above or Equery Not Below CF=0 c e *(*a) -30

pes, will jumps

instruction

**el -64**

532

Located @ jump to

Ip: 100 - 23613 s Ip: 00 E2 =226

236 -226

Jump bakso Lies

2 abflinat lives plus

for Jup is the tim

-

3

Name

EEE 174 Midterm 1 S06 Dahlquist

Page 2

7. Given: **AX=FFEO BX=3534 CX=0000 DX=0180 SP=FFEE BP=000**0 SI=0000 DI=0000 **DS=1D72 ES=1D72 SS=1072 CS=1072 IP=010D OV UP EI PL NZ NA PO NC** 10*7*2:010D 7509

**JNLE 0118** What is the decimal value of the signed number in the AX register?

**a) FFEO** b) 0020

100 D **c) 0032** d)-0020 e)0032

1111

1110 DOOD OODS 0001

- 51

8. The instruction MOV BX, BAD is what addressing mode?

A) Direct >

WoV CL,L2011) b) Register ©) Immediate → Mo*v 36*,05 U Scaled Index c) Register indirect nov 12, C5i)

9. Moore's law has accurately predicted the growth rate in the number of transistors per die for the last 25

years. What is that rate*?* a) Doubling every 18 years b) Doubling every 6 months

c) Doubling every 36 months (0Doubling every 18-24 months e) Doubling every 30 - 40 weeks

How many address lines would be required to address 512 MB directly? a) 512 **b) 64**

512 MB c) 32

29x220 =29

e)

20

TO BITS WEL pan>BX= oll

Dol Sex

What is the hexadecimal encoding for adding BX with CX and storing the result in BX? a) 0103 b) 01ĐÁ,

Add BX, CX c010B

Rogz to rey good ooow d) 0108

11 ver a nega **e) 29DA** >should be: , 0209,

hey to help boos, 200111011001 12. The binary number, 0111 1110, represents what values; in Hex, and as a BCD number?

a) 7E, 7-20 b) F5, invalid5 c) 7E, 7 invalid U 7E. 70 e) invalid 7, E7

7

nuvalid

13. In using INT 10h to set the video mode to 640 x 200, what value must be in the AX register?

a) 00h b) 02h

AM AL c) 0000h d) 0E06h C) 0006h

AX, 00

|

0

Intions service Laht

AL-defius mod

Name

EEE 174 Midterm 1 S06 Dahlquist

Page 3

DX How many Bytes are there in this short sequence of code? CD15B400CD168A3CA05

APPAUS **a) 6 b) 7** c) 8 d) 10 e) 20

PRO

5. What is the hexadecimal encoding for loading AH with a word from memory location 0520h?

v/m= 10 ap) 8A262005 **8B1 62005**

MOV AH, Los2o) ney AH = iso **c)**

A00520 **A10520**

Mens Rep a s 1000 low. mod rey r/m : memory address A12005

8 1010 0010\_allo

8 A 2 6 20 os D6. What is the hexadecimal encoding for "JGE" for a jump back 10 bytes?

**a) 79F0**

Back=10 instruction

. pasitue »,0000 1010 **b) 7DFO**

5111i Diol **c) 7DF4 2) EB16**

olli ++th : byte offset **e) EBF4** Should Be: 7DE6.

negut we lo $ F 6. D Given: 13A*7*:0110 CD 2048)20 54 68 69 *7*3-20 69 *7*3 20 74 68 65 20 12 000 1100 13A*7*:0120 66 6*9 72 7*3 74 20 4D 69-64 74 65 72 6D OD 24 D9

SI!0011 13A*7*:0130 00 06 00 00 00 00 00 00-00 00 00 00 00 00 00 00 An input buffer is at memory location 0112, what is the size of the buffer in bytes in decimal?

**a) 20**

6 4 16

4x10' = 64

F b)

.4 72 c) 64

BX16° = 8 d) 30

22 (e) 32

-

112

DIO

First Byle=size

18. Int 21h, Function 09h requires three things set up before calling in order to correctly print a string,

by Hello msg. They are:

OFFSET Hello\_msg, Helmco terminated with "S"

DSPX

Y ES = SEG Hello\_msg, DX = OFFSET Hello msg, Hello msg terminated with "S" BFDS SEG Hello msg, BX=OFFSET Hello msg, Hello\_msg terminated with "S"

DS=SEG Hello\_msg, AX = OFFSET Hello\_msg, Hello\_msg terminated with "S" d) DS-SEG Hello\_msg, DX = OFFSET Hello\_msg, Hello\_msg terminated with 24h

SEG Hello\_msg, DX = OFFSET Hello\_msg, Hello\_msg terminated with 24h

19. Given: ***A*X=FF4*7* BX=0000 Cx=0000 D**x=0000 SP=FFEE BR=0000 SI=0000 DI=0000 **DS=1D72 ES=1072 SS=1072 CS=1072 IP=0106 NY UP EI NG NZ NA PE NC** 1D72:0104 7002

**JNO 0118** What will the IP value be after a "t" command is executed in DOS Debug*?*

*(*a*)*) 0118h

0106h **1D72h 0108h 0104**

Jump Not over flow