 Name: _____

Unit 03_010 – ASCII

Video Length 17:18

1. What does the "A" in ASCII stand for? Why is it significant?

2. Fill in the blanks in the following table.

Decimal	Hex	Character
0		
	20	
		0 (zero)
64		
	41	
		a
		(tilde)

3. What are the ASCII codes with values less than 32?

4. If you have an uppercase letter, how can you convert it to the lower case equivalent?

Do you have any questions or concerns? Please write any lingering questions you have here.

Unit 03_020 – Logic Gates

Video Length 6:10

5. Draw the diagram for an AND gate and fill in the truth table.

A	B	A and B
0	0	
0	1	
1	0	
1	1	

6. What is the order of the input columns on a truth table?

7. Draw the diagram for an OR gate and fill in the truth table.

A	B	A or B
0	0	
0	1	
1	0	
1	1	

8. Draw the diagram for an XOR gate and fill in the truth table.

A	B	A xor B
0	0	
0	1	
1	0	
1	1	

9. Draw the diagram for a NOT gate and fill in the truth table.

A	not A
0	
1	

10. Draw the diagram for an NAND gate and fill in the truth table.

A	B	A nand B
0	0	
0	1	
1	0	
1	1	

11. Draw the diagram for an NOR gate and fill in the truth table.

A	B	A nor B
0	0	
0	1	
1	0	
1	1	

12. Explain the difference between a NOR gate and an XOR gate

_____

Unit 03_030 – Adders

Video Length 15:00

13. Add the binary numbers 0b00101011 + 0b00111101. Check your answer by converting the numbers to decimal.

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

15. Fill in the truth table for a full adder.

A	B	Cin	Sum	$Cout$
0	1	0		
1	0	1		

Unit 03_040 – Suffixes

Video Length 20:00

16. What is the suffix for an instruction that works on 64 bit registers? What is an example of a 64 bit register?

17. What is the suffix for an instruction that works on 32 bit registers? What is an example of a 32 bit register?

18. What is the suffix for an instruction that works on 16 bit registers? What is an example of a 16 bit register?

19. What is the suffix for an instruction that works on an 8 bit registers? What is an example of an 8 bit register?

20. What would the content of the RAX register be after executing the following code?

```
movq $0x7fffffffffffffff, %rax
movw $0, %ax
```

21. What would the content of the RAX register be after executing the following code?

```
movq $0x7fffffffffffffff, %rax
movl $0, %eax
```

Unit 03_050 – XOR

Video Length 20:00

22. Write the code needed to clear the RAX register using XOR.

23. Why is using XOR to clear a register better than using MOV?

Unit 03_060 – Add

Video Length 3:45

24. Cross out the instructions that are invalid. Put a check mark next to the ones that are valid. (You may assume that the data fields are valid)

```
addq %rax, %rbx

addq %rax, %r9

addq num1, %rdi

addq num1, num2

addq $17, %rcx

addq $17, num1

addq $rcx, num1
```

Unit 03_070, Part 1 – Complements

Video Length 7:20

25. What arithmetic operation is complement arithmetic used for?

26. What is the ten's complement of 7?

Unit 03_070 Part 2 – Complements

Video Length 9:25

27. What is the rule for converting a binary number into its two's complement?

28. What is the two's complement of the binary number 0b00001101?

29. How can you tell if a binary number is negative?

30. What is the rule for converting a two's complement number back to a positive value?

31. What is the range of possible values for a signed byte?

Unit 03_070 Part 3 – Complements

Video Length 9:25

32. Do the subtraction problem 0b00101100 - 0b00010111 using two's complement arithmetic. Show all your work.

Unit 03_070 Part 3 – Complements

Video Length 4:40

33. Why do computers use two's complement arithmetic instead of one's complement arithmetic?

34. Assume you have 'num1', 'num2', and 'difference' defined with quad values. Write the code needed to subtract num2 from num 1 and store the result in difference.


CSC 264
MOV AX,BX
ADD AX,1
CALL FUNC
Assembly Language and
Computer Architecture