Unit 00_000 – First Assembly Program

Video Length 33:00

1. What symbols are used to mark a multi-line comment in the ‘as‘ assembler?

2. What is the name of the section of the program that holds items that look like variables? (Hint: it starts with a period.)

3. What is the name of the section of the program that holds the executable code? (Hint: it also starts with a period.)

4. What symbol is used to indicate that the remainder of the line is a comment?

5. The last three lines of the program do not have comment. Write reasonable comments for each of the lines.

```
movq $60, %rax

movq sum, %rdi

syscall
```

Unit 00_010 – About Assembly

Video Length 8:27

6. Is the main purpose of this course to teach you how to write programs in Assembly Language? Explain your answer.

_____

Unit 00_015 – A Bit of History

Video Length 20:30

8. How many bits of data were needed to represent a single decimal digit using the methods used to tablulate the US census inn 1890? Explain why it took that many bits.

9. How many bits are needed to represnt a single decimal diit using Binary Coded Decimal (BCD)

10. Why was BCD inefficient?

11. What is the relationship between an electrical relay switch and a bit?

12. Relays were replaced by _____ tubes which were in turn replaced by _____. Later, many transistors and other electrical components were printed on single pieces of silicone to create _____ circuits

13. How is the speed of computers related to the physical size of the CPU?

14. What is a microprocessor?

Unit 00_020 – Computer Systems

Video Length 12:53

15. Who is generally credited with designing the basic architecture of modern computer systems?

16. What are the three main components of the CPU of a CPU?

    1. _____ 2. _____ 3. _____

17. What are registers? (You do not need to list specific registers)

18. What type of arithmetic is used by the ALU?

19. What two things are kept in Main Memory or Primary Storage?

20. What unpopular opinion makes VonNeuman a controversial figure?

21. Does a CPU need to be on a single chip of silicone?

22. In old movies and TV shows, CPUs had lots of blinking lights. What did the blinking lights represent?

23. What is a bus?

Unit 00_030 – Computer architecture

Video Length 8:13

24. In general terms, what does "Computer Architecture" mean?

25. What is the specific computer architecture we will be studying this semester? ar

26. How wide were the registers on 8086 processors

27. How wide are the registers on 80386 processors? (Oops, I did not say 80386 in the video, so I will answer this one for you.)

    32 bits

28. How wide are the registers on x86-64 processors? (Yes, it is obvious)

29. How are ARM processors different from x86 processors?

30. What is "Instruction Set Architecture? Do all CPUs share the same ISA?

Unit 00_040 – Machine Language

Video Length 5:40

31. The assembly language program translates assembly language into _____ language.

    NOTE: (Not a question). The program I wrote for the first video is in 64-bit assembler. When i made this 040 video, I wanted the machine code to be neat in the listing. I did not like how every line of machine code in 64-bit assembly takes two lines, with the second line being 000000000. So I sort of cheated and wrote this program using only 16-bit assembler. In the first program, I used the lower 16 bits of the

32. What is the relationship between hexadecimal and binary?

33. In the 000 video, I had the following line of code:

```
movq sum, %rdi
```

    In this video, I wrote the equivalent line of code as:

```
mov $7, %di
```

    Explain the differences between these two lines of code.

Unit 00_050 – Computer Languages

Video Length 5:28

34. How are high-level languages different from low-level languages?

35. The PDP-11 had a row of switches. What did each switch represent?

Unit 00_060 – Language Translators

Video Length 8:00

36. I C a compiled language or an interpreted language?

37. What is the linux command that prints a program's exit code or error code.

38. Is Python a compile language or an interpreted language?

39. Is assembler more like a compiled language or an interpreted language?

Unit 00_070 – Assembler

Video Length 7:58

42. What are the two main dialects of assemblers used for x86 assemblers? Which are we using this semester?

43. Many assembly language instructions use two operands. What order do GAS assemblers use?

44. We assemble assembly language into machine code. Can the process be reversed? When would we want to reverse the process?

    _____

Unit 00_080 – Generations of Programming languages

Video Length 15:08

45. How many bits were in a register 8086 processors?

46. The 8086 could only address 1MB of memory. Why was it limited to 1MB? (Hint: How many bits were in the Address Bus?)

47. What was the 8087 coprocessor used for?

48. How many bits were in the 80386 processor? _____

    Was the eax register available on the 80386? _____

    Was the rax register available on the 80386? _____

49. What is a "core?"

50. To what extent does an x86-64 programmer need to be aware of the history of old processors?

Unit 00_100 – Installing Software

Video Length 15:18

51. If you want to run Linux for this semester, what would you need to consider for the minimum hardware requirement?

52. What is Windows Subsystem for Linux (WSL)?

53. What is Fedora with KDE Plasma

54. What is "kate?"

Unit 00_110 – Simple Program

Video Length 8:24 Note: You do not need to watch this video. You have already seen most of this program. You may want to watch it if you have trouble getting the first assignment to work.

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