

## 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
```

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## 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.

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## 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 tabulate the US census in 1890? Explain why it took that many bits.
9. How many bits are needed to represent a single decimal digit 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 silicon to create \_\_\_\_\_ circuits.
13. How is the speed of computers related to the physical size of the CPU?
14. What is a microprocessor?

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## 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?
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## 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 00000000. 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.

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## 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? \_\_\_\_\_

\_\_\_\_\_

Please write any lingering questions you have here.