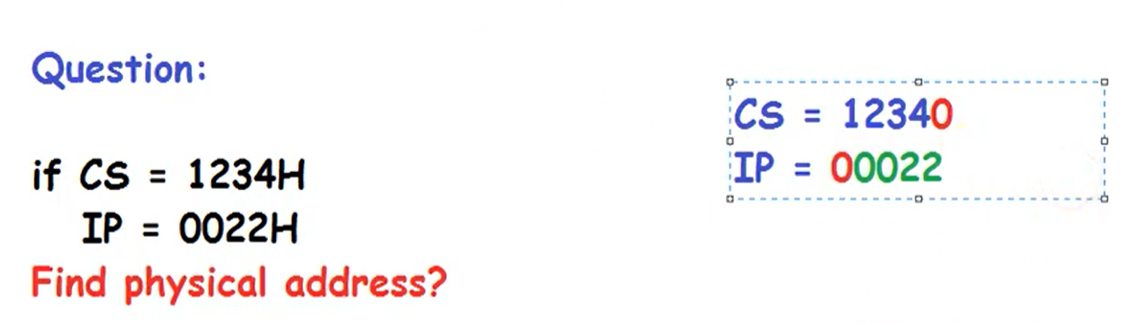
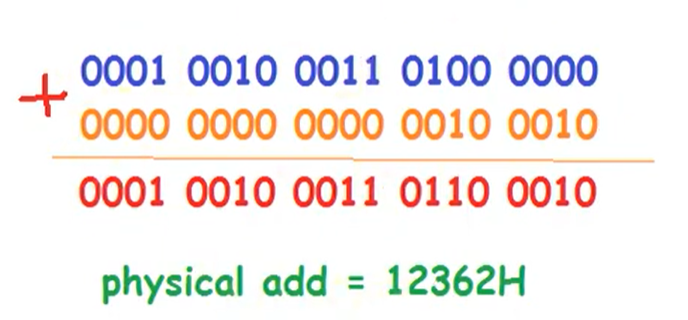
A white background with text

Description automatically generatedSegment address - add zero to the left most side

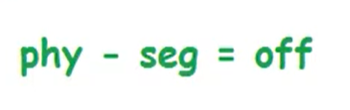
Zero – offset address (IP – Instruction Pointer)





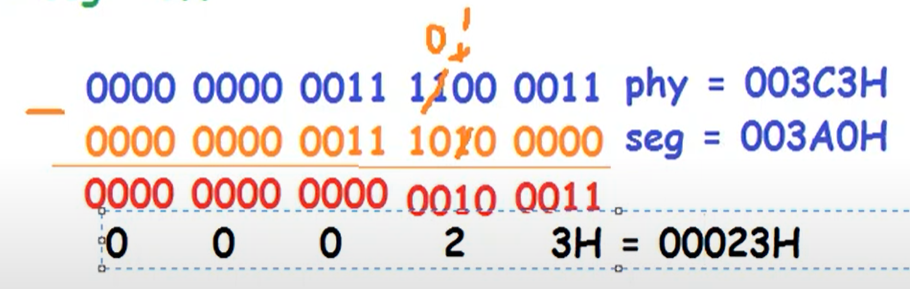
A screenshot of a computer

Description automatically generated



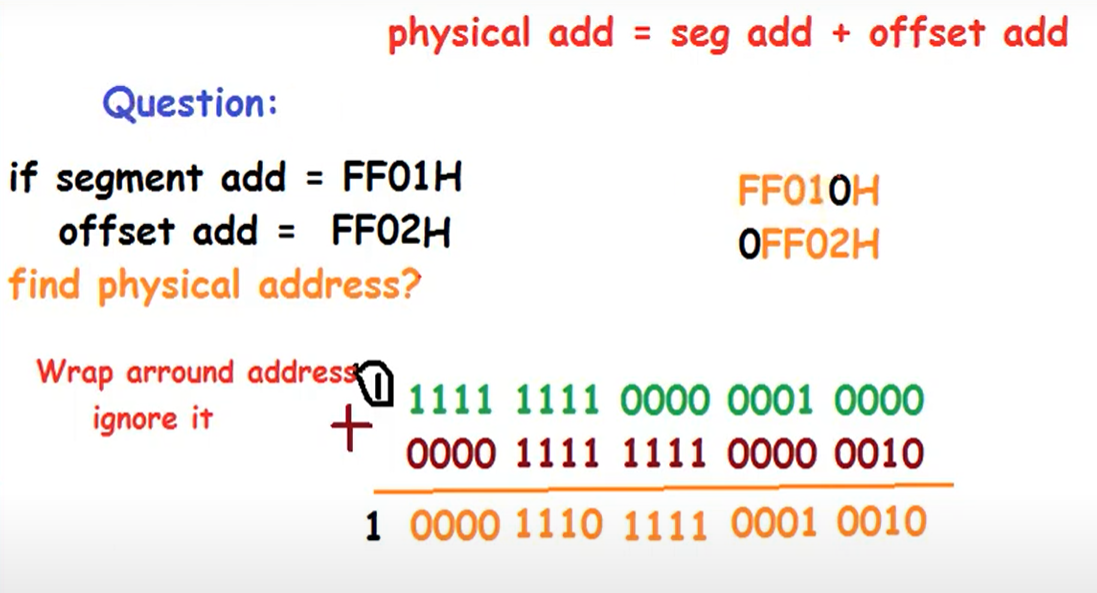
A number and a number

Description automatically generated with medium confidenceAdded zero at the end of segment address



A close up of numbers

Description automatically generatedRemember that we always add a zero to the left most side of the offset number, now when we have the offset number, we will remove the left most zero.



**What are the first and the last physical memory addresses accessible using the following segment values?**

a. 1000

b. 0FFF

c. 1002

d. 0001

e. E000

In x86 architecture, the physical address is calculated using the formula:

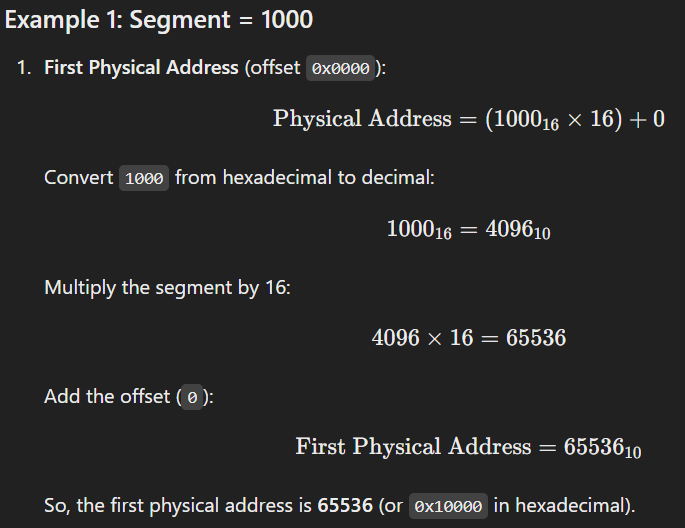
Physical Address = (Segment Base × 16) + Offset

This formula makes the segment shift 4-bits to the left

The segment values provided are used as segment bases in this calculation. To find the first and last physical memory addresses accessible with each segment value, we'll assume an offset range of 0x0000 to 0xFFFF (which covers the full 64KB range for each segment).

**Calculation Method**

1. **First Physical Address**: This is calculated using the offset 0x0000.
2. **Last Physical Address**: This is calculated using the offset 0xFFFF.



A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A black screen with white text

Description automatically generated

A black screen with white text

Description automatically generated

A black screen with white text

Description automatically generated

Add Hexadecimal:  
F + F = 30

30 – 16 = E + (carry 1 to the left)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Carry | 1 | 1 | 1 |  |  |
| Hex 1 |  | F | F | F | 0 |
| Hex 2 |  | F | F | F | F |
| Answer | 1 | F | F | E | F |