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Homework 2 - TYPES
CS 312

1) **Static Typing** - variables are fixed to type when declared at compile time, before the value is assigned.
Dynamic Typing - the type of a variable can vary depending on what value is assigned to it.
A python assignment like "a = 6" would work if the language uses dynamic typing, but this would lead to type errors for static typing languages.

2)

a) 00111101110011001100110011001101
b) 00111111100000000000000000000000

3) **a is 4 bytes**
b is 400 bytes
c is 16 bytes
d is 12 bytes

4) **Big endian means the most significant digit of the value sequence is stored first** in the memory address. **Little endian means the least significant digit of the value sequence is stored first** in the memory address.
So for an example of a computer making use of the architecture of Big endian, when storing a **hexidecimal number 56FABE**, it is **stored in memory as "56 FA BE" contiguously in memory for big endian**.
A little endian machine would store the result as "BE FA 56" contiguously in memory.

5)
The structure requires a minimum allocation of 5 bytes (though it can possibly require 8 if the machine requires that the int be allocated at an address that is a multiple of 4. -- I will assume this is not the case. If it is, I am sorry).
Assuming row major layout, A[7][3] should be at address 1365.
(This is the 3rd item of the 7th 10 item array, OR, item 73 contiguously in memory in relation to A[0][0]. This is assuming each item is a byte size of 5. -- If it is byte size 8, then A[7][3] would be at address 1584).