LAB 2 Assignment

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Assignment 3:

1. 16-bit stores signal using 16 digit binary number. With 1byte of width contains 8bits, 16bits have a width of 2.
2. paInt8's width is 1

Assignment 4:

1. '\xff\xff' to represent -1
2. '\x00\x01' to represent 256
3. '\xff\xff\xff\xff' to represent -1, '\x00\x01\x00\x00' to represent 256
4. I got an error: short format requires SHRT_MIN <= number <= SHRT_MAX
   Too large gain made peak amplitude exceed the maximum allowed value.
5. It depends on each value of original filter. Given the filter in filtering_paInt16_a.py, the differential equation goes like: $y(n)=x(n)+1.8999y(n-1)-0.9977y(n-2)$, than the transfer function goes like $H(z)=\frac{1}{z^2-1.8999z+0.9977}$ using filter function in Matlab we could find the peak point for y is 3.221 when n = 5; so gain * ymax should less than $2^{15}-1$
   The maximum gain is 10173
6. The source code of question 6 is in the package named filtering_paInt16_a_sl5352.py.
   Sound is bounded to 2^15-1 levels.
   The effect for this on sound is that the code only generates the sound with bounded amplification.
7. The source code of module is in the package named bound.py This bound module contains three function for bounding different data type.
8. The source code of question 8 is in the package named Lab_2_Asgmnt3_8_sl5352.py
9. The source code of question 9 is in the package named Lab_2_Asgmnt3_9_sl5352.py