September 11, 2014

No Title

1 000 – 1 thousand 10^3	1024 - 1 kilo 2^{19}
1 000 000 – 1 million 10^6	1024 x 1024 – 1 mega 2^{20}
1 000 000 000 – 1 billion 10^9	1024x 1024 x 1024 – 1 giga 2^{30}
1 000 000 000 000 – 1 trillion 10^{12}	1024 x 1024 x 1024 x 1024 – 1 tera 2^{40}

AM Radio:	FM Radio:
560, 770	88 – 107*
560 kHz, 770 kHz	88.5 MHz, 99.1 MHz
560 x 1024 cycles/second, 770 x 1024 cycles/second	88.5 x 2^{30}

- each station uses their own frequency

TV frequency is 400 MHz – 800 MHz
Cell phone GSM frequency is 850 MHz, 900 MHz, 1800 MHz, 1900 MHz

A – 01000001 = 65
B – 01000010 = 66

- they can either represent a number or a character
- they are used by seeing if you need a character or number

How to Represent Sound: (search for diagram in textbook)

- Stored data would be represented by 0s and 1s instead of 2s to 9s
- Sound waves have data that is collected from samples in constant intervals
- The more samples you take, the wavelength will be more accurate (better quality sound)
- Sound waves
    - Voice is 0-200Hz
    - Human hearing range 0-20kHz
    - Ultra sound
    - Radio wave: AM to FM
    - TV
    - Cellphone
    - Wifi 2.4 GHz – 5.8GHz
- CD players take 44.1k samples/second
- Telephones take 8k or 16k samples /second

Image Representation

- bit map representation
    - Roster Graphics
    - Smallest unit is 1 pixel (0 = white pixel, 1 = black pixel)
    - Usually use 24 bits (3 bytes) to represent a pixel
        - Each byte represents the three additive primary colours (red, green, blue) RGB 0 – 255

        - Smallest number is 00000000 = 0
        - Largest number is 11111111 = 255
            - There are 256 levels
        - 3 bytes in one colour pixel
    - Cameras
        - 1M front camera
        - 12M back camera
        - 1M = 1 megapixel
        - picture size
            - 1k x 1k (1024 x 1024): if the picture is stored, it will take up 3MB of space
            - 3k x 4k (4096 x 3072)
    - Jpeg format
        - Highest quality (Q=100) has a ratio of 2:6:1
        - High quality (Q=50) has a ratio of 1:5:1
        - Medium quality (Q=25) has a ratio of 2:3:1
        - Low quality (Q=10) has a ratio of 46:1
        - Lowest quality (Q=1) has a ratio of 144:1
        - There is also extra fine, fine, good
    - Newer 4K TV is 3840 x 2160 (which is 8 megapixels) 4 times the older HDTV size

American Standard Code Information Interchange

- ASCII is 7 bits.

Microprocessor: an integrated circuit designed to produce instructions

- usually the most expensive component of a computer

A transistor is used as an electronic switch. It is a semi-conductor.

Each Hz can handle one input of information per second.
Ex. 3.5 GHz can handle 3.5 billion inputs of information per second (in theory)

A bus is a connection (like from a CPU to the main memory. The connection is bus)