PC Metrics

Tera 12

Giga 9

Mega 6

Kilo 3

Mili -3

Micro -6

Nano -9

Pico - 12

**Convert to bits \*8**

**Convert to bytes / 8**

File size = pixels \* pixels

Percentage e.g. 200x106/2x1012 \* 100 = 0.01

Revolution per second = 5400(RPM) /60

1/T = clock cycle

F = 1/166.6x10-12 = 6GHz

Speed

5400/60 = 90 F

1/90 = 0.01 s so its 11.11ms

* 1. 1 MHz

1/T = 1/1,000,000

= 0.000001

Instantaneous amplitude

Communication Metrics

Image to encode

File size = 1024 x 768 x 16 = 12582912 bits

t = 12582912 / 9600 = 1310.72 s

transfer animation

t = (10x106 x 8) / 56 x 103 = 1428.57 s

get two points and y/x so 2.5/4000 = 625x10-6

equation of line = 625x10-6

reciprocal of line = 1/gradient = 1600

speed is 1600 bps

data reate = size \* 8 / (speed / second)

**Communication Fundamentals**

Class a 1 – 127

Class b 128 – 191

Class c 192 – 223

**10-15 is A-F**

**2 power of bit = how many can be formed**

**Introduction to Signals**

**T = 1/F or F = 1/T**

ω = 2.π. f

Revolutions per second = \_\_ / 60

V(t) = A.sin(ω.t)

|  |  |  |
| --- | --- | --- |
| f(t) | = | A.sin (.t) |
| f(t) | = | A.sin (2..f.t) |
| f(t) | = | A.sin (2..(1/T).t) |
| f(t) | = | 10.sin (2..(1/5x10-9). 2.5x10-9) |
| f(t) | = | 10.sin (2..200x10+6. 2.5x10-9) |
| f(t) | = | 0 |

f = c / λ

3X108(speed of light)

**Modulation and Signals**

**Quantization and Noise**

Sampling frequency = 2 fmax

bps = 2.n.fmax

C = B log2(1+S/N)

V2

\_\_\_\_\_

R

A channel has a bandwidth of 3 kHz, and a S/N of 30dB. What is the capacity of the channel.

First Find the S/N ratio

NdB = 10log10 (Po/Pi)

30 = 10 log10(S/N)

30/10 = log10(S/N)

3 = log10(S/N)

103 = S/N

S/N = 1000

Now you can find the capacity

C = B log2(1+S/N)

C = 3000 log2(1+1000)

Using the relationship logbx = logyx / logyb

C = 3000 log10(1001) / log102

C = 29.91 kbps

George Loukas

Errors

Hamming Distance

C+D + 1 = Hamming Distance

**LAN**

109/(512\*8) = fps

Convert to bit

Times by the speed

e.g. 10mbps and 5bytes per frame, it would be 50\*8 = 400 10,000,000/400 = 25,000 bits per second

IP

Class a 1 – 127

Class b 128 – 191

Class c 192 – 223

**114.154.54.7**

**2n – 2 hosts**,

11111111.11111111. 11110000.0000

So if there was 1111, it would be **24 = 16 – 2 = 14 (for 1s)**

**2 to the power of 12 – 2 =** 4,094 hosts per subnet ( for the 0s)

WAN

Fully connected mesh

**Nodes \* ( nodes -1) / 2** = fully connected mesh

So, if we had 6 nodes, and 9 links, how many links till a fully connected mesh

6 \* (6 – 1) = 30

30/2 = 15. Therefore, 15 – 9, it needs 6 links for a fully connected mesh

Mobile

Number of channels per cell \* hexagon cells = maximum number of concurrent calls

Number of channels per cell = total channels / reuse factor

Total Area = 3√(3)\*(1.6) 2 / 2