Introduction to Web Science – Assignment 1

Group hotel
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1 Ethernet Frame

- Source MAC Address (6 bytes): `00 13 10 e8 dd 52`
- Destination MAC Address (6 bytes): `00 27 10 21 fa 48`
- Protocol inside the data payload (2 bytes): `08 06` (Address Resolution Protocol (ARP) (for IP and for CHAOS))
- last 2 fields:

  28 bytes arp request or arp reply
  (source hardware address/srouce protocl address/target hardware address/target protocol address)
  `00 01 08 00 06 04 00 01`
  `00 13 10 e8 dd 25 c0 a8`
  `02 01 00 00 00 00 00 00`
  `c0 a8 02 67`

  10 bytes padding (filler bytes to reach minimum of 46 bytes)
  `00 00 00 00 00 00 00 00`
  `00 00`

2 Cable Issue

$$speed \cdot time = distance \tag{1}$$

$$speed = 300\,000\,000 \frac{m}{s} \tag{2}$$

$$distance = 20m \tag{3}$$

$$time = unknown \tag{4}$$

$100 \frac{Mbit}{s}$:

$$300000000 \frac{m}{s} \cdot t_{100} \cdot 10^{-8} = 20m \tag{5}$$

$$t_{100} = \frac{200s}{3 \frac{m}{s}} = 6.666s \tag{6}$$

$10 \frac{Mbit}{s}$:

$$300000000 \frac{m}{s} \cdot t_{10} \cdot 10^{-7} = 20m \tag{7}$$

$$t_{10} = \frac{200s}{3 \frac{m}{s}} = 66.666s \tag{8}$$

3 Basic Network Tools

4 Simple Python Programming

```
# assignment 1 task4
# Andrea Mildes - mildes@uni-koblenz.de
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import random
import math
import matplotlib.pyplot as plt
import matplotlib.patches as lpatches

sin = []
cosin = []
xcoord = []

plt.axis([0, 90, 0, 1])
plt.xlabel('x [radiant]')
plt.ylabel('y')

for i in range(0, 10):
    x = random.randint(0,90)
    xcoord.append(x)
    sin.append(math.sin(math.radians(x)))
    cosin.append(math.cos(math.radians(x)))

plt.plot(xcoord, sin, "ro",  label = "sinus")
plt.plot(xcoord, cosin, "g^", label = "cosinus")

plt.legend(bbox_to_anchor = (1.05, 1), loc = 2, borderaxespad = 0)

plt.show()
```