

# Introduction to Web Science

## Assignment 1

### TANGO

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## 1 Ethernet Frame

1. Source MAC Address: 00:13:10:e8:dd:52
2. Destination MAC Address: 00:27:10:21:fa:48
3. Protocol: Address Resolution Protocol
4. The last two blocks of the targets IP Address (192.168.2.103).

## 2 Cable Issue

Let  $c$  be the speed of light,  $l$  the length of the cable and  $t$  the time it takes for the first bit to travel the length  $l$ . As the length of the cables are equal and the networks bandwidth doesn't change the propagation delay, the calculation for both networks are the same. Given the speed of light  $c = 3 \cdot 10^8 \frac{m}{s}$  and the formula for the propagation delay  $t = \frac{l}{c}$ , the propagation delay is  $t = \frac{20}{3 \cdot 10^8} s \approx 67 ns$

## 3 Basic Network Tools

## 4 Simple Python Programming

see `src/task4.py`