

# Networking practice - 2

## Exercise 1: Fragmentation Calculation

**Objective:** Understand how IP packets are fragmented according to different MTU sizes.

**Scenario:** You have a data packet of 3,600 bytes, including a 20-byte IP header. The MTU of the network is 1,200 bytes.

**Tasks:**

1. **Calculate the Number of Fragments:** Determine how many fragments are needed.
2. **Detail Each Fragment:** For each fragment, specify its size, including the IP header.
3. **Identify Fragment Offsets:** Calculate the offset for each fragment.
4. **Set Flags:** Determine the 'More Fragments' flag status for each fragment.

## Exercise 2: Fragmentation of Various Sized Packets

**Objective:** Explore how packets of different sizes are fragmented.

**Scenario:** You have three packets of sizes 2,500 bytes, 4,500 bytes, and 5,000 bytes, each including a 20-byte IP header. The MTU is 1,400 bytes.

**Tasks:**

1. **Fragment Each Packet:** Calculate the fragmentation details for each packet.
2. **Compare Fragmentation:** Analyze how the number and size of fragments vary with different packet sizes.

## Exercise 3: Dynamic MTU Change

**Objective:** Understand the impact of changing MTU on IP fragmentation.

**Scenario:** A packet of 4,800 bytes, including a 20-byte IP header, traverses through three different networks with MTUs of 1,600 bytes, 1,200 bytes, and 1,000 bytes, respectively.

**Tasks:**

1. **Fragmentation at Each Stage:** Calculate the fragmentation at each network stage.

2. **Track Fragment Changes:** Note how the fragments change as they pass through networks with different MTUs.

שנו את כתובות ה-IP הבאות (ורסיה 4) מהייצוג הבינארי שלהן לייצוג הדצימלי, המופרד בנקודות:

- א. 01111101 01100111 11110000 01111111
- ב. 10101111 11000000 11111000 00011101
- ג. 11011111 10110000 00011111 01011101
- ד. 11101111 11110111 11000111 00011101

שנו את כתובות ה-IP הבאות (ורסיה 4) מהייצוג הדצימלי המופרד בנקודות לייצוג הבינארי שלהן:

- א. 114.34.2.8
- ב. 129.14.6.8
- ג. 208.34.54.12
- ד. 238.34.2.1

מדוע צריך לטפל בבעיית ה-fragmentation?