Subnets Are Fun 🎉🌐

Background

As a network analyst, you are tasked with analyzing IP addresses and subnets. Your goal is to determine whether an IP address belongs to a specific subnet and to find the IP address ranges for given subnets.

Instructions

Task 1: Does this IP belong here? 🎟️

For each of the following IP addresses, determine whether it belongs to the given subnet.

IP Address	Subnet	Subnet Mask	Does IP belong in Subnet
192.168.1.100	192.168.1.0	255.255.255.0	
10.0.0.5	10.0.0.0	255.0.0.0	
172.16.1.200	172.16.0.0	255.255.0.0	
192.168.2.50	192.168.3.0	255.255.255.0	
172.16.0.1	172.16.1.0	255.255.255.0	
8.8.8.8	9.0.0.0	255.0.0.0	
192.168.1.1	192.168.0.0	255.255.0.0	

Write "Yes" if the IP address belongs to the subnet, and "No" if it does not.

Task 2: IP Range Finder 🔍

For each of the following subnets, find the range of valid IP addresses.

Subnet	Subnet Mask	Valid IP Range
192.168.1.0	255.255.255.0	
10.0.0.0	255.0.0.0	
172.16.0.0	255.255.0.0	
192.168.2.0	255.255.255.0	
172.16.1.0	255.255.255.0	
8.0.0.0	255.0.0.0	

Write in a text file your:

- IP range in the format: "Lowest IP - Highest IP" in the table.
- your explanation & calculation of the valid range underneath the table.

Example Output for Task 2

Subnet	Subnet Mask	Valid IP Range
192.168.1.0	255.255.255.0	192.168.1.1 - 192.168.1.254

To calculate the IP range for the subnet 192.168.1.0 with a subnet mask of 255.255.255.0:

1. The lowest IP address in the range is the network address plus 1. In this case, it's 192.168.1.0 + 1 = 192.168.1.1.

2. The highest IP address in the range is the broadcast address minus 1. To calculate the broadcast address:
    - Invert the subnet mask: 255.255.255.0 becomes 0.0.0.255
    - Add the inverted subnet mask to the network address: 192.168.1.0 + 0.0.0.255 = 192.168.1.255 (broadcast address)
    - Subtract 1 from the broadcast address to get the highest valid IP: 192.168.1.255 - 1 = 192.168.1.254

Therefore, the range of valid IP addresses for the subnet 192.168.1.0/255.255.255.0 is 192.168.1.1 - 192.168.1.254.

To submit

Fill in the answers for Tasks 1 and 2 in a text file and submit it.