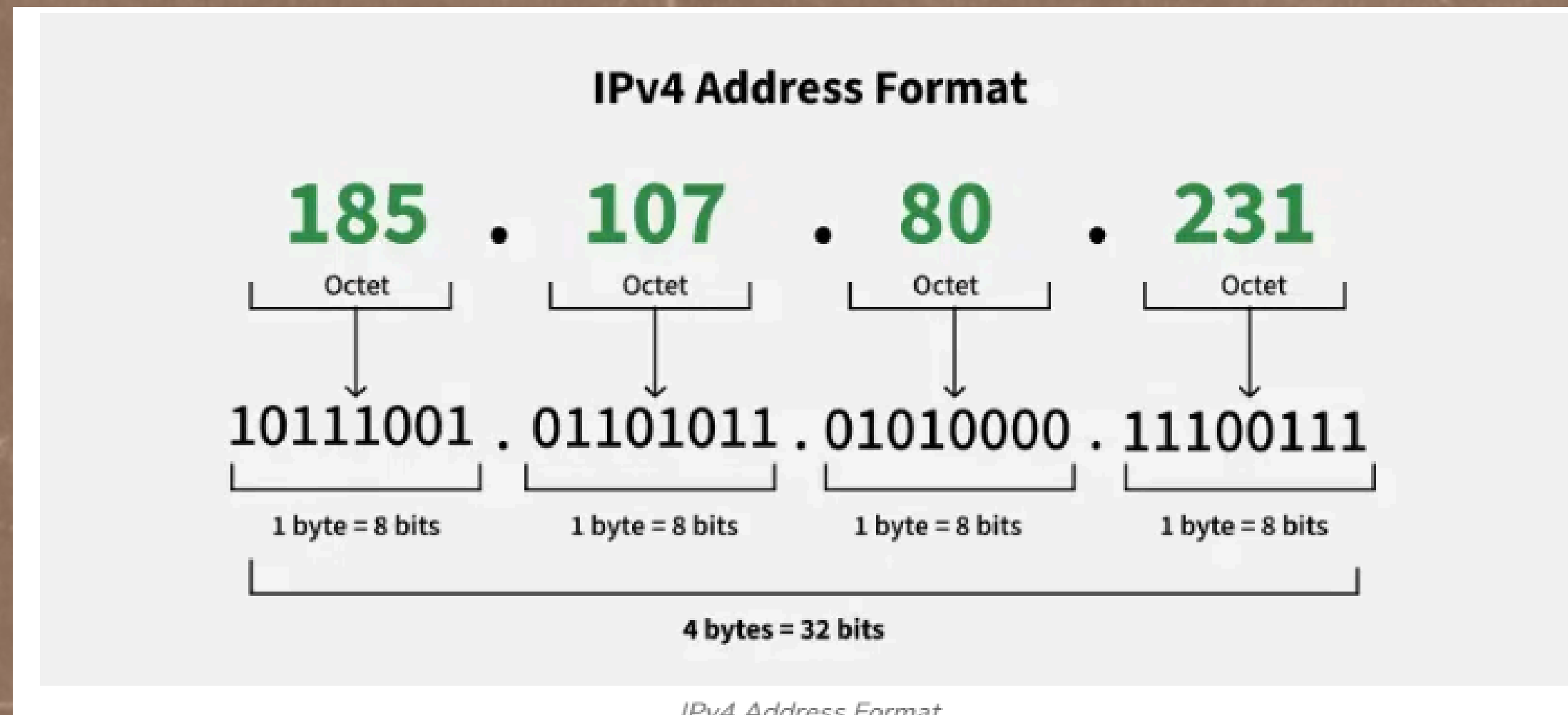# IP Address

Imagine every device on the internet as a house. For you to send a letter to a friend living in one of these houses, you need their home address. In the digital world, this home address is what we call an IP (Internet Protocol) Address. It's a unique string of numbers separated by periods (IPv4) or colons (IPv6) that identifies each device connected to the internet or a local network.

IPv4 Address Format

185 . **107** . **80** . **231**

Octet — Octet — Octet — Octet

10111001 . 01101011 . 01010000 . 11100111

1 byte = 8 bits — 1 byte = 8 bits — 1 byte = 8 bits — 1 byte = 8 bits

4 bytes = 32 bits

IPv4 Address Format

IPv6 Address

IPv6 addresses were created to deal with the shortage of IPv4 addresses. They use 128 bits instead of 32, offering a vastly greater number of possible addresses. These addresses are expressed as eight groups of four hexadecimal digits, each group representing 16 bits. The groups are separated by colons. Example of IPv6 Address: 2001:0db8:85a3:0000:0000:8a2e:0370:7334 Each group (like 2001, 0db8, 85a3, etc.) represents a 16-bit block of the address.