Question 4

You are given three IP addresses: 192.168.10.5, 172.20.15.1, and 8.8.8.8.

Identify the class of each IP address.

Determine if it is private or public.

Explain how NAT would handle a private IP when accessing the internet.

Approach

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| --- | --- | --- |
| IP Address | Class | Default Subnet Mask |
| 192.168.10.5 | Class C | 255.255.255.0 (/24) |
| 172.20.15.1 | Class B | 255.255.0.0 (/16) |
| 8.8.8.8 | Class A | 255.0.0.0 (/8) |

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| --- | --- | --- |
| IP Address | Private/Public | Reason |
| 192.168.10.5 | Private | Falls in 192.168.x.x range |
| 172.20.15.1 | Private | Falls in 172.16.x.x – 172.31.x.x range |
| 8.8.8.8 | Public | Does not belong to any private range (Google DNS) |

Network Address Translation (NAT) allows devices with private IPs to access the internet by replacing their private IP address with a public IP address.

* PC with Private IP (e.g., 192.168.10.5) sends a request to the internet.
* Router with NAT translates the private IP to a public IP (assigned by ISP).
* The request reaches the web server (e.g., google.com).
* Response is sent back to the router’s public IP.
* NAT translates it back to the private IP and forwards it to the correct device.

Types of NAT:

* Static NAT - One-to-one mapping of private IP to public IP.
* Dynamic NAT - Uses a pool of public IPs for translation.
* PAT (Port Address Translation) - Multiple private IPs share a single public IP (most common).