**ASSIGNMENT 03:**

**Question 3:**

* **IP Address:** It’s a label assigned to each device participating in a network.
* **IPv4 Address**: A unique 32-bit address that identifies the device on a local network.
* **IPv6 Address**: A longer 128-bit address to support a larger number of devices than IPv4.

**Routing:** IP addresses play a crucial role in routing data across the internet. Routers and other networking equipment use these addresses to determine the best path for data to travel from the source to the destination.

**IP Addressing Scheme**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Device** | **Interface** | **IP Address** | **Subnet Mask** | **Default Gateway** |
| **Router** | GigabitEthernet0/0 | 1.1.1.254 | 255.255.255.0 | - |
| **Router** | GigabitEthernet0/1 | 2.2.2.254 | 255.255.255.0 | - |
| **PC1** | - | 1.1.1.1 | 255.255.255.0 | 1.1.1.254 |
| **PC2** | - | 1.1.1.2 | 255.255.255.0 | 1.1.1.254 |

**Question 4:**

**Subnetting :** Subnetting is a technique used in IP networking to improve network efficiency, security, and organization. It involves dividing a larger IP network into smaller, more manageable segments, known as subnets, by allocating a portion of the original network's IP address space to each subnet.