Upon doing usual browsing, I noticed these five protocols, which were not discussed in class.

- 1. **MDNS**: multicast DNA, it resolves hostnames to IP addresses with small networks. It uses UDP packets. RFC 6763
- **2.** NTP: network time protocol, a networking protocol for clock synchronization of systems over packet-switched and variable latency data networks. RFC 5905
- 3. **OCSP**: online certificate status protocol, an internet protocol that is used for obtaining the revocation status of digital certificates. Firefox uses OCSP to validate HTTPS certificates. RFC 6960
- **4. QUIC:** a general protocol for transport layer network protocol. Used by more than half of all connections from Chrome to Google servers. It improves performance of connection-oriented web applications that are using TCP by establishing multiplexed connection between two endpoints using UDP. RFC 9000
- **5. ICMP**: Internet control message protocol, a supporting protocol in the suite of Internet protocols. It is used by network devices to send operational information indicating success or failure when communicating with other IP addresses. RFC 792

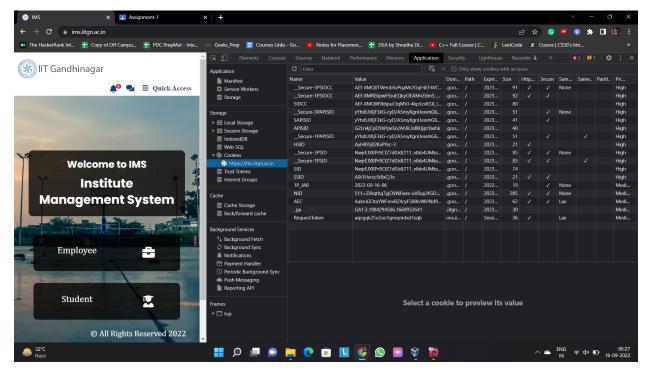
5b:

```
1096 62.888043915 172.217.160.174
                                                                                              10.7.63.11
                                                                                                                                                                  1399 Handshake, DCID=e39ca1, SCID=9a143ea19cb4b01c
      1097 62.888043979 172.217.160.174
1100 62.888044991 172.217.160.174
1101 62.888044138 172.217.160.174
                                                                                             10.7.63.11
10.7.63.11
10.7.63.11
10.7.63.11
                                                                                                                                                                  1399 Handshake, DCID=e39ca1, SCID=9a143ea19cb4b91c
1399 Handshake, DCID=e39ca1, SCID=9a143ea19cb4b91c
1399 Handshake, DCID=e39ca1, SCID=9a143ea19cb4b91c
                                                                                                                                              QUIC
                                                                                                                                                                    305 Protected Payload (KPO), DCID=e39ca1
      1102 62.888098903 172.217.160.174
                                                                                                                                             QUIC
      1106 62.891585891 10.7.63.11
1110 62.895813538 10.7.63.11
1111 62.895915381 10.7.63.11
                                                                                              172.217.160.174
172.217.160.174
172.217.160.174
                                                                                                                                                                     88 Handshake, DCID=9a143ea19cb4b01c, SCID=e39ca1
150 Protected Payload (KP0), DCID=9a143ea19cb4b01c
111 Protected Payload (KP0), DCID=9a143ea19cb4b01c
                                                                                                                                             QUIC
                                                                                                                                             QUIC
                                                                                                                                                                  154 Protected Payload (KPO), DCID=e39ca1
73 Protected Payload (KPO), DCID=9a143ea19cb4b01c
1399 Initial, DCID=fce3731ba9290e8e, SCID=613eaf, PKN: 2, PING, PADDING
     1113 62.999818595 172.217.160.174
1114 62.910222592 10.7.63.11
1115 62.916885807 10.7.63.11
                                                                                                                                             QUIC
                                                                                               10.7.63.11
                                                                                              142.251.42.97
                                                                                                                                             OUIC
Frame 112: 657 bytes on wire (5256 bits), 657 bytes captured (5256 bits) on interface wlp8s20f3, id 0 Ethernet II, Src: Cisco_6c:2d:7f (88:1d:fc:6c:2d:7f), Dst: IntelCor_53:4f:6c (50:e0:85:53:4f:6c) Internet Protocol Version 4, Src: 172.217.160.174, Dst: 10.7.63.11 User Datagram Protocol, Src Port: 443, Dst Port: 49236 QUIC IETF
```

The packet number 1115 in the above image, uses QUIC to transfer a packet of data and setup the connection. So RTT = (62.916885807 - 62.910222592)

5c:

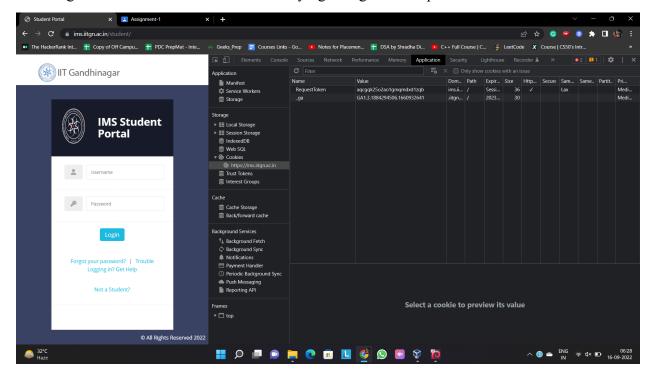
The image below shows the cookies structure, when visiting ims.iitgn.ac.in.



Some cookies observed are:

- 1. SSID: unique identifier for websites, used to track how a visitor uses a website and monitor performance of marketing campaigns.
- 2. SIDCC: identification of trusted web traffic.
- 3. NID: shows google ads in google services for signed-out users.
- 4. APISID: used by google to display personalized ads on google sites.

The image below shows the cookies when trying to login to ims portal.



Cookies observed are:

1. _ga: Google uses _ga cookie to recognise a unique combination of browser and device