COMSATS University Islamabad
Abbottabad Campus
Department of Computer Science

Assignment No. 1

Class: BSE-5A

Session: Fall 2023

Course: DCCN

Instructor: Dr. Sardar Khaliq uz Zaman

Submission Deadline

The deadline for the submission of assignment is, **Sunday night October 15th 2023, 23:59** on CU Online. Nobody is allowed to send assignment through emails. Late submission is extremely discouraged and won`t be marked.

Topic: *Layered Architectures and Working of Network Devices (**CLO-C1**)*

Q 1) UDP Pinger: In this programming assignment, you will write a client ping program in java. Your client will send a simple ping message to a server, receive a corresponding pong message back from the server, and determine the delay between when the client sent the ping message and received the pong message. This delay is called the Round-Trip Time (RTT). The functionality provided by the client and server is similar to the functionality provided by standard ping program available in modern operating systems. However, standard ping programs use the Internet Control Message Protocol (ICMP) (which we will study in Chapter 5). Here you will create a nonstandard (but simple!) UDP-based ping program. Your ping program is to send 10 ping messages to the target server over UDP. For each message, your client is to determine and print the RTT when the corresponding pong message is returned. Because UDP is an unreliable protocol, a packet sent by the client or server may be lost. For this reason, the client cannot wait indefinitely for a reply to a ping message. You should have the client wait up to one second for a reply from the server; if no reply is received, the client should assume that the packet was lost and print a message accordingly. In this assignment, you will write and run complete code for the client and server.

Q 2) Explain the architecture of Google`s Content Delivery Network across the globe.

Important Instruction:

- Title page should NOT be attached. You can write your names, reg no in headers/footers.
- Use Arial font with 10 size and 1.5 line spacing. The text should be justified by margins as well.
- The assignments will not include any Page borders. The page margins would be of standard A4.
- Maximum page count must not exceed 5 pages.
- References should be cited properly in text and at listed the end of document where required.