FIT1047

SUPPLEMENTARY WORKSHEET -02

WEEK 10

1. Which of the following is **not** part of the TCP protocol?
   a) The four-way handshake.
   b) The three-way handshake.
   c) Acknowledgement numbers.
   d) Sequence numbers.
   e) HTTP status codes.

2. A "client-server" architecture approach
   a) places all or almost all of the application logic on the client
   b) places all or almost all of the application logic on the server
   c) places all or almost all of the data storage logic on the client
   d) places all or almost all of the presentation logic on the server
   e) places all or almost all of the network logic on the client

3. Briefly explain how does a switch work.

   A switch connects devices in a local area network. It stores the MAC address of a device which is connected to a specific port in a forwarding table. When a device transmits a frame to the switch, it will look for the targeted MAC address in the forwarding table. The switch will then transmit the frame based on the looked up port address.

   If the forwarding table does not contain the targeted MAC address, the switch will simply work like a hub that broadcast to all devices. The device with that specific MAC address will then respond to the switch. Through this way, the switch can know the port of the MAC address and transmit them accordingly.

4. Briefly explain how does a router work.

   A router is a device that connects multiple local area networks together and route the packets from one network to another. The routing is done through a routing table that stores the next destination IP address to transmit in order to reach its final destination. When an incoming packet arrives, it will look for the destination IP address in the routing table. It then sends the packet directly or to another router (if the destination is afar).

   Routing tables are usually configured through static routing or dynamic routing. In static routing, the routing tables are fixed and manually set while in dynamic routing, the routing tables exchange information between routers themselves to form a routing table.

5. Briefly describe the two-tier email architecture (using a diagram).

   Two-tier email is a client-server approach of accessing emails. The client implements the application logic by using Simple Mail Transfer Protocol (SMTP) and Post Office Protocol (POP) or Internet Message Access Protocol (IMAP). The sender sends a mail through the SMTP to the mail server. The mail server will then forward the message to the recipient's mail server through SMTP. Finally, the recipient's mail server allow the recipient to access the mail by using POP or IMAP.

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6. Name two different methods for transmitting digital data through cables.

Unipolar and bipolar transmission. In unipolar transmission, only one polarity (either 0 to positive voltage or 0 to negative voltage) is allowed to be encoded while in bipolar transmission, both polarities (0 to positive and 0 to negative voltage) are allowed for data encoding. An example of bipolar would be Manchester encoding.

7. Explain the advantage of roaming in wireless networks.

Roaming allows users to stay connected to the same network without losing its connection to the network. This is done by allowing the users to roam between the Basic Service Set (BSS), extending the coverage of connection.

8. What is the difference between Static and Dynamic routing?

In static routing, the routing tables are manually set. This is commonly seen in small organisations that do not need to manage their networks often. On the other hand, in dynamic routing, the routing tables are automatically configured by routers themselves. The routers will exchange information via distance vector or link state to form a routing table. In distance vector routing protocol, transmission distance is exchanged through the shortest route while in link state routing, the information exchanged is not just the distance but also the quality of the links through the fastest route.

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