**Activity 2**

**Chapter 6**

**Q6-3.** A host communicates with another host using the TCP/IP protocol suite. What is the unit of data sent or received at each of the following layers?

1. application layer **b.** network layer **c.** data-link layer

Answer:

Application layer: Data

Network layer: Packet

Data-link layer: Data stream

**Q6-4.** Which of the following data units is encapsulated in a frame?

1. a user datagram **b.** a datagram **c.** a segment

Answer: B&C

A segment in TCP

A datagram in UDP

**Q6-5.** Which of the following data units is decapsulated from a user datagram?

**a.** a datagram **b.** a segment **c.** a message

Answer: B. A segment.

**Q6-6.** Which of the following data units has an application-layer message plus the header from layer 4?

**a.** a frame **b.** a user datagram **c.** a bit

**Q6-7.** What are the types of addresses (identifiers) used in each of the following layers?

**a.** application layer **b.** network layer **c.** data-link layer

**Answer:**

Application layer: application-layer addresses or application-specific identifiers

Network layer: IP address

Data-link layer: MAC address

**Chapter 8**

**P8-3.** Using the FindLargest algorithm, make a table to show the value of Largest after

each integer in the following list is processed:

18 12 8 20 10 32 5

Gợi ý:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Largest | Current | 18 | 12 | 8 | 20 | 10 | 32 | 5 |
| 18 | 18 | 18 | 12 | 8 | 20 | 10 | 32 | 5 |
| 18 | 12 | 18 | 12 | 8 | 20 | 10 | 32 | 5 |
| 18 | 8 | 18 | 12 | 8 | 20 | 10 | 32 | 5 |
| 20 | 20 | 18 | 12 | 8 | 20 | 10 | 32 | 5 |
| 20 | 10 | 18 | 12 | 8 | 20 | 10 | 32 | 5 |
| 32 | 32 | 18 | 12 | 8 | 20 | 10 | 32 | 5 |
| 32 | 5 | 18 | 12 | 8 | 20 | 10 | 32 | 5 |

**P8-5.** Using the selection sort algorithm, manually sort the following list and show your

work in each pass using a table:

14 7 23 31 40 56 78 9 2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| i | smallest | current | id |  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 0 | 14 | 14 | 0 |  | 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 0 | 7 | 7 | 1 |  | 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 0 | 7 | 23 | 1 |  | 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 0 | 7 | 31 | 1 |  | 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 0 | 7 | 40 | 1 |  | 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 0 | 7 | 56 | 1 |  | 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 0 | 7 | 78 | 1 |  | 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 0 | 7 | 9 | 1 |  | 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 0 | 2 | 2 | 8 |  | 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 0 | 2 | NULL | 8 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 1 | 7 | 7 | 1 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 1 | 7 | 23 | 1 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 1 | 7 | 31 | 1 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 1 | 7 | 40 | 1 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 1 | 7 | 56 | 1 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 1 | 7 | 78 | 1 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 1 | 7 | 9 | 1 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 1 | 7 | 14 | 1 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 1 | 7 | NULL | 1 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 2 | 23 | 23 | 2 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 2 | 23 | 31 | 2 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 2 | 23 | 40 | 2 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 2 | 23 | 56 | 2 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 2 | 23 | 78 | 2 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 2 | 9 | 9 | 7 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 2 | 9 | 14 | 7 |  | 2 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 14 |
| 2 | 9 | NULL | 7 |  | 2 | 7 | 9 | 31 | 40 | 56 | 78 | 23 | 14 |
| 3 | 31 | 31 | 3 |  | 2 | 7 | 9 | 31 | 40 | 56 | 78 | 23 | 14 |
| 3 | 31 | 40 | 3 |  | 2 | 7 | 9 | 31 | 40 | 56 | 78 | 23 | 14 |
| 3 | 31 | 56 | 3 |  | 2 | 7 | 9 | 31 | 40 | 56 | 78 | 23 | 14 |
| 3 | 31 | 78 | 3 |  | 2 | 7 | 9 | 31 | 40 | 56 | 78 | 23 | 14 |
| 3 | 23 | 23 | 7 |  | 2 | 7 | 9 | 31 | 40 | 56 | 78 | 23 | 14 |
| 3 | 14 | 14 | 8 |  | 2 | 7 | 9 | 31 | 40 | 56 | 78 | 23 | 14 |
| 3 | 14 | NULL | 8 |  | 2 | 7 | 9 | 14 | 40 | 56 | 78 | 23 | 31 |
| 4 | 40 | 40 | 4 |  | 2 | 7 | 9 | 14 | 40 | 56 | 78 | 23 | 31 |
| 4 | 40 | 56 | 4 |  | 2 | 7 | 9 | 14 | 40 | 56 | 78 | 23 | 31 |
| 4 | 40 | 78 | 4 |  | 2 | 7 | 9 | 14 | 40 | 56 | 78 | 23 | 31 |
| 4 | 23 | 23 | 7 |  | 2 | 7 | 9 | 14 | 40 | 56 | 78 | 23 | 31 |
| 4 | 23 | 31 | 7 |  | 2 | 7 | 9 | 14 | 40 | 56 | 78 | 23 | 31 |
| 4 | 23 | NULL | 7 |  | 2 | 7 | 9 | 14 | 23 | 56 | 78 | 40 | 31 |
| 5 | 56 | 56 | 5 |  | 2 | 7 | 9 | 14 | 23 | 56 | 78 | 40 | 31 |
| 5 | 56 | 78 | 5 |  | 2 | 7 | 9 | 14 | 23 | 56 | 78 | 40 | 31 |
| 5 | 40 | 40 | 7 |  | 2 | 7 | 9 | 14 | 23 | 56 | 78 | 40 | 31 |
| 5 | 31 | 31 | 8 |  | 2 | 7 | 9 | 14 | 23 | 56 | 78 | 40 | 31 |
| 5 | 31 | NULL | 8 |  | 2 | 7 | 9 | 14 | 23 | 40 | 78 | 56 | 31 |
| 6 | 78 | 78 | 6 |  | 2 | 7 | 9 | 14 | 23 | 40 | 78 | 56 | 31 |
| 6 | 56 | 56 | 7 |  | 2 | 7 | 9 | 14 | 23 | 40 | 78 | 56 | 31 |
| 6 | 31 | 31 | 8 |  | 2 | 7 | 9 | 14 | 23 | 40 | 78 | 56 | 31 |
| 6 | 31 | NULL | 8 |  | 2 | 7 | 9 | 14 | 23 | 40 | 31 | 56 | 78 |
| 7 | 56 | 56 | 7 |  | 2 | 7 | 9 | 14 | 23 | 40 | 31 | 56 | 78 |
| 7 | 56 | 78 | 7 |  | 2 | 7 | 9 | 14 | 23 | 40 | 31 | 56 | 78 |
| 7 | 56 | NULL | 7 |  | 2 | 7 | 9 | 14 | 23 | 40 | 31 | 56 | 78 |

**P8-6.** Using the bubble sort algorithm, manually sort the following list and show your

work in each pass using a table:

14 7 23 31 40 56 78 9 2

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 7 | 14 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 7 | 14 | 23 | 31 | 40 | 56 | 9 | 78 | 2 |
| 7 | 14 | 23 | 31 | 40 | 9 | 56 | 78 | 2 |
| 7 | 14 | 23 | 31 | 9 | 40 | 56 | 78 | 2 |
| 7 | 14 | 23 | 9 | 31 | 40 | 56 | 78 | 2 |
| 7 | 14 | 9 | 23 | 31 | 40 | 56 | 78 | 2 |
| 7 | 9 | 14 | 23 | 31 | 40 | 56 | 78 | 2 |
| 7 | 9 | 14 | 23 | 31 | 40 | 56 | 2 | 78 |
| 7 | 9 | 14 | 23 | 31 | 40 | 2 | 56 | 78 |
| 7 | 9 | 14 | 23 | 31 | 2 | 40 | 56 | 78 |
| 7 | 9 | 14 | 23 | 2 | 31 | 40 | 56 | 78 |
| 7 | 9 | 14 | 2 | 23 | 31 | 40 | 56 | 78 |
| 7 | 9 | 2 | 14 | 23 | 31 | 40 | 56 | 78 |
| 7 | 2 | 9 | 14 | 23 | 31 | 40 | 56 | 78 |
| 2 | 7 | 9 | 14 | 23 | 31 | 40 | 56 | 78 |

**P8-7.** Using the insertion sort algorithm, manually sort the following list and show your

work in each pass:

7 23 31 40 56 78 9 2

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| current | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| NULL | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 7 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 23 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 31 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 40 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 56 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 78 | 7 | 23 | 31 | 40 | 56 | 78 | 9 | 2 |
| 9 | 7 | 9 | 23 | 31 | 40 | 56 | 78 | 2 |
| 2 | 2 | 7 | 9 | 23 | 31 | 40 | 56 | 78 |

**P8-26.** Draw a UML diagram for the bubble sort algorithm that uses a subalgorithm.

The subalgorithm bubbles the unsorted sublist.

