HW2 - OSI Model

What is encoded, and what is the purpose of bytes 0-5 and 6-11?
Bytes 0-5: Represent the Destination Hardware Address (eth.addr). They specify which device should receive the packet, ensuring it reaches the right place.
Bytes 6-11: Represent the Source Hardware Address (eth.addr). They identify the device that sent the packet, much like an address on a letter.

What is encoded, and what is the relation-ship between, byte 14 and the two bytes 16,17?
Byte 14: Represent the IP Version (first 4 bits) and Header Length(last 4 bits) (ip.hdr_len). It serves as an indicator of the header's size, which is crucial for separating the header from the packet's actual data.
Bytes 16,17: Represent the Total Length(ip.len), the entire size of the packet, both its header and data. It's essential for understanding the entire packet's size.
Relationship between Byte 14 and Bytes 16,17: To find out the size of the actual message or content, you'd subtract the header size (byte 14) from the total size (bytes 16,17).

What is encoded, and what is the purpose of bytes 18-19?
Bytes 18-19: These are the Identification bytes (ip.id). They serve to uniquely identify a group of fragments of a single IP datagram. It's significant for reassembling fragmented packets.

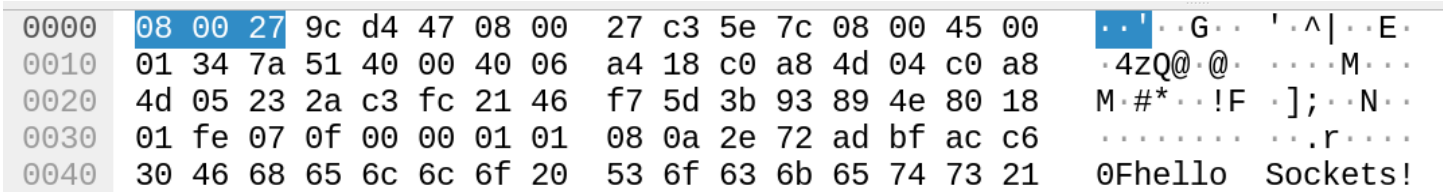
What is encoded, and what is the purpose of bytes 20-21?
Bytes 20-21: This represents the Flag and Fragment Offset (ip.frag_offset), significant for reassembling the packet in the correct order if it gets fragmented during transmission.

What is encoded, and what is the purpose of byte 23?
Byte 23: This byte denotes the Protocol (ip.proto). Its purpose is to specify the protocol being used (like TCP, UDP) by guiding how the packet should be processed.

What is encoded, and what is the purpose of bytes 26-29 and 30-33?
Bytes 26-29: These bytes denote the Source IP address (ip.src), essentially showing where the packet is coming from. It's like the "from" address on a letter.
Bytes 30-33: This range is for the Destination IP address (ip.dst). It's the "to" address, indicating where the packet should be delivered.

What is encoded, and what is the purpose of bytes 34-35 and 36-37?
Bytes 34-35: These are for the Source Port (tcp.srcport), determining which application on the sending device is responsible for the packet.
Bytes 36-37: This range specifies the Destination Port (tcp.dstport). It shows which application on the receiving device should handle the packet.

What is encoded after byte 65?
After Byte 65: This segment contains the actual data being sent. In our context, it's the message: "hello Sockets!". Just like the main content of a letter we would send in the mail.



Layer 2 (Link)
Range: Bytes 0-13
Bytes: 08 00 27 9c d4 47 08 00 27 c3 5e 7c 08 00
Purpose: This layer is responsible for the physical transmission of data across network connections. It includes details like MAC addresses.

Layer 3 (Network)
Range: Bytes 14-33
Bytes: 45 00 01 34 7a 51 40 00 40 06 a4 18 c0 a8 4d 04 c0 a8 4d 05
Purpose: Manages the delivery of packets across networks. Contains information like IP addresses and routing.

Layer 4 (Transport)
Range: Bytes 34-65
Bytes: 23 2a c3 fc 21 46 f7 5d 3b 93 89 4e 80 18 01 fe 07 0f 00 00 01 01 08 0a 2e 72 ad bf ac c6 30 46
Purpose: Ensures reliable data transfer between two systems. Manages things like port numbers and flow control.

Layer 7 (Application)
Range: Bytes 66 onwards
Bytes: 68 65 6c 6c 6f 20 53 6f 63 6b 65 74 73 21
Purpose: Represents the data being sent or received. In this case, it's our message: "Hello Sockets!"