

# FIT9137 Applied Week 8

## Topics

- Network Layer: Addressing
  - Subnets
  - Address Resolution
  - Dynamic Addressing

## Covered Learning Outcomes:

- Analyse and formulate the functions and architectures of (wireless) local area networks, wide area networks and the Internet.
- Examine networks using the underlying fundamental theories, models and protocols for data transmission.

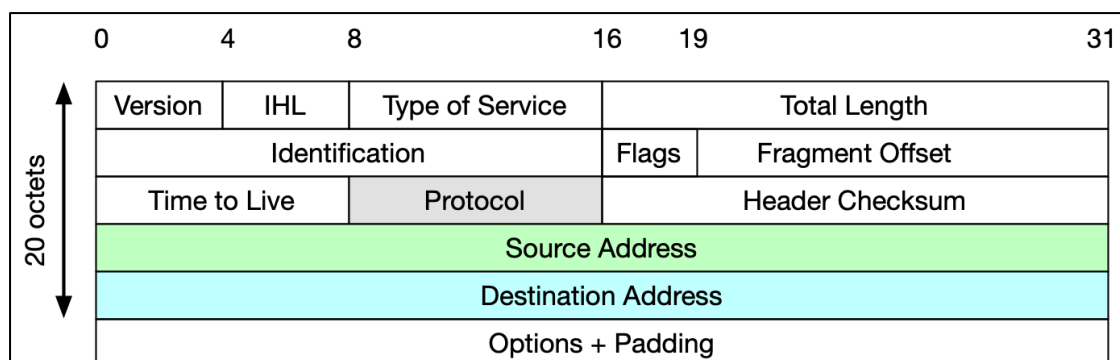
## Instructions

- One of the main purposes of an applied session is to build the learning community, create connections and include the learners. The other goal is to give and receive feedback from your peers and or your tutors.
- Form groups of 2 students (peers) to work through the exercises. If met with a problem, try to solve it by asking direct questions to your peer. If the issue was not solved within peers, ask your tutor. If did not get a chance to solve the problem during your applied session with your peer or tutor, jump into one of many consultation hours and ask any of the tutors to help you. Please visit the “Teaching Team and Unit Resources” tile in the FIT9137 Moodle site.

## Network Layer – Addressing

1. Inspect the Internet Protocol Version 4 Header shown in Figure- and answer the questions. You can find a description of each field at:

<https://tools.ietf.org/html/rfc791#page-10>



*Internet Protocol Version 4 Header*

- a) What is the purpose of an IP address?
- b) What is the size of Source and Destination Address fields?
- c) What is the total number of possible IPv4 Addresses?
- d) If the binary representation of an IP address is as follows what is the dotted decimal notation of the address?

**11001010000010010101111110111100**

- 2. Answer the following questions regarding IPv4 addresses.
  - a) Explain Classful addressing.
  - b) Explain Classless addressing.
  - c) Why Classless addressing is used instead of Classful addressing?
  - d) How is network and host part of an IP address identified in Classless addressing?
- 3. For each of the following Classless IPv4 addresses and their corresponding subnet masks, find out the network address, the subnet's broadcast address, and the number of usable addresses in that subnet.
  - a) IP address: 192.168.13.23, netmask: 255.255.0.0
  - b) IP address: 130.194.77.37 netmask: 0xfffffe00
  - c) IP address 130.194.66.77 netmask: /26