# CARLETON UNIVERSITY
## School of Computer Science

## COMP3203– Principles of Computer Networks
## Assignment 2

### Instructor: Prof. AbdelRahman Abdou

### Winter 2022

The assignment is **worth 3.64%** of the total course grade. It is graded out of 25, so your mark will be scaled accordingly.

You should submit a PDF document with your solutions in the respective assignment dropbox on cuLearn. For example, if you use MS Word, save it as PDF and upload. Name the PDF file as:

"A#_FirstName_LastName_StudentNumber.pdf"

So if John Smith, whose number is 123456789, is uploading the solution for Assignment 3, John should name the file "A3_John_Smith_123456789.pdf".

Make sure you upload your solution before the deadline, which is at **11:59pm EST on Feb 15th**. As usual, feel free to ask questions on our Brightspace forum.

### Distribution of Marks

| Question | Points | Score |
|:--------:|:------:|:-----:|
| 1 | 15 | |
| 2 | 10 | |
| Total: | 25 | |

1. Answer the following questions.

   (a) (4 points) How does SMTP mark the end of a message body?

   (b) (4 points) How about HTTP?

   (c) (7 points) Can HTTP use the same method as SMTP to mark the end of a message body? Explain.

2. In this problem, we use the useful `dig` tool available on UNIX and Linux hosts to explore the hierarchy of DNS servers. If you are using Windows, you must install `dig`.[1] In Fig.2.19 of the textbook, a DNS server in the DNS hierarchy delegates a DNS query to a DNS server lower in the hierarchy, by sending back to the DNS client the name of that lower-level DNS server. First, read the `man` page for `dig`, and then answer the following questions.

   (a) (5 points) Starting with a root DNS server (from one of the root servers *[a-m].root-servers.net*), initiate a sequence of queries (one for each DNS server in the hierarchy) for the IP address for `cisl.carleton.ca` by using `dig`. Write down the `dig` command you ran for each query, and the `AUTHORITY SECTION` in the response to each query.

   (b) (5 points) Repeat part (a) for `stem.open.ac.uk`

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[1]Search online on how to install `dig` for Windows. You can start here: `https://help.dyn.com/how-to-use-binds-dig-tool/`.