Assignment 5

- Please finish the lab according to this file
  - submit the **report** of lab 5 based on the lab report template.
  - submit your source code in zip file. (**5.3.zip**)
    - comments is MUST
    - DO NOT copy paste any existing source code of DNS resolver

Assignment 5.1

- make an DNS query which will invoke the EDNS0
  - Screenshot on this command and its output
- capture the packages using Wireshark
  - what is the content of this query message
    - Find the name, type and class of this query
    - How can you tell this DNS query is based on EDNS0
    - From this query massage , can it handle DNSSEC security RRs or not
  - what is the content of this response message
    - Is there any answers, what's the ttl of each answer
    - Is there any authority RRs, what's the type of each RR
    - Is there any special additional RRs with OPT type, what does its 'Do bit' say: Does it accept DNSSEC security RRs or not

Assignment 5.2

- Make the query by using query method of “dns resolver”(a python package)
  - To query the type A value of www.163.com based on TCP and UDP stream respectively
- capture the related TCP stream and UDP stream using Wireshark
  - Screenshot on this two commands .
    what’s the default transport lay protocol while invoke DNS query
  - Screenshot on the TCP stream of query by TCP.
    how many TCP packets are captured in this stream, Which port is used?
  - Screenshot on the UDP stream of query by UDP.
    how many UDP packets are captured in this stream, Which port is used?
  - Is there any difference on DNS query and response message while using TCP and UDP respectively

Assignment 5.3 (Class A Only) implement a local resolver

- Function:
  - Listen and accept DNS queries.
    - Support common query types:
      A, AAAA, CNAME, TXT, NS, MX
    - EDNS implementation is not required.
  - Forward query to a upstream DNS resolver (or a public DNS server).
  - Check out the response and send response to your clients.
  - Maintain a cache of DNS query-response of all results.
- Test method:
  - using dig sending query to your resolver
- *comments is MUST
- *DO NOT copy paste any existing source code of DNS resolver.