Assignment 5 :
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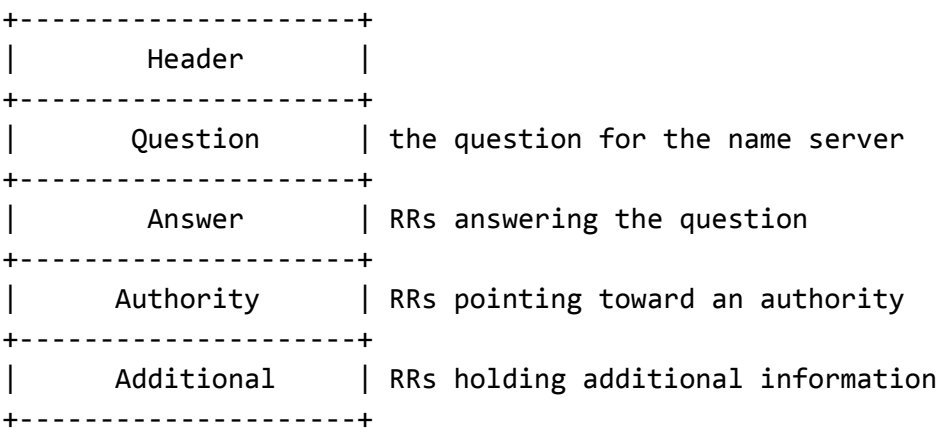
DNS Client and DNS Server

Basics- Each DNS request is same in form of request and response.

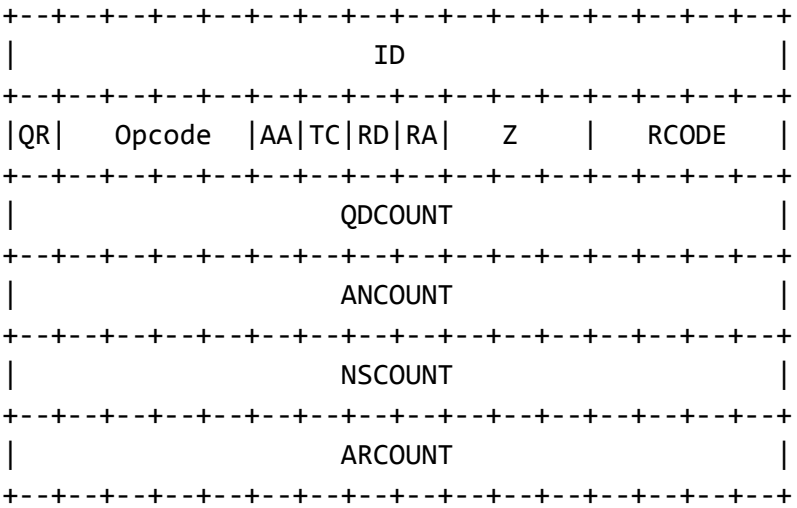
All communications inside of the domain protocol are carried in a single format called a message. The top level format of message is divided into 5 sections (some of which are empty in certain cases) shown below:



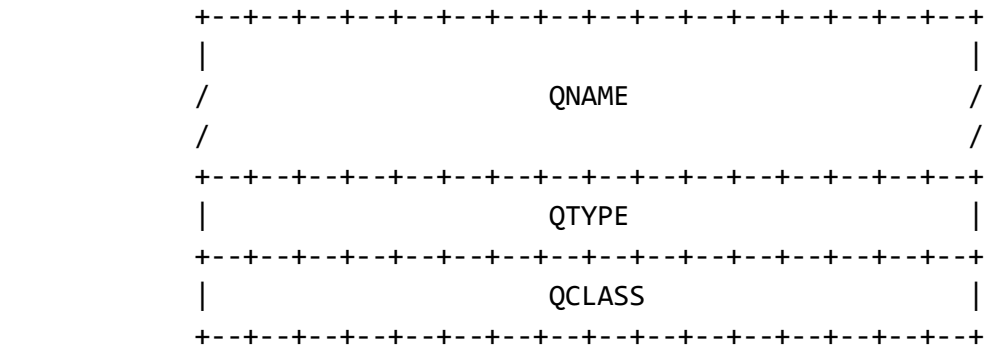
Header :

Header is a 12 byte data segment containing flags , number of questions, answers , name severs and number
of additional info answers.

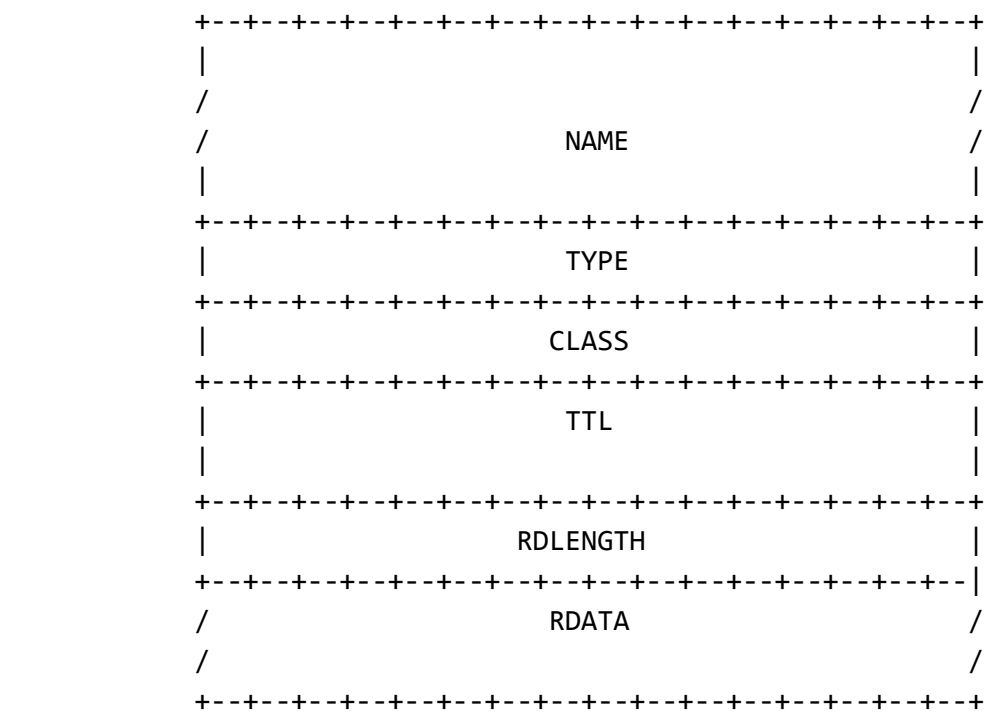
The header contains the following fields:



Questions :
Each question has a particular format.
The question section is used to carry the "question" in most queries, i.e., the parameters that define what is being asked. The section contains QDCOUNT (usually 1) entries, each of the following format:



Finally all answers are RR sharing the same format :
The answer, authority, and additional sections all share the same format: a variable number of resource records, where the number of records is specified in the corresponding count field in the header.
Each resource record has the following format:



Assignment :
Create your own header with all flags and 1 question , pack it using the python module struct and send it to local DNS server , where it goes to get resolved.

Now start taking out bytes based on the format given in the standard RFC1035 . Following that , make it look like nslookup out put .

Usage :
Python DNSC.py www.amazon.com 127.0.1.1 53 [query type]

Supported query types are 1,2,5,6,15

DNS Proxy server :
Implement a server that get and sends the dns packets to local dns server .
The server runs on 12001 port number .

Caching implemented using the dictionary.
More explanation in the comments of the file.