HW1 : DNS RESOLVER

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PART A:

This is a basic DNS resolver implemented in python using dnspython library. This internally uses the root servers mention in this url : https://www.iana.org/domains/root/server.it can support quires like NS,MX ,CNAME and A. The output is formatted and has sections as specified in requirement

EX:

```
python mydig www.cnn.com  CNAME
output
QUESTION SECTION:
www.cnn.com IN CNAME

ANSWER SECTION:
www.cnn.com 300 IN CNAME turner-tls.map.fastly.net.

Query time: 18.499994278 msec
WHEN: 02/18/18 14:10:33
MSG SIZE rcvd: 62
```

PART B:

We perform few more validations compared to previous section

Dependies : pycrypto

1)verify the rr records with rrsig records(query 1)

2)verify the key records(query 2)

3) verify the whole trust chain from the root server all along to the last server serving answer

4) for root verify the KSK and ZSK keys with the already downloaded values (trust anchor)

This program has been tested for all the three types of websites mentioned in assignment specification.

PART C:

This analysis is based on 3 resolvers local DNS resolver, my DNS resolver and google DNS resolver.

Top 25 websites in alexa.com were used for Calculation of the CDF. Time per website was calculated over average of 10 readings .Below is the detailed CDF graph it can be observed that google DNS and local DNS (130.245.255.4)resolvers perform better than mydns because of better caching mechanisms and better architecture used by these resolvers.