

# CSE 534 Assignment I: Implementation of DNS Resolver

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## Part A

A dig like DNS resolver is implemented in python using dnspython library support. The resolver supports querying of resource records such as A, NS and MX only. It is tested with top 25 websites from Alexa.com website. The current limitations of the resolver are: no caching, not as full fledged as Linux dig tool.

## Part B

The DNS resolver is extended with dnssec implementation using the library support from dnspython. The dnssec is a two step verification of name servers with resource records signature and checking the validity of keys. The dnssec enabled resolver is tested with websites such as verisign.com, paypal.com, verisigninc.com, iis.se, kirei.se etc which are dnssec supported. It is also tested with websites such as google.com, facebook.com, stonybrook.edu, yahoo.com, youtube.com etc which are dnssec not supported. It is also tested with dnssec-failed.org website which is failed to validate the keys.

## Part C

The naive DNS resolver implemented in Part A is tested with top 25 websites from alexa.com website each for 10 runs. The average resolution time over 10 runs is calculated for 3 types of resolvers: google public dns resolver, local dns resolver and my resolver. The results are plotted with CDF as shown in Fig. 1. The local dns resolver has the IP of 130.245.9.240. From the figure, it is observed that the resolution times of google dns resolver and local dns resolver are almost similar. However, my dns resolver is taking long due to lack of caching and several other optimizations.

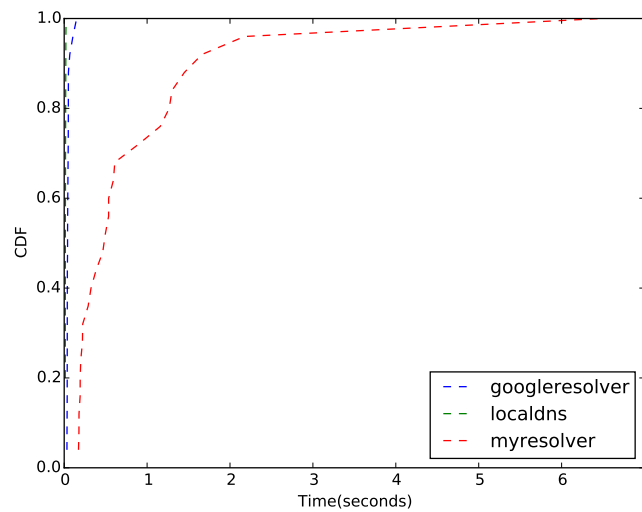


Figure 1: Cumulative Distribution of DNS Resolution time