

Language:	Python 3	
Basic Version		
Limitations/Issues	Possible Solutions	
Some of type A queries did not get the response from resolver.	1. can review the timeout settings by both client and server. If the timeout is too short some queries may not receive a response in time. 2. Retransmission mechanism: can implement a retransmission mechanism in the client to retry sending the query to the reoslver if there is no response is received in timeout periods.	

Enhancement 1:	Error Handling and timeout	
	Limitations/Issues	Possible Solutions
	The timeout parameter in 3.1.2 and 3.2 type argument has conflict.	This can be solved by editing the format of arguments, like -t 5 represents timeout, and -tp a represents type A query.

Enhancement 2:	Advanced Records and Reverse DNS	
Limitations/Issues	Possible Solutions	
Missing ptr records. Reverse dns lookup will not return expected results if the records are missing or contain incorrect information.	1. Check ptr record existence. Ensure each ip address has a corresponding ptr record taht can map to domain name correctly. 2. Automation and documentation: use automation tools and scripts to manage ptr records, which can ensure consistency and reduce risk of human error.	

Enhancement 3:	Performance Reporting	
Limitations/Issues		Possible Solutions
There is no record of which dns servers respond slowly.		1.dns query logging: enable dns query logging on dns resolver. This will record the timestamp and repsonse time for each DNS query. Analyzing the log data will help identify slow-responding dns servers. 2. Round trip time measurement: use RTT to assess the time taken for dns queries to reach dns servers and receive responses. This can help identify servers with higher response time.

COMP3331/9331 Computer Networks and Applications

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