FACULTY OF INFORMATION TECHNOLOGY
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Network Applications and Network Administration (ISA)

DNS resolver

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Contents

1 Introduction

The aim of this project was to create network aplication which is able to query DNS queries. Application should support domain resolve in Ip v4 and ip v6 and reverse queries. It should be able to handle A, AAAA and CNAME records. Queries are sent to server selected by user and server answers are then returned and formated to standart output. Client needs to support comunication over UDP.

2 Protocol description

DNS protocol as described in RFC1035 is aimed to provide a mechanism for naming services. For user DNS is a protocol which retrieves information associated with particular domain name from a database on a nameserver. Comunication between client and server goes on a port number 53. Messages can be sent to server using UDP or TCP datagrams. UDP datagrams are limited in size to 512 bytes if data is of a larger size, flag signalizing data truncation is set. UDP datagrams are the main form of comunication with nameserver, but since they can be lost during their route thus are unreliable, retransmission policy should be apppliad in case of no response. Comunication over TCP protocol although possible is not considered in this scenario.

2.1 Datagram description

Single datagram can be divided into several parts which can then be implemented into their separate modules. Parts include header, questions section, answers section, authorities section and additionals section. These parts are serialized in the same order as described. Different parts of datagram consist of other subparts which are questions for section questions and resource records for sections answers, authorities and additionals.

2.1.1 Header

Header section is

2.1.2 Question

2.1.3 Resource record

CNAME AAAA A

2.1.4 Name

3 Application architecture

4 Application usage

5 Comertialy available resolvers