LAB SESSION-8

COURSE:- Computer Networks Lab

Course Code:- BCSE308P

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➢ Implementing DNS using TCP socket programming

Code:

Client: -

```
import java.io.*;
import java.net.*;

public class DNSClient {
   public static void main(String[] args) throws IOException {
      Socket socket = new Socket("localhost", 5000);
      PrintWriter out = new PrintWriter(socket.getOutputStream(), true);
      out.println("google.com");
      BufferedReader in = new BufferedReader(new
InputStreamReader(socket.getInputStream()));
      String ipAddress = in.readLine();
      System.out.println("IP address: " + ipAddress);
      socket.close();
   }
}
```

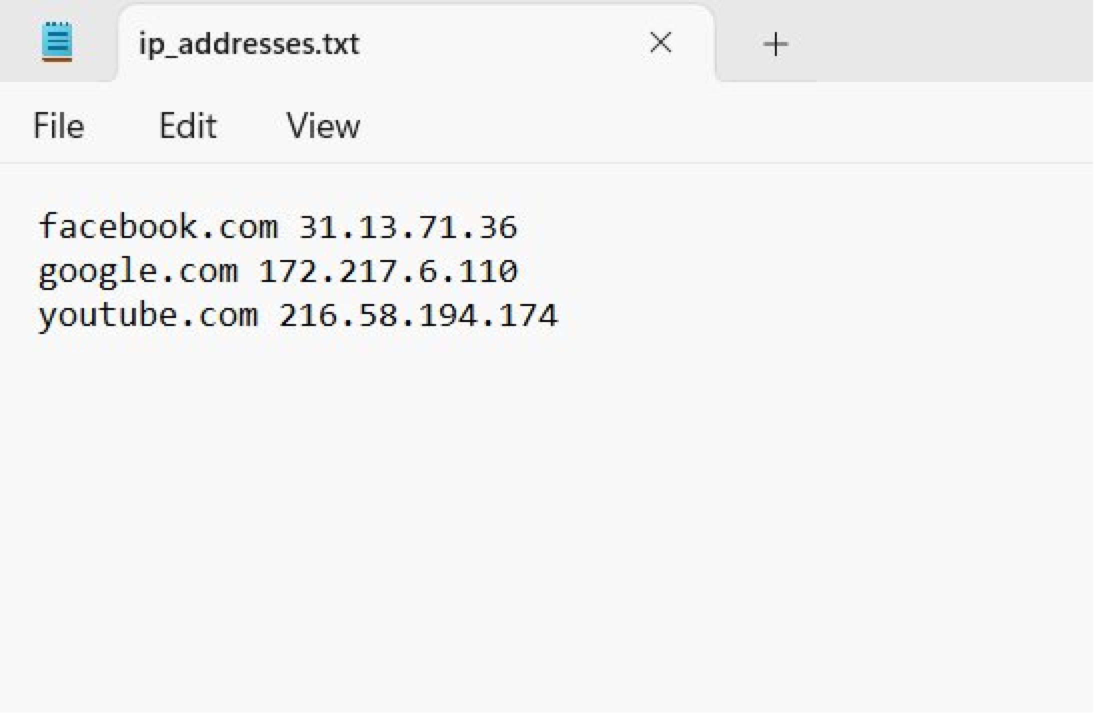
Server:-

```
import java.io.*;
import java.net.*;

public class DNSServer {
    public static void main(String[] args) throws IOException {
        File file = new File("ip_addresses.txt");
        BufferedReader br = new BufferedReader(new FileReader(file));
        ServerSocket serverSocket = new ServerSocket(5000);
        System.out.println("DNS server started. Listening on port 5000...");

        while (true) {
            Socket clientSocket = serverSocket.accept();
            System.out.println("Connection established with client " +
clientSocket.getInetAddress());
            BufferedReader in = new BufferedReader(new
InputStreamReader(clientSocket.getInputStream()));
            String domainName = in.readLine();
            System.out.println("Received request for domain: " + domainName);
            String ipAddress = "";
            String line;
            while ((line = br.readLine()) != null) {
                if (line.startsWith(domainName)) {
                    ipAddress = line.substring(domainName.length() + 1);
                    break;
                }
            }
            PrintWriter out = new PrintWriter(clientSocket.getOutputStream(),
true);
            out.println(ipAddress);
            clientSocket.close();
        }
    }
}
```

Contents of Ip_addresses.txt:-



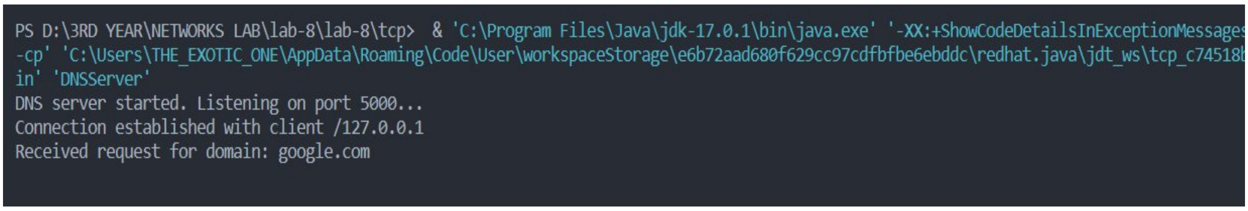
```
facebook.com 31.13.71.36
google.com 172.217.6.110
youtube.com 216.58.194.174
```

Input: -

Google.com

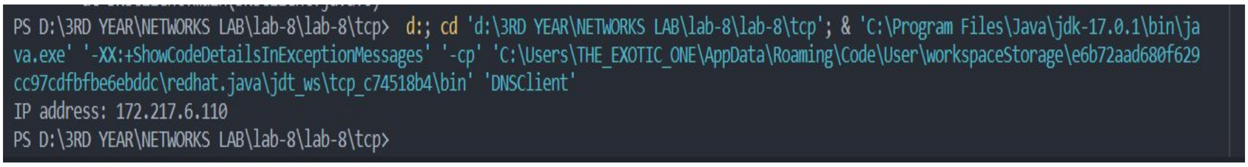
Output: -

Server:



```
PS D:\3RD YEAR\NETWORKS LAB\lab-8\lab-8\tcp>  & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages
-cp' 'C:\Users\THE_EXOTIC_ONE\AppData\Roaming\Code\User\workspaceStorage\e6b72aad680f629cc97cdfbfbe6ebddc\redhat.java\jdt_ws\tcp_c74518b
in' 'DNSServer'
DNS server started. Listening on port 5000...
Connection established with client /127.0.0.1
Received request for domain: google.com
```

Client:



```
PS D:\3RD YEAR\NETWORKS LAB\lab-8\lab-8\tcp>  d:; cd 'd:\3RD YEAR\NETWORKS LAB\lab-8\lab-8\tcp'; & 'C:\Program Files\Java\jdk-17.0.1\bin\ja
va.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\THE_EXOTIC_ONE\AppData\Roaming\Code\User\workspaceStorage\e6b72aad680f629
cc97cdfbfbe6ebddc\redhat.java\jdt_ws\tcp_c74518b4\bin' 'DNSClient'
IP address: 172.217.6.110
PS D:\3RD YEAR\NETWORKS LAB\lab-8\lab-8\tcp>
```

➢ Implementing DNS using UDP socket programming.

Code:-

Client:

```
import java.io.*;
import java.net.*;

public class DNSClient {
    public static void main(String[] args) throws IOException {
        DatagramSocket socket = new DatagramSocket();
        InetAddress serverAddress = InetAddress.getByName("localhost");
        String domainName = "google.com";
        byte[] buffer = domainName.getBytes();
        DatagramPacket requestPacket = new DatagramPacket(buffer, buffer.length,
serverAddress, 5000);
        socket.send(requestPacket);
        byte[] responseBuffer = new byte[1024];
        DatagramPacket responsePacket = new DatagramPacket(responseBuffer,
responseBuffer.length);
        socket.receive(responsePacket);
        String ipAddress = new String(responsePacket.getData(), 0,
responsePacket.getLength());
        System.out.println("IP address: " + ipAddress);
        socket.close();
    }
}
```

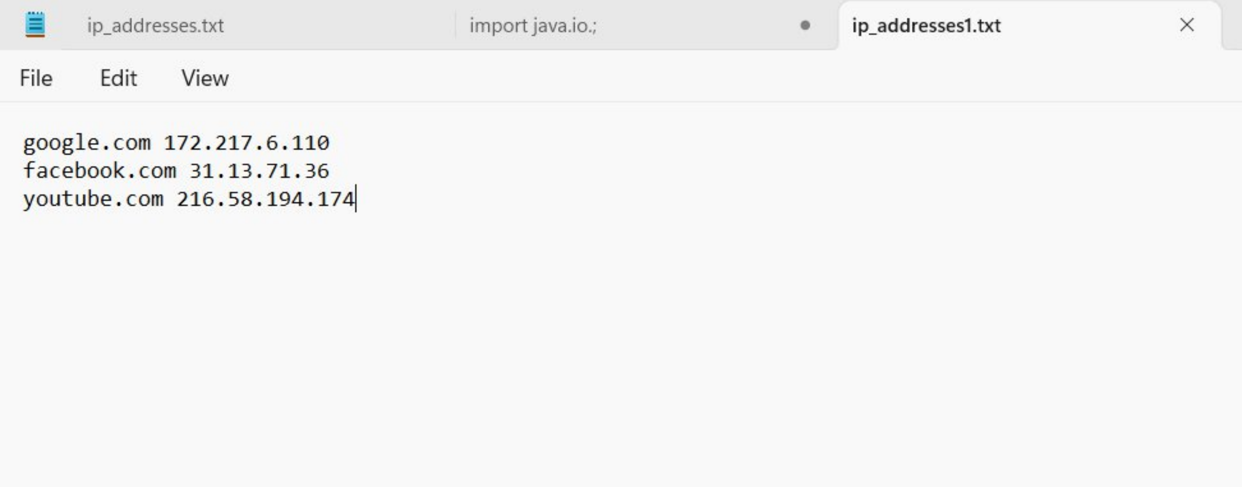
Server:

```
import java.io.*;
import java.net.*;

public class DNSServer {
    public static void main(String[] args) throws IOException {
        File file = new File("ip_addresses1.txt");
        BufferedReader br = new BufferedReader(new FileReader(file));
        DatagramSocket socket = new DatagramSocket(5000);
        System.out.println("DNS server started. Listening on port 5000...");

        while (true) {
            byte[] buffer = new byte[1024];
            DatagramPacket requestPacket = new DatagramPacket(buffer,
buffer.length);
            socket.receive(requestPacket);
            InetAddress clientAddress = requestPacket.getAddress();
            int clientPort = requestPacket.getPort();
            String domainName = new String(requestPacket.getData(), 0,
requestPacket.getLength());
            System.out.println("Received request for domain: " + domainName);
            String ipAddress = "";
            String line;
            while ((line = br.readLine()) != null) {
                if (line.startsWith(domainName)) {
                    ipAddress = line.substring(domainName.length() + 1);
                    break;
                }
            }
            byte[] responseBuffer = ipAddress.getBytes();
            DatagramPacket responsePacket = new DatagramPacket(responseBuffer,
responseBuffer.length, clientAddress, clientPort);
            socket.send(responsePacket);
        }
    }
}
```

Contents of io_addresses1.txt file



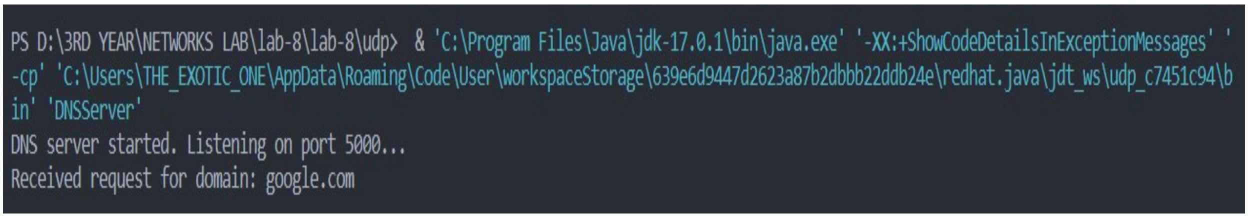
```
google.com 172.217.6.110
facebook.com 31.13.71.36
youtube.com 216.58.194.174
```

Input:

google.com

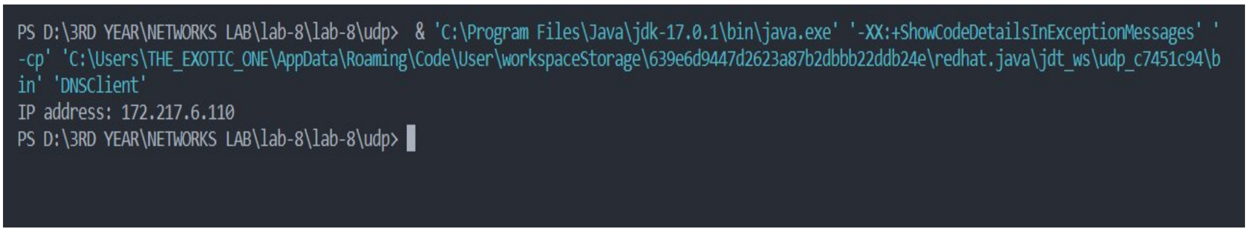
Output:

Server:



```
PS D:\3RD YEAR\NETWORKS LAB\lab-8\lab-8\udp>  & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '
-cp' 'C:\Users\THE_EXOTIC_ONE\AppData\Roaming\Code\User\workspaceStorage\639e6d9447d2623a87b2dbbb22ddb24e\redhat.java\jdt_ws\udp_c7451c94\b
in' 'DNSServer'
DNS server started. Listening on port 5000...
Received request for domain: google.com
```

Client:



```
PS D:\3RD YEAR\NETWORKS LAB\lab-8\lab-8\udp>  & 'C:\Program Files\Java\jdk-17.0.1\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '
-cp' 'C:\Users\THE_EXOTIC_ONE\AppData\Roaming\Code\User\workspaceStorage\639e6d9447d2623a87b2dbbb22ddb24e\redhat.java\jdt_ws\udp_c7451c94\b
in' 'DNSClient'
IP address: 172.217.6.110
PS D:\3RD YEAR\NETWORKS LAB\lab-8\lab-8\udp> 
```