Problem No: 10

Problem Name: Access the Site with Local DNS Server (csebatcheight1002.com)

Objective

To configure and access a custom domain (csebatcheight1002.com) using a locally implemented DNS server.

Theory

DNS (Domain Name System) translates domain names into IP addresses. In this experiment, a local DNS server is configured to resolve a custom domain name to a local IP address (127.0.0.1).

Workflow:

- Browser requests csebatcheight1002.com
- Local DNS server resolves it to 127.0.0.1
- HTTP server running on localhost serves the webpage

This simulates real-world domain resolution in a controlled local environment.

Application

Local DNS configuration is used in:

- Web development testing
- Internal network hosting
- Custom domain simulation
- Educational networking labs

Implementation

Step 1: Modify DNS Server (dns_server.py)

```
import socket

dns_records = {
    "csebatcheight1002.com": "127.0.0.1"
}

HOST = "127.0.0.1"
PORT = 5353

server = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
server.bind((HOST, PORT))

print("Local DNS Server Running...")

while True:
    data, addr = server.recvfrom(1024)
    domain = data.decode().strip()
    ip = dns_records.get(domain, "Domain not found")
    server.sendto(ip.encode(), addr)
```

Step 2: Run Local HTTP Server

Ensure HTTP server is running on 127.0.0.1 (Port 8080).

Step 3: Configure System DNS

Set system DNS to:

- DNS Address: 127.0.0.1

Execution Steps

1. Run DNS server.
2. Run HTTP server.
3. Configure system DNS to 127.0.0.1.
4. Open browser and enter: csebatcheight1002.com

Result

The browser successfully accessed the website using the custom domain name csebatcheight1002.com through the local DNS server.

Sample Output

DNS Server Console:

```
Local DNS Server Running...
Received: csebatcheight1002.com
Responded: 127.0.0.1
```

Browser:
Website loads successfully from local HTTP server using custom domain.

Discussion

This experiment demonstrates custom domain resolution using a local DNS server. It shows how domain names are mapped to IP addresses and how browsers rely on DNS for website access.

Conclusion

The custom domain csebatcheight1002.com was successfully resolved using a local DNS server and accessed through the local HTTP server. This experiment reinforces practical understanding of DNS resolution and client-server communication.