Experiment No. 4

Aim: Setting up Linux proxy server.

1. Update latest package list:

```
                                                          root@ubuntu: ~
manish28@ubuntu:~$ sudo -i
[sudo] password for manish28:
root@ubuntu:~# sudo apt-get update
Err:1 http://security.ubuntu.com/ubuntu focal-security InRelease
  Temporary failure resolving 'security.ubuntu.com'
Err:2 http://us.archive.ubuntu.com/ubuntu focal InRelease
  Temporary failure resolving 'us.archive.ubuntu.com'
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [807 kB]
Get:6 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2,469 kB]
Get:7 http://us.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [421 kB]
Get:8 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [274 kB]
Get:9 http://us.archive.ubuntu.com/ubuntu focal-updates/main DEP-11 48x48 Icons [60.8 kB]
Get:10 http://us.archive.ubuntu.com/ubuntu focal-updates/main DEP-11 64x64 Icons [98.3 kB]
Get:11 http://us.archive.ubuntu.com/ubuntu focal-updates/main DEP-11 64x64@2 Icons [29 B]
Get:12 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [16.4 kB]
Get:13 http://us.archive.ubuntu.com/ubuntu focal-updates/restricted i386 Packages [30.4 kB]
Get:14 http://us.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [1,717 kB]
Get:15 http://us.archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [242 kB]
```

```
Get:47 http://us.archive.ubuntu.com/ubuntu focal-backports/universe DEP-11 64x64 Icons [22.7 kB]
Get:48 http://us.archive.ubuntu.com/ubuntu focal-backports/universe DEP-11 64x64@2 Icons [29 B]
Get:49 http://us.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata [880 B]
Get:50 http://us.archive.ubuntu.com/ubuntu focal-backports/multiverse amd64 c-n-f Metadata [116 B]
Fetched 982 kB in 1min 7s (14.7 kB/s)
Reading package lists... Done
```

2. Install Squid proxy server:

```
                                                          manish28@ubuntu: ~
manish28@ubuntu:~$ sudo apt install squid
[sudo] password for manish28:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libdbi-perl libecap3 squid-common squid-langpack
Suggested packages:
  libclone-perl libmldbm-perl libnet-daemon-perl libsql-statement-perl
  squidclient squid-cgi squid-purge resolvconf smbclient winbind
The following NEW packages will be installed:
  libdbi-perl libecap3 squid squid-common squid-langpack
0 upgraded, 5 newly installed, 0 to remove and 259 not upgraded.
Need to get 3,670 kB of archives.
After this operation, 15.7 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libecap3 amd64 1.0.1-3.2ubuntu1 [17.4 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal/main amd64 squid-langpack all 20191103-1 [167 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 squid-common all 4.10-1ubuntu1.7 [194 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 libdbi-perl amd64 1.643-1ubuntu0.1 [730 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 squid amd64 4.10-1ubuntu1.7 [2,562 kB]

51% [5 squid 513 kB/2,562 kB 20%]
                  54% [5 squid 622 kB/2,562 kB 24%]
```

3. Start and enable proxy server:

```
                                                    root@ubuntu: ~
manish28@ubuntu:~$ sudo -i
[sudo] password for manish28:
root@ubuntu:~# sudo systemctl start squid
root@ubuntu:~# sudo systemctl enable squid
Synchronizing state of squid.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable squid
root@ubuntu:~#
```

4. To see the status:

```
                                                    root@ubuntu: ~
manish28@ubuntu:~$ sudo -i
[sudo] password for manish28:
root@ubuntu:~# sudo systemctl status squid
● squid.service - Squid Web Proxy Server
     Loaded: loaded (/lib/systemd/system/squid.service; enabled; vendor preset: enabled)
     Active: active (running) since Sun 2023-04-23 09:11:21 PDT; 8min ago
       Docs: man:squid(8)
   Main PID: 3483 (squid)
      Tasks: 4 (limit: 4921)
     Memory: 15.5M
     CGroup: /system.slice/squid.service
             ├─3483 /usr/sbin/squid -sYC
             ├─3485 (squid-1) --kid squid-1 -sYC
             ├─3488 (logfile-daemon) /var/log/squid/access.log
             └─3489 (pinger)

Apr 23 09:11:21 ubuntu squid[3485]: Max Swap size: 0 KB
Apr 23 09:11:21 ubuntu squid[3485]: Using Least Load store dir selection
Apr 23 09:11:21 ubuntu squid[3485]: Set Current Directory to /var/spool/squid
Apr 23 09:11:21 ubuntu squid[3485]: Finished loading MIME types and icons.
Apr 23 09:11:21 ubuntu squid[3485]: HTCP Disabled.
Apr 23 09:11:21 ubuntu squid[3485]: Pinger socket opened on FD 14
Apr 23 09:11:21 ubuntu squid[3485]: Squid plugin modules loaded: 0
Apr 23 09:11:21 ubuntu squid[3485]: Adaptation support is off.
Apr 23 09:11:21 ubuntu squid[3485]: Accepting HTTP Socket connections at local=[::]:3128 remote=[::] FD 12 flags=9
Apr 23 09:11:22 ubuntu squid[3485]: storeLateRelease: released 0 objects
root@ubuntu:~#
```

5. To see which proxy port is running:

```
                                                    root@ubuntu: ~
manish28@ubuntu:~$ sudo -i
[sudo] password for manish28:
root@ubuntu:~# netstat -tnlp
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN      692/systemd-resolve
tcp        0      0 127.0.0.1:631           0.0.0.0:*               LISTEN      852/cupsd
tcp6       0      0 ::1:631                 :::*                    LISTEN      852/cupsd
root@ubuntu:~#
```

6. To restart squid:

```
manish28@ubuntu:~$ sudo -i
[sudo] password for manish28:
root@ubuntu:~# sudo systemctl restart squid
root@ubuntu:~#
```

7. Configure Proxy Sources to Access Internet:

```
manish28@ubuntu:~$ sudo -i
[sudo] password for manish28:
root@ubuntu:~# sudo vi /etc/squid/squid.conf
```

```
#                                                              root@ubuntu:~
#       Examples:
#             acl macaddress arp 09:00:2b:23:45:67
#             acl myexample dst_as 1241
#             acl password proxy_auth REQUIRED
#             acl fileupload req_mime_type -i ^multipart/form-data$
#             acl javascript rep_mime_type -i ^application/x-javascript$
#
#Default:
# ACLs all, manager, localhost, and to_localhost are predefined.
#
#
# Recommended minimum configuration:
#

# Example rule allowing access from your local networks.
# Adapt to list your (internal) IP networks from where browsing
# should be allowed
acl localnet src 0.0.0.1-0.255.255.255  # RFC 1122 "this" network (LAN)
acl localnet src 10.0.0.0/8             # RFC 1918 local private network (LAN)
acl localnet src 100.64.0.0/10          # RFC 6598 shared address space (CGN)
acl localnet src 169.254.0.0/16         # RFC 3927 link-local (directly plugged) machines
acl localnet src 172.16.0.0/12          # RFC 1918 local private network (LAN)
acl localnet src 192.168.0.0/16         # RFC 1918 local private network (LAN)
acl localnet src fc00::/7               # RFC 4193 local private network range
acl localnet src fe80::/10              # RFC 4291 link-local (directly plugged) machines
acl localnet src 110.220.330.0/24
acl SSL_ports port 443
acl Safe_ports port 80          # http
acl Safe_ports port 21          # ftp
acl Safe_ports port 443         # https
acl Safe_ports port 70          # gopher
acl Safe_ports port 210         # wais
acl Safe_ports port 1025-65535  # unregistered ports
acl Safe_ports port 280         # http-mgmt
acl Safe_ports port 488         # gss-http
acl Safe_ports port 591         # filemaker
```

8. To block websites:

```
manish28@ubuntu:~$ sudo -i
root@ubuntu:~# sudo vi /etc/squid/blocked_sites
root@ubuntu:~#
```

```
facebook.com
twitter.com
instagram.com
~
~
~
~
```

```
manish28@ubuntu:~$ sudo -i
[sudo] password for manish28:
root@ubuntu:~# sudo vi /etc/squid/squid.conf
```

```
#
#Default:
# ACLs all, manager, localhost, and to_localhost are predefined.
#
#
# Recommended minimum configuration:
#

# Example rule allowing access from your local networks.
# Adapt to list your (internal) IP networks from where browsing
# should be allowed
acl localnet src 0.0.0.1-0.255.255.255  # RFC 1122 "this" network (LAN)
acl localnet src 10.0.0.0/8             # RFC 1918 local private network (LAN)
acl localnet src 100.64.0.0/10          # RFC 6598 shared address space (CGN)
acl localnet src 169.254.0.0/16         # RFC 3927 link-local (directly plugged) machines
acl localnet src 172.16.0.0/12          # RFC 1918 local private network (LAN)
acl localnet src 192.168.0.0/16         # RFC 1918 local private network (LAN)
acl localnet src fc00::/7               # RFC 4193 local private network range
acl localnet src fe80::/10              # RFC 4291 link-local (directly plugged) machines
acl localet src 49.205.220.161/32
acl SSL_ports port 443
acl Safe_ports port 80          # http
acl Safe_ports port 21          # ftp
acl Safe_ports port 443         # https
acl Safe_ports port 70          # gopher
acl Safe_ports port 210         # wais
acl Safe_ports port 1025-65535  # unregistered ports
acl Safe_ports port 280         # http-mgmt
acl Safe_ports port 488         # gss-http
acl Safe_ports port 591         # filemaker
acl Safe_ports port 777         # multiling http
acl CONNECT method CONNECT

acl blocked_sites dstdomain
"etc/squid/blocked_sites"
http_access deny blocked_sites
```

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)