Assessment -5

WEB SERVER

Trainee Name : Arun Parmar
Mentor Name : Ravi Kumar

1. What is the advantage of using a “reverse proxy server”?

A **reverse proxy server** is a type of **proxy server** that typically sits behind the firewall in a private network and directs client requests to the appropriate backend **server** it gives the following benefits.

- Load Balancing: A reverse proxy can provide a load balancing solution which will distribute the incoming traffic evenly among the different servers to prevent any single server from becoming overloaded. In the event that a server fails completely, other servers can step up to handle the traffic.
- Caching: A reverse proxy can also cache content, resulting in faster performance.
- SSL Encryption: Encrypting and decrypting SSL (or TLS) communications for each client can be computationally expensive for an origin server. A reverse proxy can be configured to decrypt all incoming requests and encrypt all outgoing responses, freeing up valuable resources on the origin server.
- Logging: Health of all the servers can be checked with the reverse proxy server.
- Canary Deployment: If we want to display different outputs for different requests without enabling the client to know which server is serving the request.

2. Why and where Nginx is a better choice than apache.

1) Fast Static Content Processing: Nginx can perform a much better job at handling the static files from a specific directory.Also, the upstream server processes don’t get blocked because of the heavy, multiple static content requests as Nginx can process them concurrently. This significantly improves the overall performance of backend servers.

2) Great for High Traffic Websites: If we talk about the speed and how many clients can be served on a high load, Nginx will always shine as a winner over Apache. This makes Nginx significantly lightweight and great for server resources. This is why most of the web developers prefer Nginx over Apache.

3) Backend: If your website is PHP dependent, Nginx is the far best way to host application.

3. What are worker nodes and worker connections? How to calculate the max server capacity using the above two?

1. **Worker Node/Server Node**: A server node is a virtual node which is created by nginx to serve user requests. The details of each worker node/server node is mentioned in the server context of the nginx.conf file.

2. Worker Connections : NGINX can run multiple worker processes, each capable of processing a large number of simultaneous connections. The maximum number of connections that each worker process can handle simultaneously. The default is 512, but most systems have enough resources to support a larger number. The appropriate setting depends on the size of the server and the nature of the traffic, and can be discovered through testing.

Max capacity (no of clients) = Product of total number of worker processes and number of worker connections in each process.

4. From what directory will NGINX automatically load server (virtual host) configurations when using the default /etc/nginx/nginx.conf configuration?

   /etc/nginx/conf.d directory

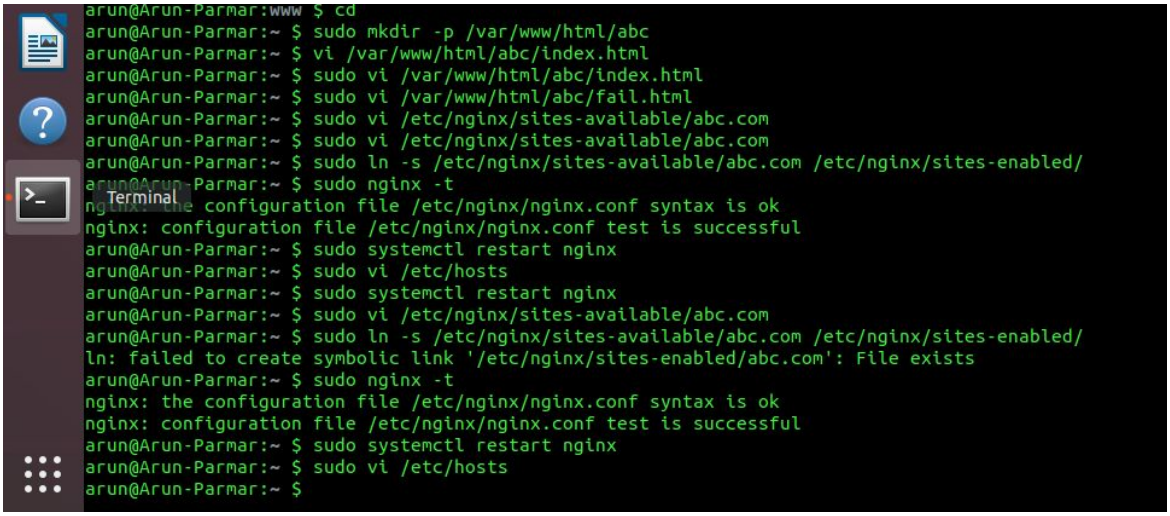
5. How to configure different log_format for different “location” block/directive?

   Mention different log_format directive along with the format in different location contexts respectively.

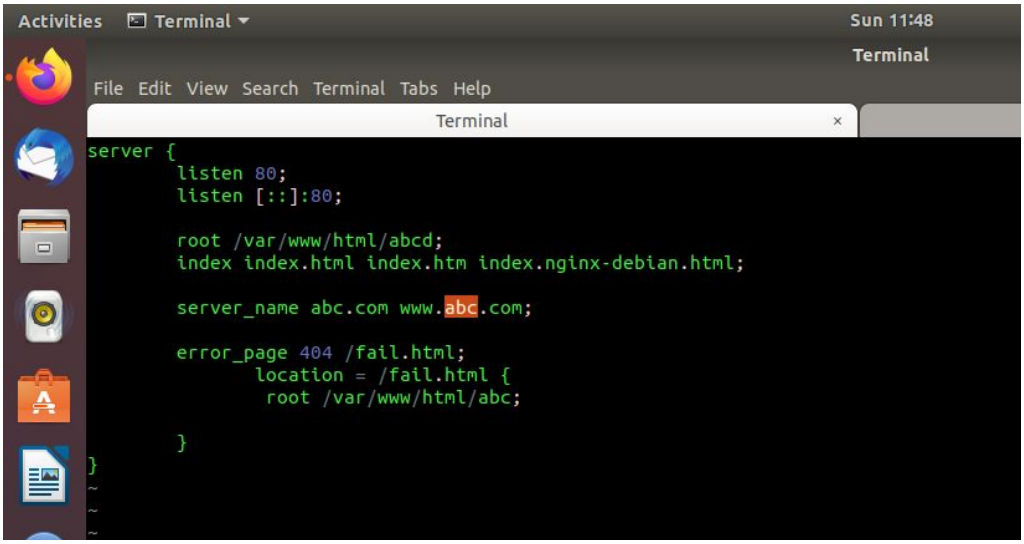
```
log_format locate

'$remote_addr - $remote_user [$time_local]'

'"$request" $status $body_bytes_sent '

'"$http_referer" "$http_user_agent"';
```

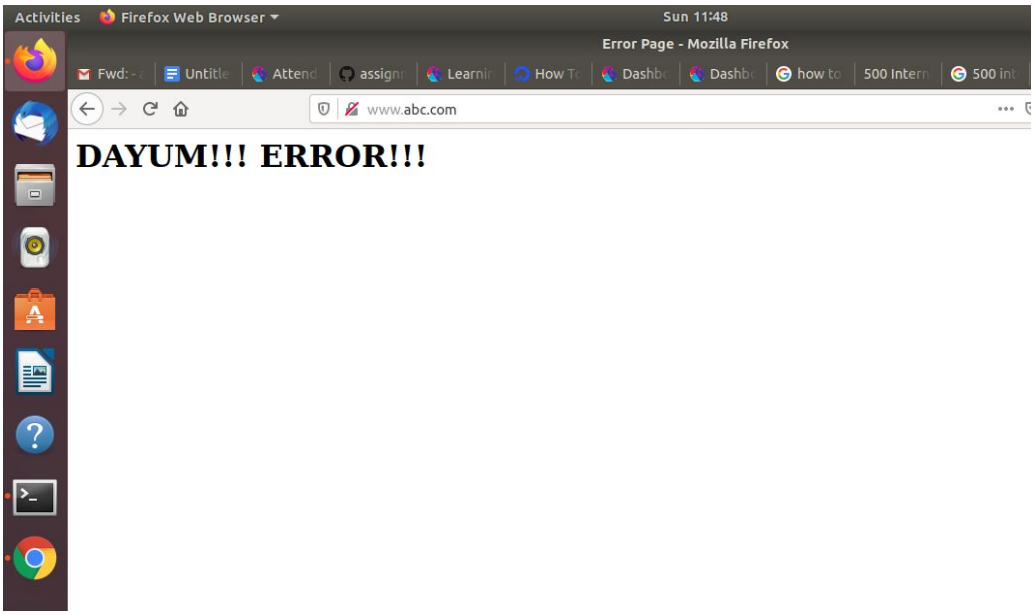
6. Host a site ABC.COM
    1. Create an index page and a fail-safe page. If a page for URI is not available, the fail-safe page is served.

       We will create a folder in var/www/html with name abc to keep all relevant files, afterwards we will create index page and fail safe page inside the same. Afterwards we will create a server block inside sites-available. Afterwards we will enable them by creating link in sites-enabled. Check for syntax error. Restart the server, edit the host file and your site is good to go.

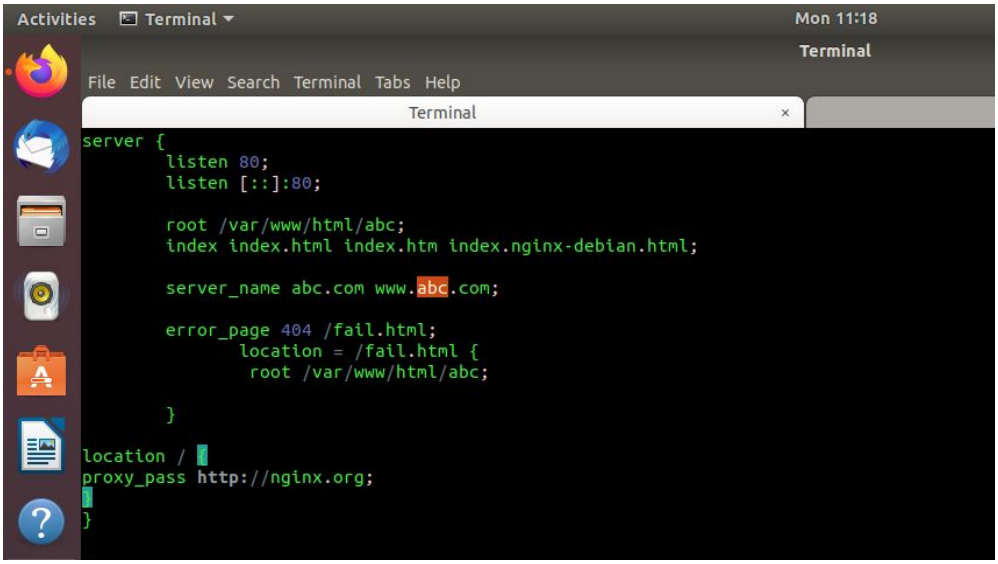


       Now we will change the name of folder we are using so that it produces a 404 error and will edit the error page.

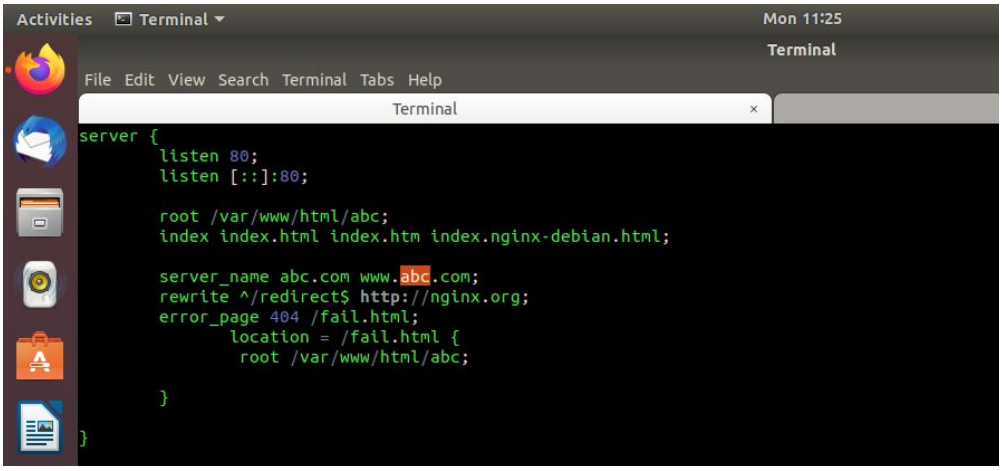




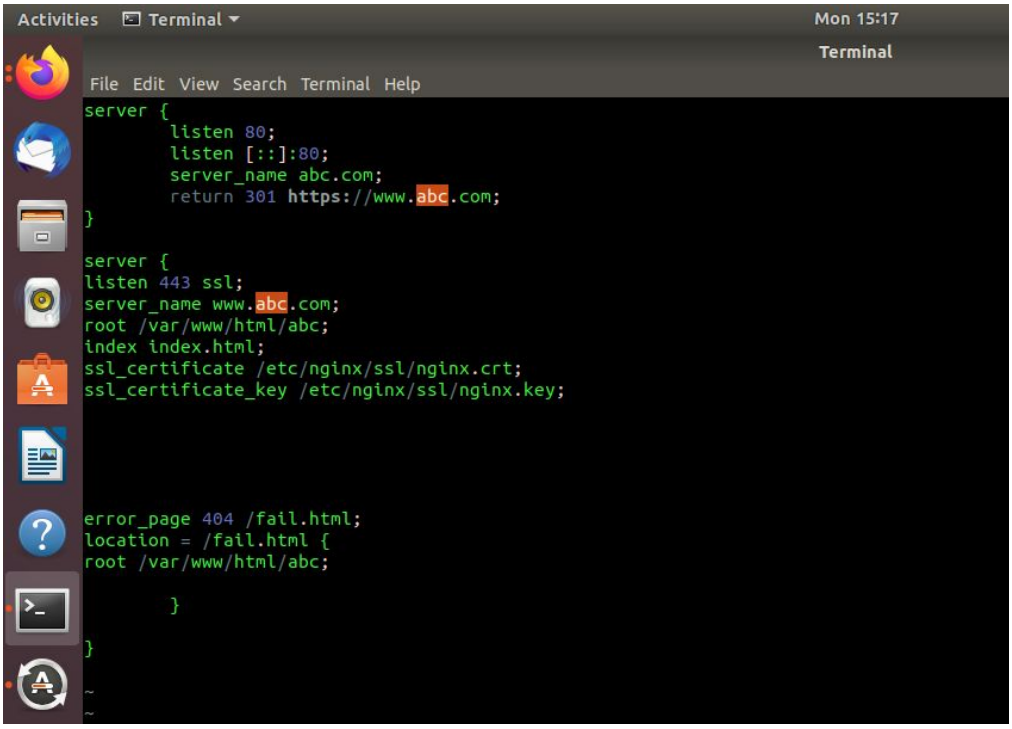
2. proxy pass to a website xyz.com on a particular URI.



3. redirect to above URI on /redirect/



4. perform an HTTP to HTTPS redirection including non-www to www redirection.

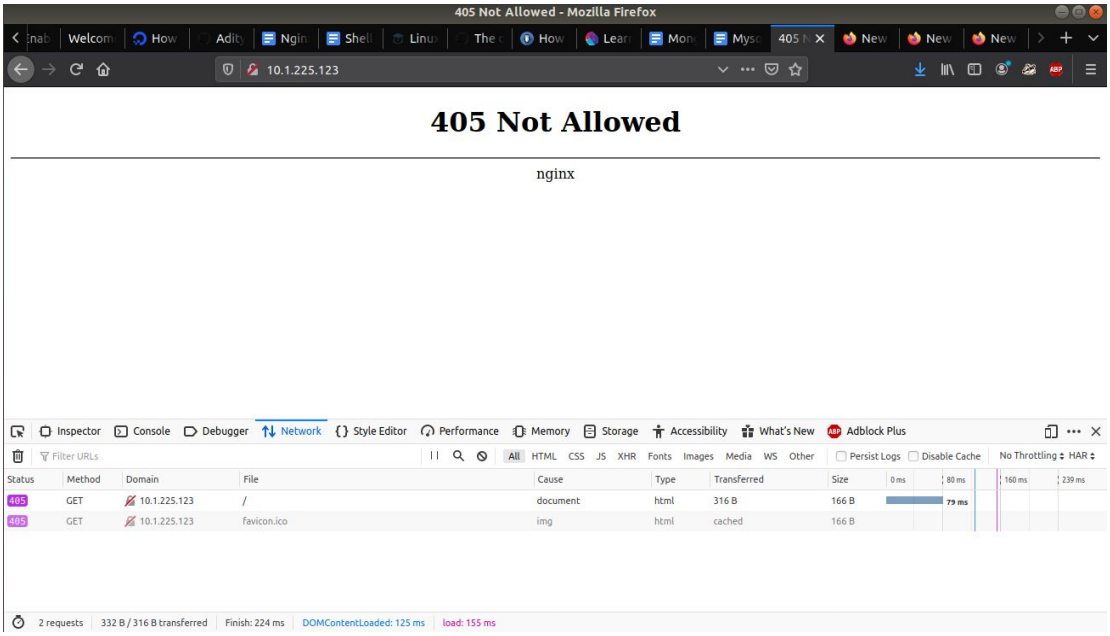


5. Allow access to a set of particular IPs on a location block and return 405 to other IPs no matter if the page in that location exists.

```
server {
        listen 80;
        listen [::]:80;
        server_name abc.com;
        allow 127.0.0.1;
        root /var/www/html/abc;
        deny all;
        error_page 404 403 =405 /error.html;
        location /error.html {
        return 405 ;
        }
}

server {
listen 443 ssl;
server_name www.abc.com;
root /var/www/html/abc;
index index.html;
ssl_certificate /etc/nginx/ssl/nginx.crt;
ssl_certificate_key /etc/nginx/ssl/nginx.key;

  location / {
   auth_basic "Restricted Content";
   auth_basic_user_file /etc/nginx/.htpasswd;
 }

#error_page 404 /fail.html;
#location = /fail.html {
#root /var/www/html/abc;

        }
```

Remote Machine:

```
aditya@aditya-130:$ ^C
aditya@aditya-130:$ curl http://10.1.225.123
<html>
<head><title>405 Not Allowed</title></head>
<body bgcolor="white">
<center><h1>405 Not Allowed</h1></center>
<hr><center>nginx</center>
</body>
</html>
aditya@aditya-0:$
```



7. Create a load balancer with 5 backends. Explain different types of load balancing methods.

   -Create 5 html files in /var/www/html

   -Go to sites available and create a load balancer file lb_bal

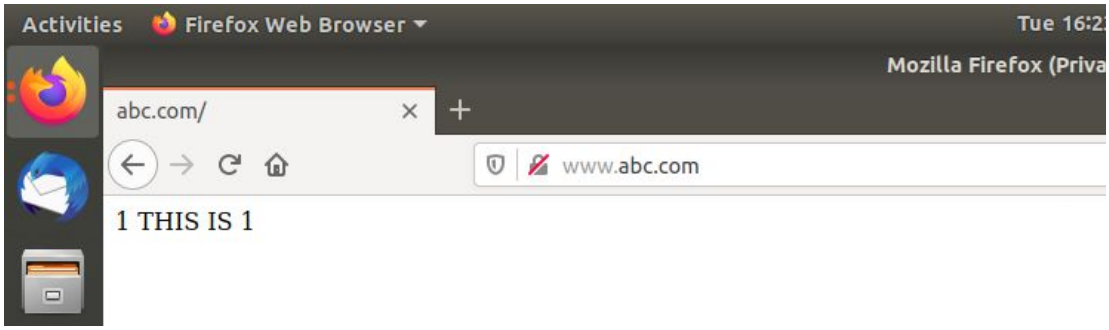
```
upstream backend{
server 127.0.0.1:81;
server 127.0.0.1:82;
server 127.0.0.1:83;
server 127.0.0.1:84;
server 127.0.0.1:85;

}

server{
listen 80;
server_name abc.com;
location /{
proxy_pass http://backend;
}
}
server{
listen 81;
server_name _;
root /var/www/html;
index 1.html;
}

server{
       listen 82;
       server_name _;
       root /var/www/html;
       index   2.html;
}
server{
       listen 83;
       server_name _;
       root /var/www/html;
       index   3.html;
}
server{
       listen 84;
"lb_bal" 49L, 683C
```

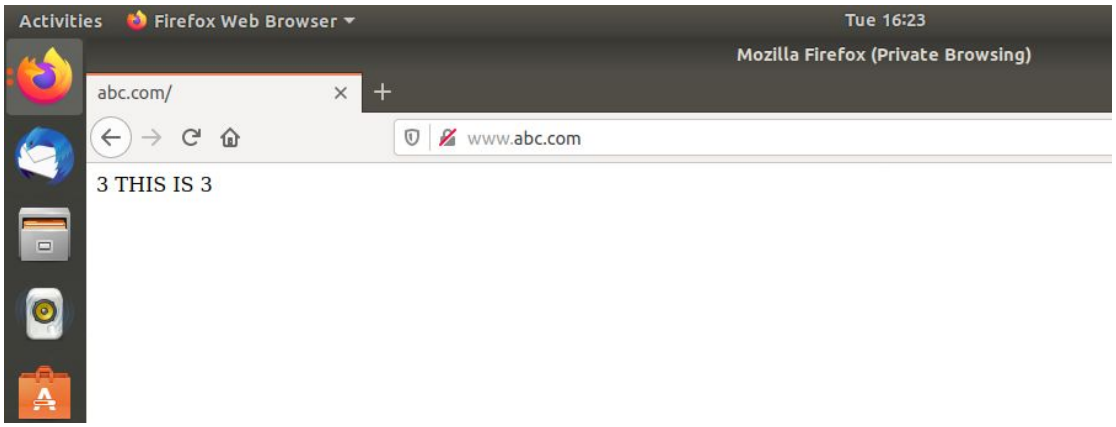
```
server{
       listen 84;
       server_name _;
       root /var/www/html;
       index   4.html;
}
server{
       listen 85;
       server_name _;
       root /var/www/html;
       index   5.html;
}
```

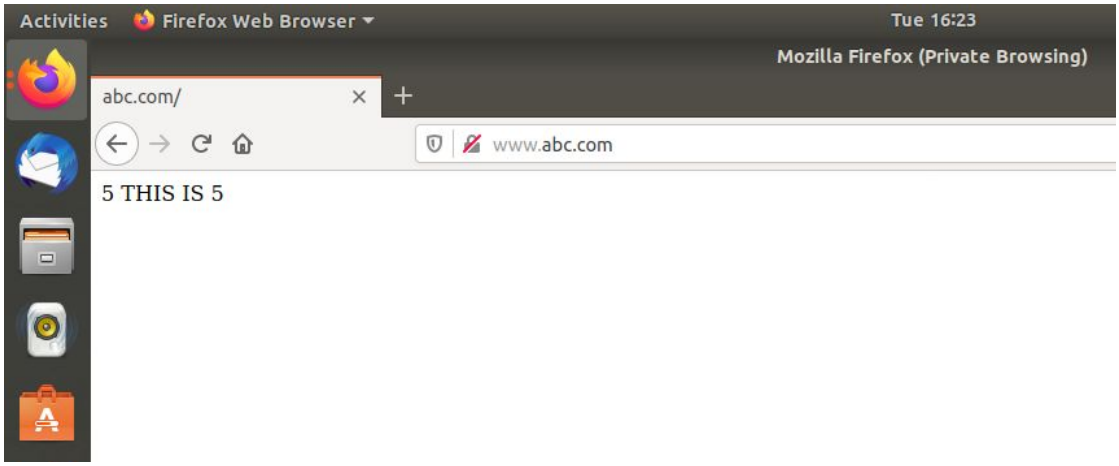
-Create a symlink for the same in sites-enabled

-Delete the symlink for abc.com in sites-enabled

-Reload the service


Activities
Firefox Web Browser
Tue 16:2
Mozilla Firefox (Priva
abc.com/
www.abc.com
1 THIS IS 1


Activities
Firefox Web Browser
Tue 16:23
Mozilla Firefox (Private Browsing)
abc.com/
www.abc.com
3 THIS IS 3


Activities
Firefox Web Browser
Tue 16:23
Mozilla Firefox (Private Browsing)
abc.com/
www.abc.com
5 THIS IS 5

8. Setup Basic Auth (Popup asking for username and password) in a particular location block.

```
server {
listen 443 ssl;
server_name www.abc.com;
root /var/www/html/abc;
index index.html;
ssl_certificate /etc/nginx/ssl/nginx.crt;
ssl_certificate_key /etc/nginx/ssl/nginx.key;

  location / {
   auth_basic "Restricted Content";
   auth_basic_user_file /etc/nginx/.htpasswd;
 }

#error_page 404 /fail.html;
#location = /fail.html {
#root /var/www/html/abc;

        }



~
~
~
"abc.com" 34L, 639C
```