

# Nginx Assignment.

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

These **proxy servers** can interpret network traffic, so they are used to cache web pages and files, making it easier and faster for users to access them. HTTP **proxies** can affect multiple connections at the same time without their speeds taking a serious hit.

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

When many requests are coming concurrently. As nginx is light weight compared to apache and when we do not need much pre installed modules.

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

`worker_processes` – The number of NGINX worker processes (the default is 1. In most cases, running one worker process per CPU core works well, and we recommend setting this directive to `auto` to achieve that. There are times when you may want to increase this number, such as when the worker processes have to do a lot of disk I/O.

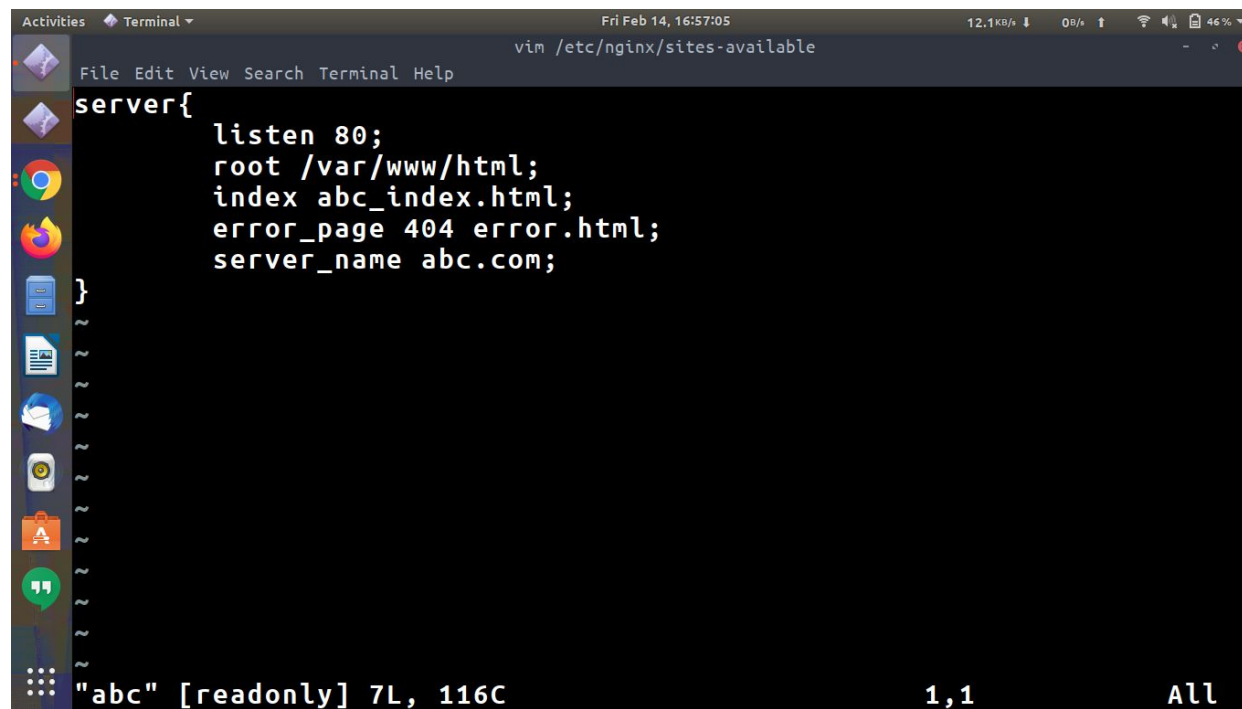
`worker_connections` – The maximum number of connections that each worker process can handle simultaneously. The default is 512, but most systems have enough resources to support a larger number. The appropriate setting depends on the size of the server and the nature of the traffic, and can be discovered through testing.

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

`/etc/nginx/sites-enabled`.

5. Host a site [ABC.COM](http://ABC.COM)

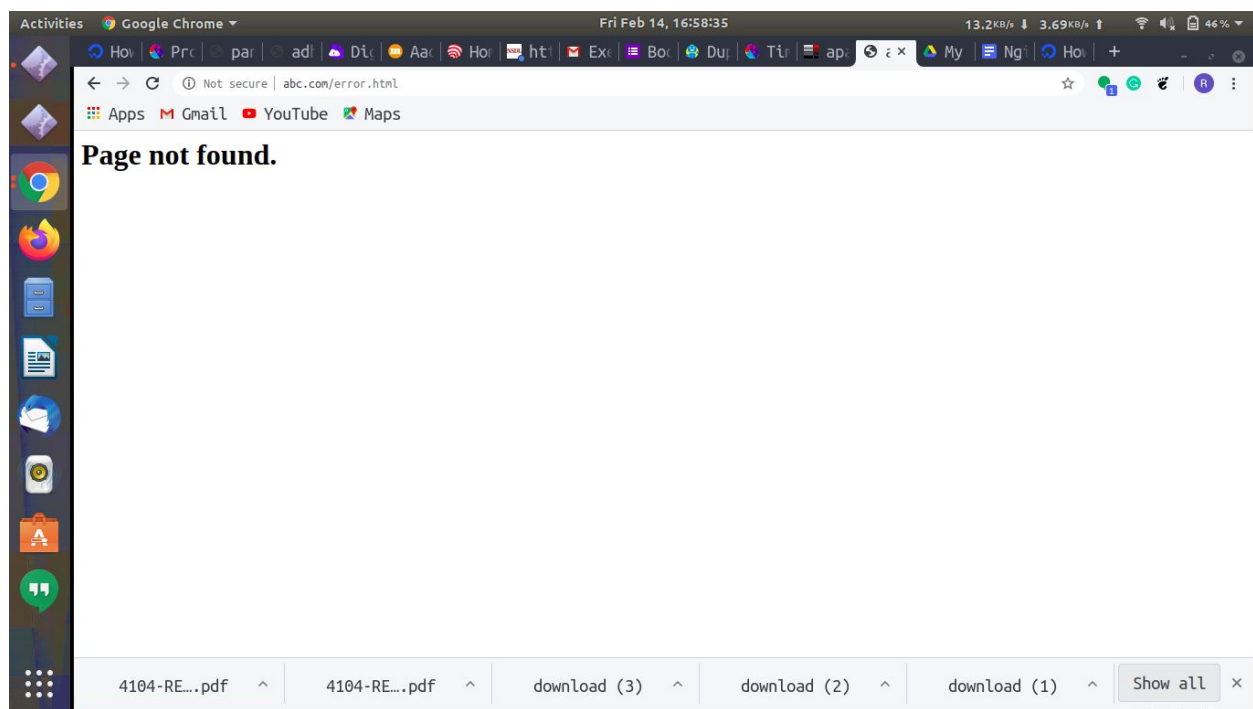
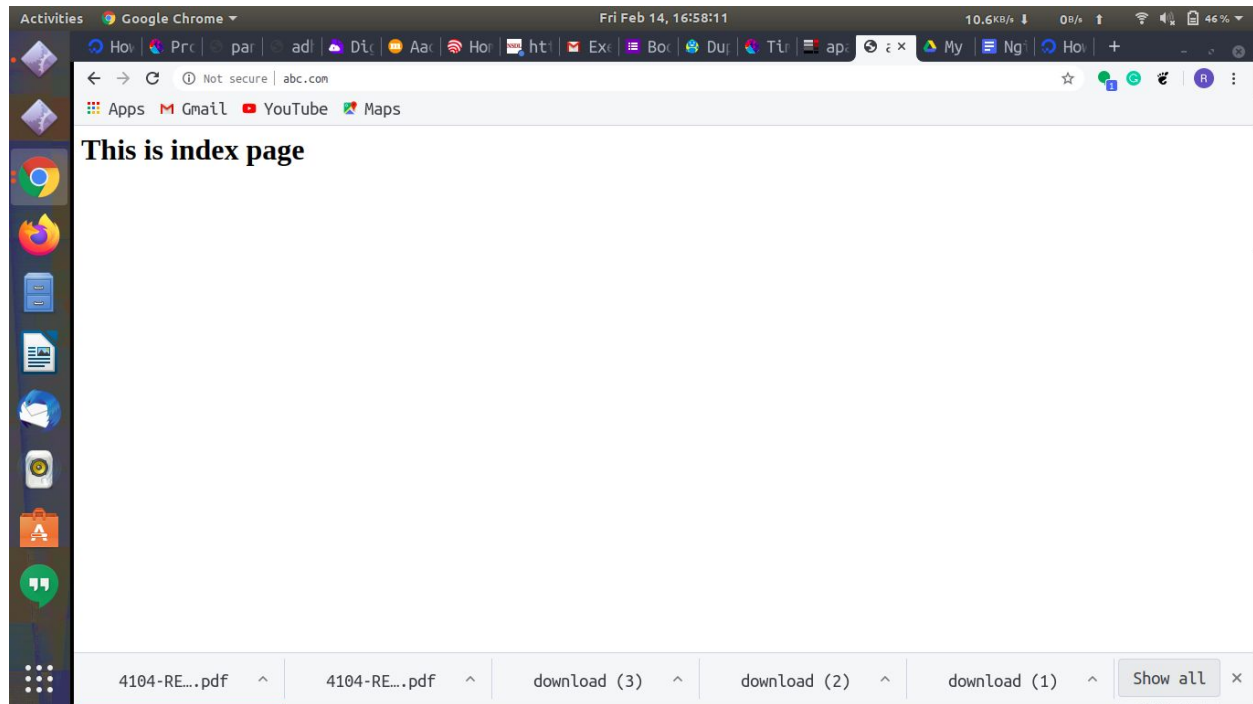
1. Create an index page and a fail-safe page. If a page for URI is not available, the fail-safe page is served.



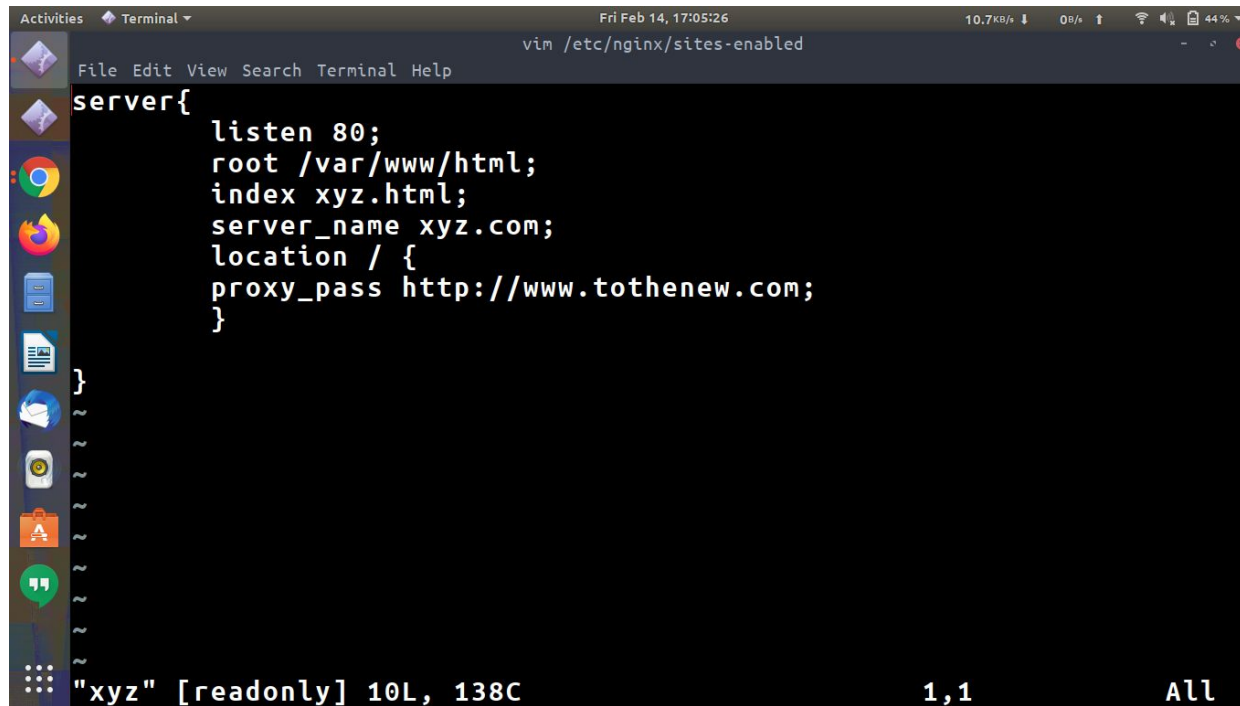
The screenshot shows a terminal window with the vim editor open to the file `/etc/nginx/sites-available`. The editor is displaying the configuration for a new server block. The configuration includes listening on port 80, setting the root directory to `/var/www/html`, defining the index file as `abc_index.html`, setting the 404 error page to `error.html`, and specifying the server name as `abc.com`. The status bar at the bottom indicates the current line and column as `"abc" [readonly] 7L, 116C`, with the cursor at line 1, column 1.

```
server{
    listen 80;
    root /var/www/html;
    index abc_index.html;
    error_page 404 error.html;
    server_name abc.com;
}
```



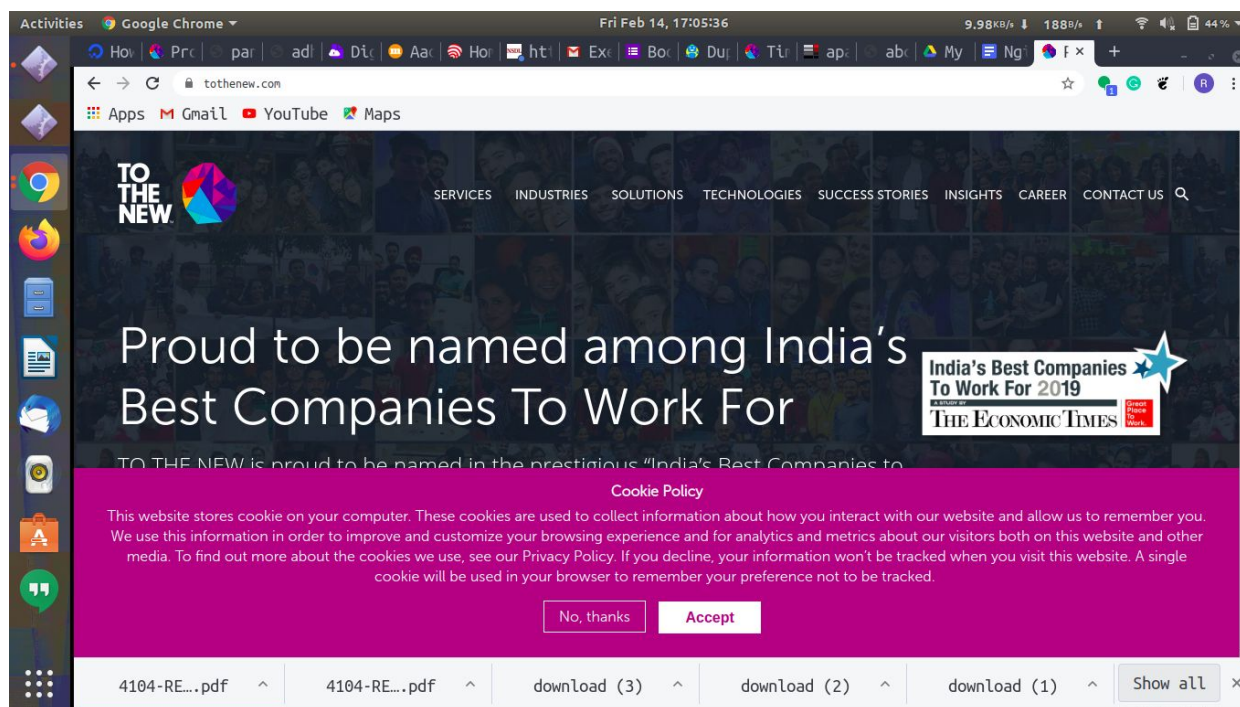


2. proxy pass to a website [xyz.com](http://xyz.com) on a particular URI.

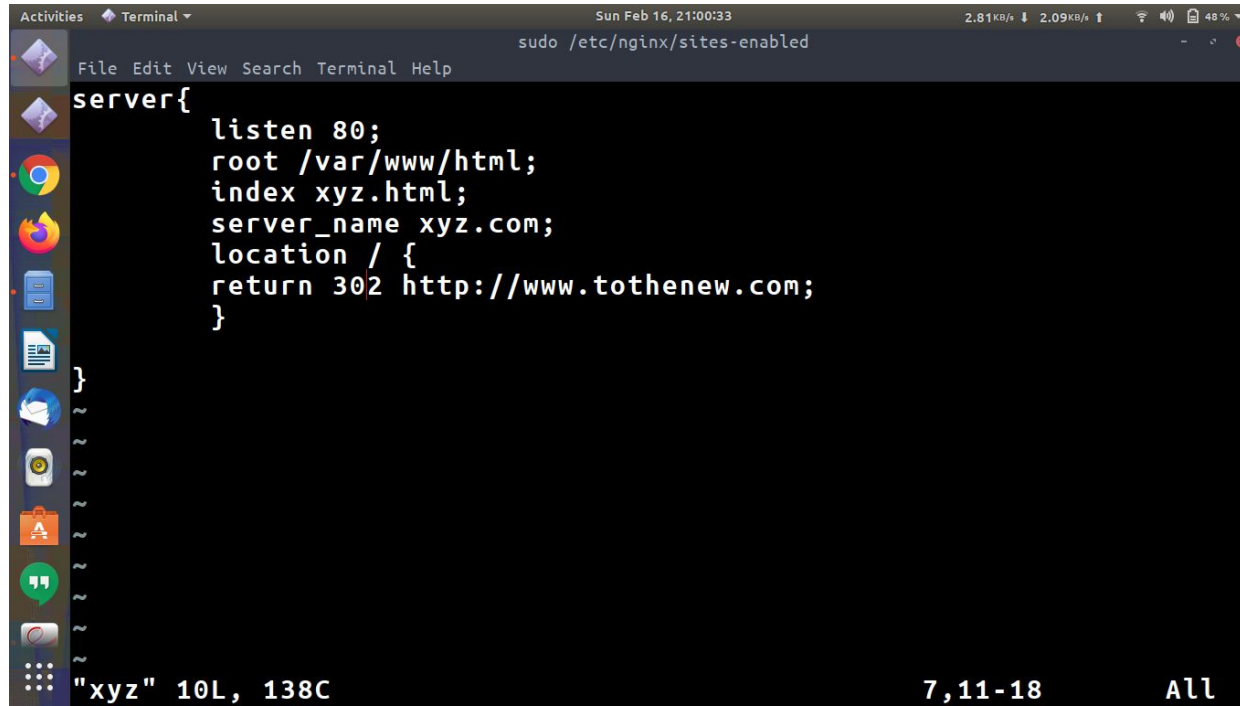


```
server{
    listen 80;
    root /var/www/html;
    index xyz.html;
    server_name xyz.com;
    location / {
        proxy_pass http://www.tothenew.com;
    }
}
```

"xyz" [readonly] 10L, 138C 1,1 All

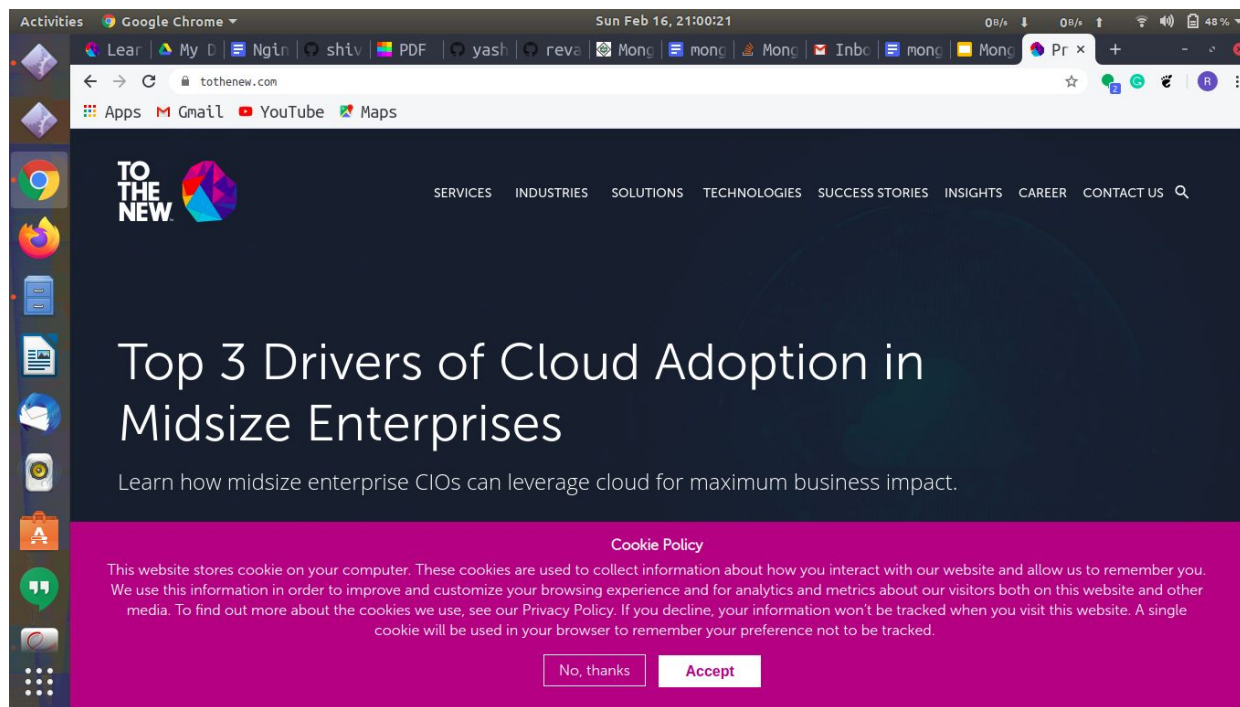


3. redirect to above URI on /redirect/



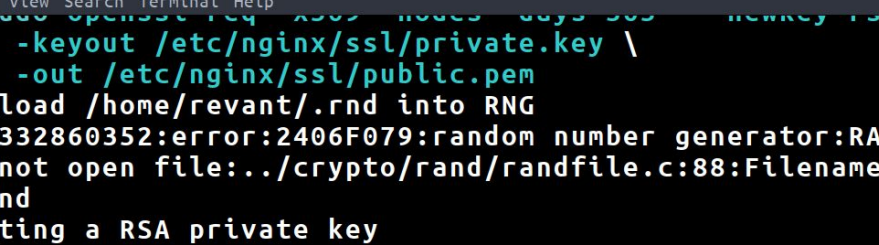
A terminal window titled "Terminal" showing the contents of the file `/etc/nginx/sites-enabled`. The configuration is for an nginx server listening on port 80, with the root directory set to `/var/www/html` and the index file set to `xyz.html`. The server name is `xyz.com`. A location block for the root path returns a 302 redirect to `http://www.tothenew.com`. The terminal status bar at the bottom shows the file name `"xyz"`, its size `10L, 138C`, and the cursor position `7,11-18` on the `All` tab.

```
server{
    listen 80;
    root /var/www/html;
    index xyz.html;
    server_name xyz.com;
    location / {
        return 302 http://www.tothenew.com;
    }
}
```



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





```
Sun Feb 16, 21:07:17 0B/s 0B/s 46%
fish /etc/nginx

File Edit View Search Terminal Help

- keyout /etc/nginx/ssl/private.key \
- out /etc/nginx/ssl/public.pem

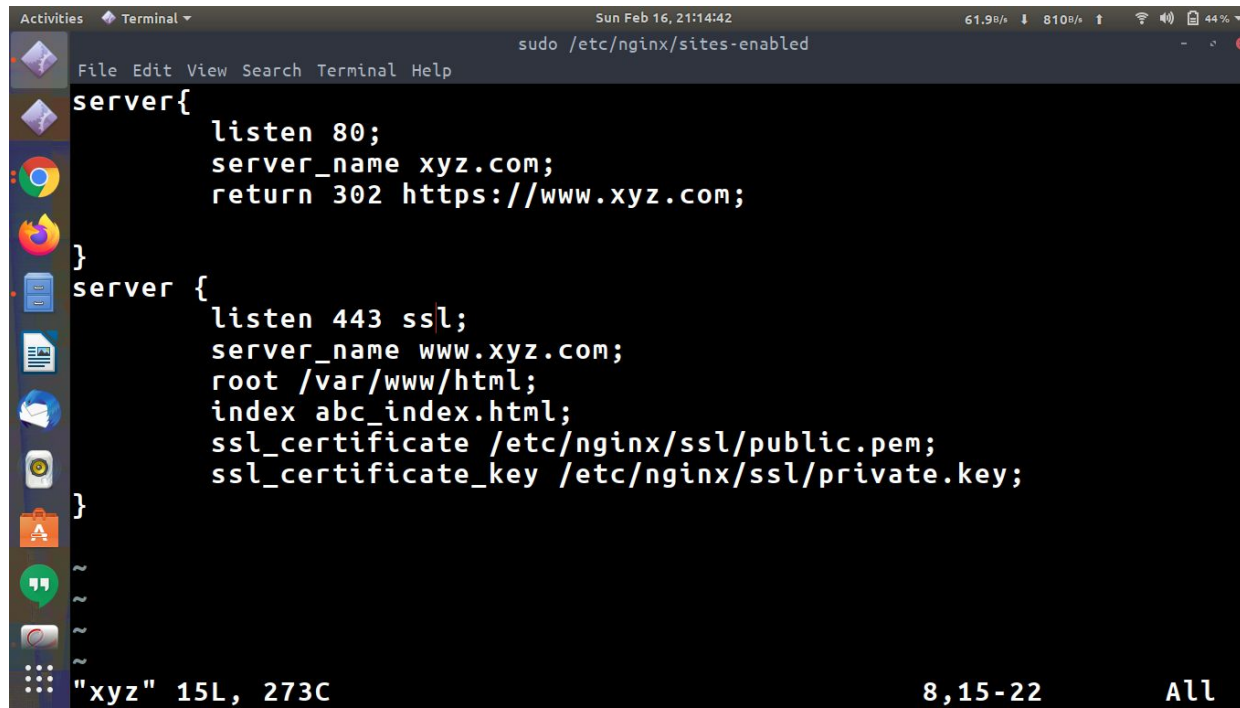
Can't load /home/revant/.rnd into RNG
140335332860352:error:2406F079:random number generator:RAND_load_file:Cannot open file:../crypto/rand/randfile.c:88:Filename=/home/revant/.rnd

Generating a RSA private key
.....+++++
...+++++
writing new private key to '/etc/nginx/ssl/private.key'
-----

You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name
or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
```

The screenshot shows a Linux desktop environment. On the left is a vertical dock with icons for various applications: a file manager, a web browser, a terminal, a mail client, a calendar, a weather app, a file manager, a mail client, a calendar, a weather app, a file manager, a mail client, a calendar, a weather app, and a file manager. The main window is a web browser displaying a certificate viewer for 'REVANT'. The browser's address bar shows 'https://www.xyz.com'. The certificate viewer has two tabs: 'General' and 'Details'. The 'General' tab is selected, showing the following information:

- Issued To:**
  - Common Name (CN): REVANT
  - Organisation (O): TTN
  - Organisational Unit (OU): CLOUD
- Issued By:**
  - Common Name (CN): REVANT
  - Organisation (O): TTN
  - Organisational Unit (OU): CLOUD
- Validity Period:**
  - Issued On: Sunday, 16 February 2020 at 21:07:10
  - Expires On: Monday, 15 February 2021 at 21:07:10
- Fingerprints:**
  - SHA-256 Fingerprint: B5 A0 D2 96 D3 3A EA 95 6A 75 84 88 CA 48 E3 5F 15 E4 09 43 D5 77 4F F2 8E 39 D6 EB 8E 30 78 DF A5 FC A6 7F 06 7A BA C9 96 DF 0A 4F B0 F8 4D DE 30 3A A6 1F
  - SHA-1 Fingerprint: 30 3A A6 1F

A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a title bar (Sun Feb 16, 21:14:42, 61.9B/s, 810B/s, 44%). The terminal shows the command 'sudo /etc/nginx/sites-enabled' and the following nginx configuration:

```
server{  
    listen 80;  
    server_name xyz.com;  
    return 302 https://www.xyz.com;  
}  
server {  
    listen 443 ssl;  
    server_name www.xyz.com;  
    root /var/www/html;  
    index abc_index.html;  
    ssl_certificate /etc/nginx/ssl/public.pem;  
    ssl_certificate_key /etc/nginx/ssl/private.key;  
}  
~  
~  
~  
~  
"xyz" 15L, 273C 8,15-22 All
```

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.

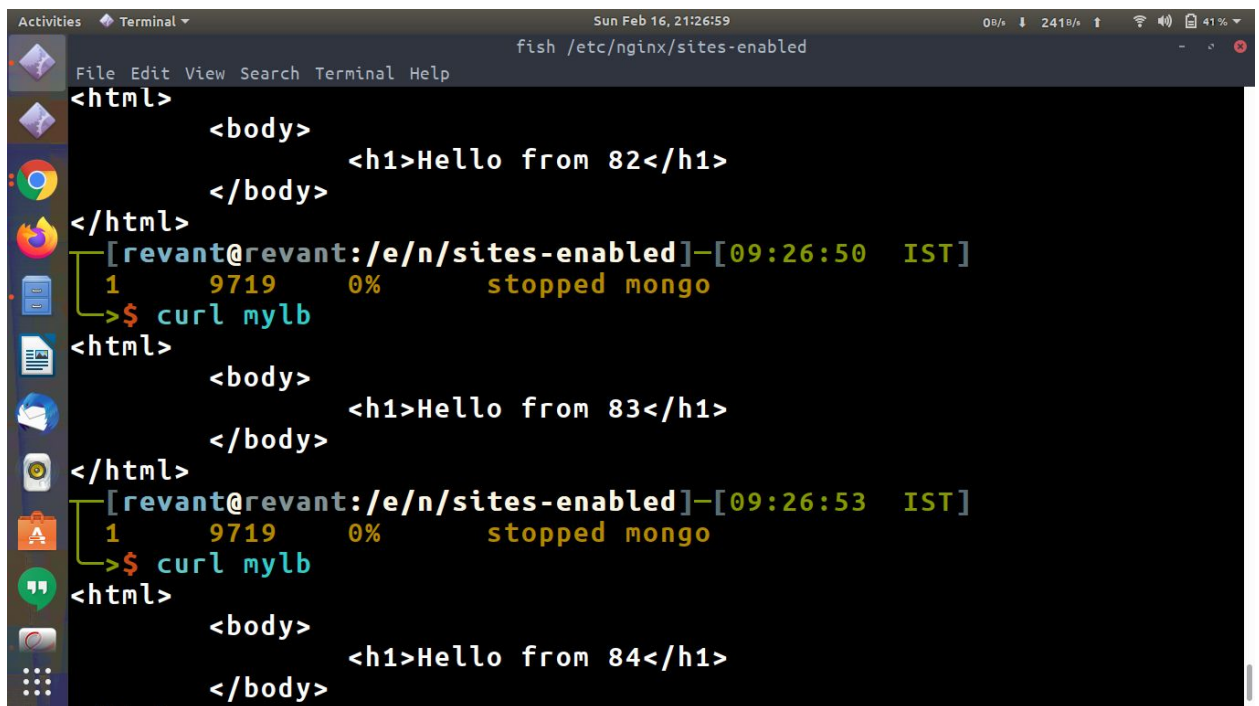




5. Place your images at /var/www/html/images. Only accept jpg/png/jpeg. Discard rest

DOUBT.

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



```
Activities Terminal Sun Feb 16, 21:26:59 08/s 2418/s 41%
fish /etc/nginx/sites-enabled
<html>
  <body>
    <h1>Hello from 82</h1>
  </body>
</html>
[revant@revant:/e/n/sites-enabled]-[09:26:50 IST]
1 9719 0% stopped mongo
>$ curl mylb
<html>
  <body>
    <h1>Hello from 83</h1>
  </body>
</html>
[revant@revant:/e/n/sites-enabled]-[09:26:53 IST]
1 9719 0% stopped mongo
>$ curl mylb
<html>
  <body>
    <h1>Hello from 84</h1>
  </body>
```

```
Activities Terminal Sun Feb 16, 21:27:16 613B/s 192B/s 41%
vim /etc/nginx/sites-enabled

File Edit View Search Terminal Help

server {
    listen 82;
    root /var/www/html;
    index index82.html;
    server_name localhost;
}
server {
    listen 83;
    root /var/www/html;
    index index83.html;
    server_name localhost;
}
server {
    listen 84;
    root /var/www/html;
    index index84.html;
    server_name localhost;
}
server {
    "load" [readonly] 34L, 534C 1,1 Top
```

```
Activities Terminal Sun Feb 16, 21:27:30 660B/s 762B/s 41%
vim /etc/nginx/sites-enabled

File Edit View Search Terminal Help

#http {
    upstream mylb {
        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 127.0.0.1:86;
    }
    server {
        listen 80;
        server_name lb.com;
        location /{
            proxy_pass http://mylb;
        }
    }
}
#}
~
~
~
"xyz" [readonly] 16L, 224C 1,1 All
```

**Round Robin** – Requests are distributed evenly across the servers, with **server weights** taken into consideration. This method is used by default (there is no directive for enabling it)

**Least Connections** – A request is sent to the server with the least number of active connections, again with **server weights** taken into consideration:

**IP Hash** – The server to which a request is sent is determined from the client IP address. In this case, either the first three octets of the IPv4 address or the whole IPv6 address are used to calculate the hash value. The method guarantees that requests from the same address get to the same server unless it is not available.

**Least Time** (NGINX Plus only) – For each request, NGINX Plus selects the server with the lowest average latency and the lowest number of active connections, where the lowest average latency is calculated based on which of the following **parameters** to the `least_time` directive is included:

7. Setup Basic Auth (Popup asking for username and password) in a particular location block. (The Basic Auth should not be asked for TTN IP)

```
Activities Terminal Sun Feb 16, 21:44:12 0B/s 0B/s 38%
sudo /etc/nginx/sites-enabled

File Edit View Search Terminal Help

server {
    listen 80;
    server_name localhost;
    root /var/www/html;
    index index.html;
    location =/admin.html{
        satisfy any;
        allow 192.168.1.10;
        auth_basic "Login Required";
        auth_basic_user_file /etc/nginx/.htpasswd;
    }
}

"basic" 12L, 228C 12,1 All
```

```
Activities Terminal Sun Feb 16, 21:30:14 1.13KB/s 641B/s 40%
fish /etc/nginx/sites-enabled

File Edit View Search Terminal Help

[revant@revant:/e/n/sites-enabled]-[09:30:03 IST]
1 9719 0% stopped mongo
>$ sudo htpasswd -c /etc/nginx/.htpasswd revant
New password:
Re-type new password:
Adding password for user revant
[revant@revant:/e/n/sites-enabled]-[09:30:13 IST]
1 9719 0% stopped mongo
>$ |
```

