1. Node JS:

- **Install Node js on local VM.**
- **Create 2 API's running on ports 6080 and 7080 with messages "Hello Node JS" and "Node JS installed successfully" respectively.**
- **Install pm2 tool and create 4 clusters of bothe Node's.**
- **Delete all 4 clusters one-by-one**

Answer:

Firstly, we install Node.js and NPM using the NodeSource Enterprise Linux repository. We use following commands;

- **curl -sL https://deb.nodesource.com/setup_14.x | sudo -E bash -**
- **sudo apt-get install -y nodejs**
- **sudo apt-get install npm**

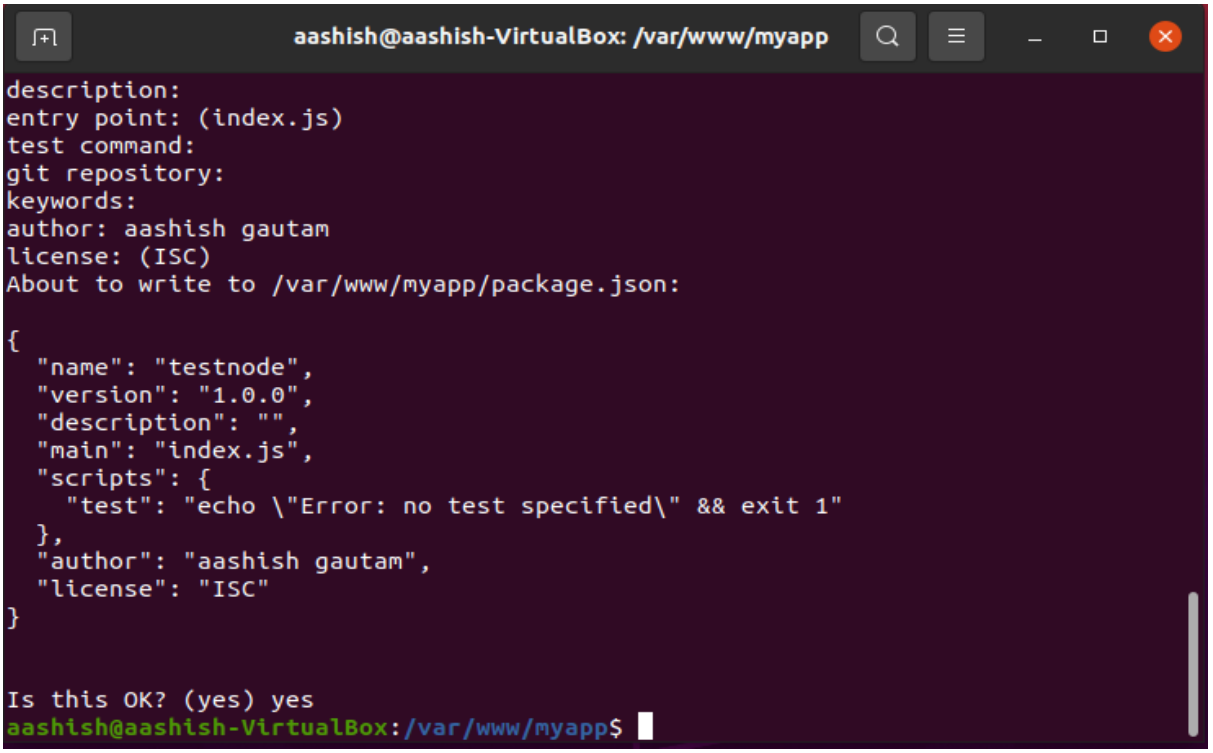
We use following commands to verify if the Node.js and npm are installed in our system;

- **node -v**
- **npm -v**

Now, we create a directory that will store our application files after initializing npm, using the following command;

- **sudo mkdir -p /var/www/myapp**
- **cd /var/www/myapp**
- **npm init**

And then, app named **testnode** is created as follows;

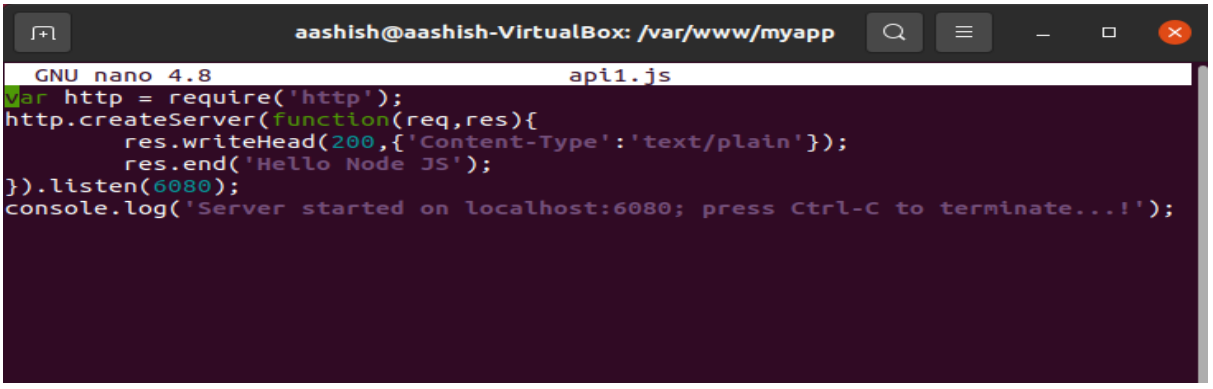


Next, we create 2 apps namely **api1.js** running on port **6080** and **api2.js** running on port **7080** with messages **"Hello Node JS"** and **"Node JS installed successfully"** respectively.

- **sudo nano api1.js**

Then, we copy and paste the code below in it.

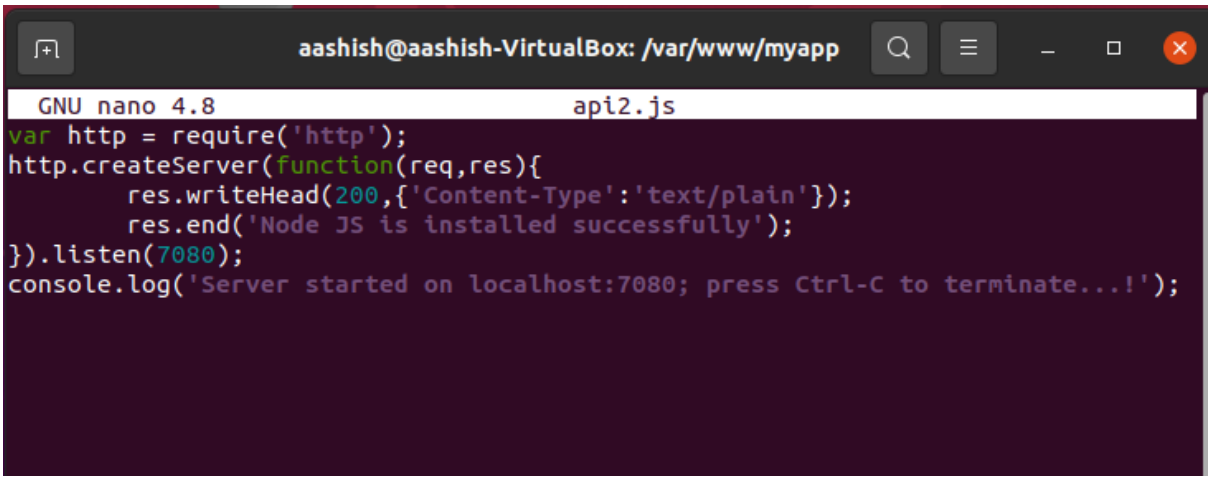
```
var http = require('http');
http.createServer(function(req,res){
        res.writeHead(200, { 'Content-Type': 'text/plain' });
        res.end('Hello Node JS');
}).listen(6080);
console.log('Server started on localhost:8080; press Ctrl-C to terminate...!');
```



- **sudo nano api2.js**

Again, we copy and paste the code below in it.

```
var http = require('http');
http.createServer(function(req,res){
        res.writeHead(200, { 'Content-Type': 'text/plain' });
        res.end('Node JS installed successfully');
}).listen(7080);
console.log('Server started on localhost:8080; press Ctrl-C to terminate...!');
```

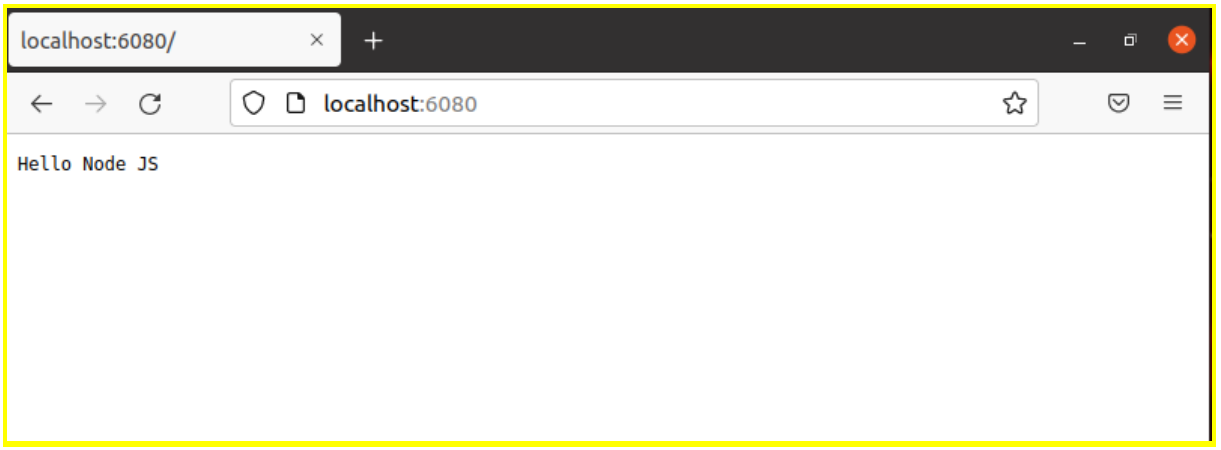


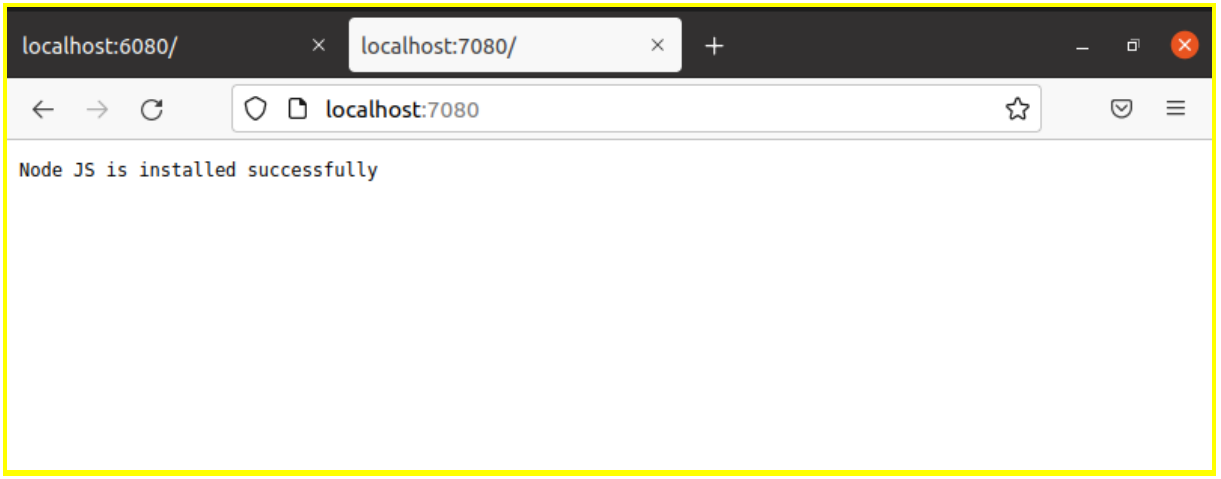
Now, to run the app we use following commands;

- **node api1.js**
- **node api2.js**

To test the app, we run following command on the browser;

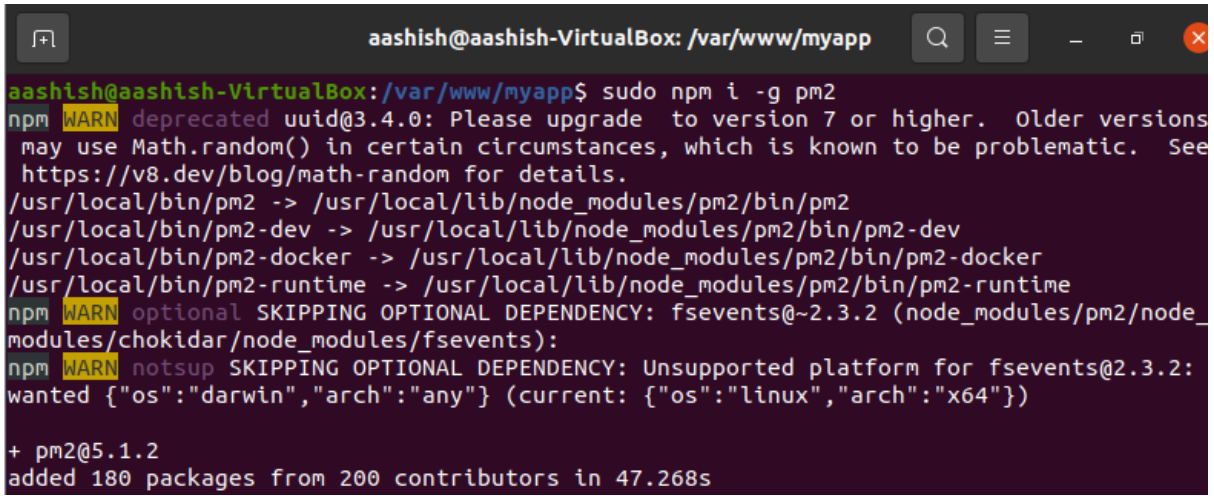
- **localhost:6080**
- **localhost:7080**





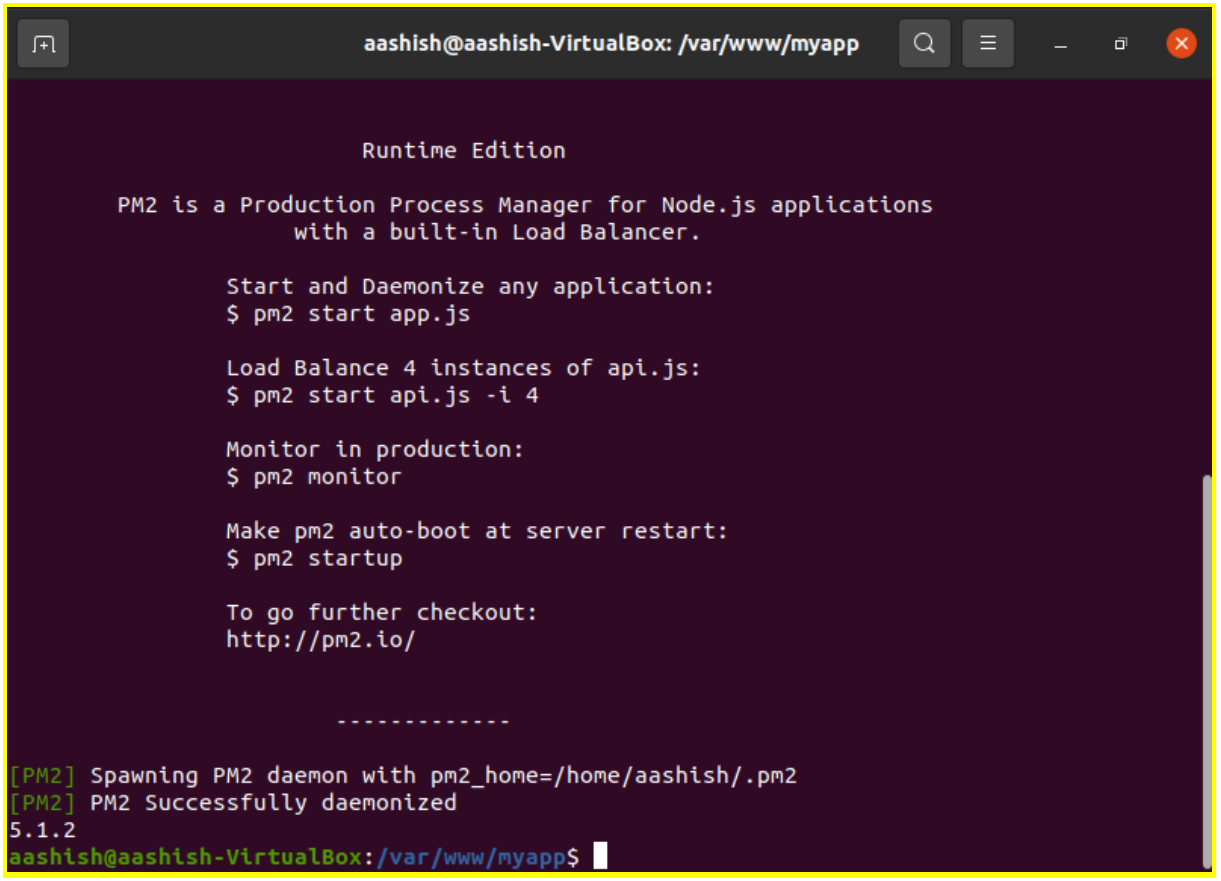
Now, we install PM2 tools using following command;

- **sudo npm i -g pm2**



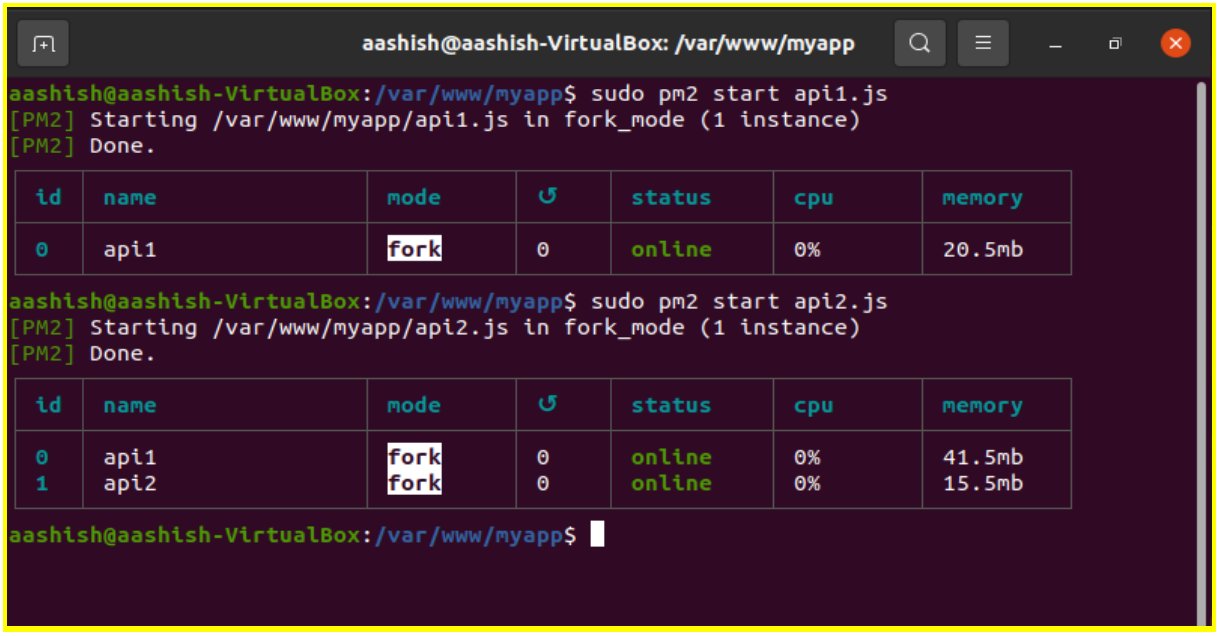
To verify pm2 tool we use following command;

- **pm2 -v**



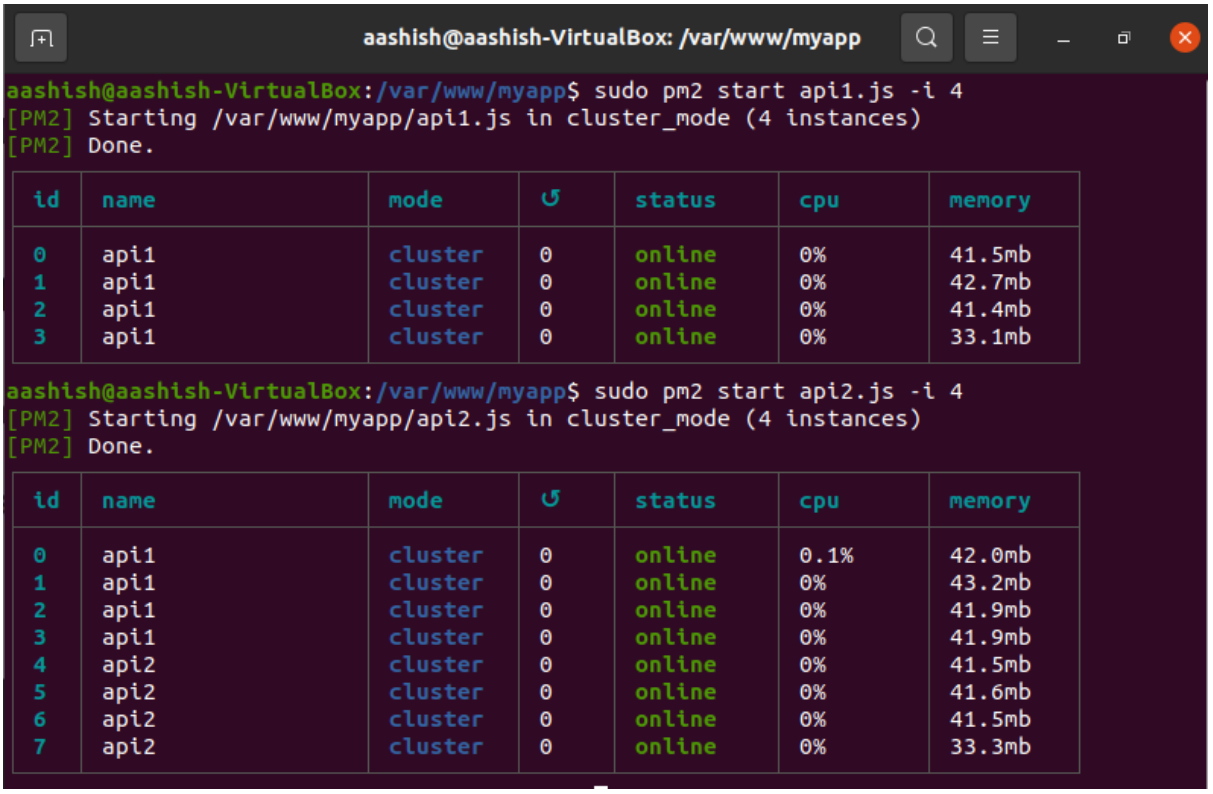
To start node application using pm2 tool, we use following commands;

- **sudo pm2 start api1.js**
- **sudo pm2 start api2.js**



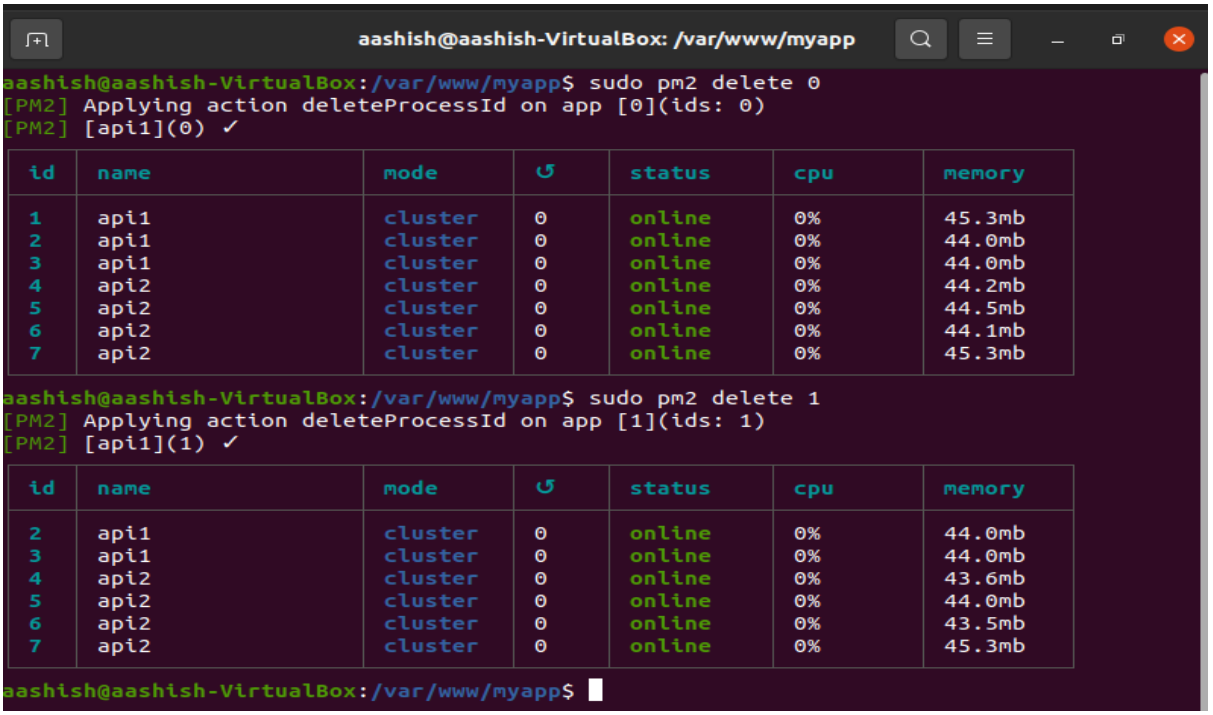
To start both applications in 4 cluster mode,we use following command;

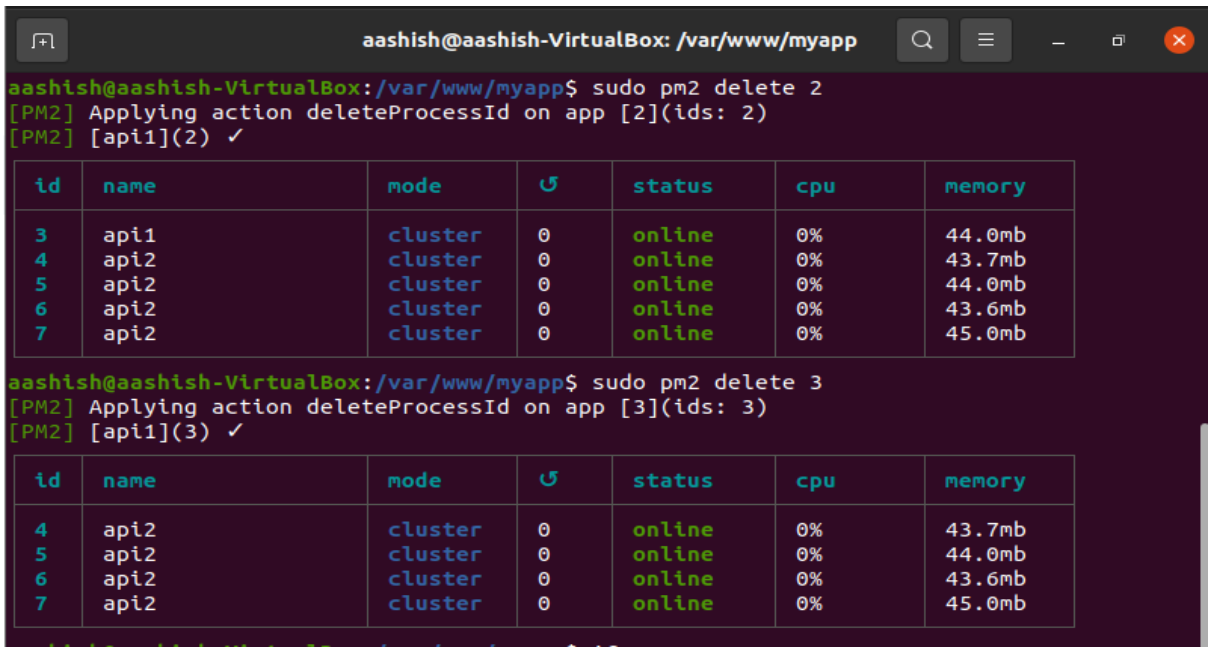
- **sudo pm2 start api1.js -i 4**
- **sudo pm2 start api2.js -i 4**



To delete all the clusters one-by-one,we use following command;

- **sudo pm2 delete 0**
- **sudo pm2 delete 1**
- **sudo pm2 delete 2**
- **sudo pm2 delete 3**
- **sudo pm2 delete 4**
- **sudo pm2 delete 5**
- **sudo pm2 delete 6**
- **sudo pm2 delete 7**


aashish@aashish-VirtualBox: /var/www/myapp
aashish@aashish-VirtualBox:/var/www/myapp$ sudo pm2 delete 0
[PM2] Applying action deleteProcessId on app [0](ids: 0)
[PM2] [api1](0) ✓
id name mode ↺ status cpu memory
1 api1 cluster 0 online 0% 45.3mb
2 api1 cluster 0 online 0% 44.0mb
3 api1 cluster 0 online 0% 44.0mb
4 api2 cluster 0 online 0% 44.2mb
5 api2 cluster 0 online 0% 44.5mb
6 api2 cluster 0 online 0% 44.1mb
7 api2 cluster 0 online 0% 45.3mb
aashish@aashish-VirtualBox:/var/www/myapp$ sudo pm2 delete 1
[PM2] Applying action deleteProcessId on app [1](ids: 1)
[PM2] [api1](1) ✓
id name mode ↺ status cpu memory
2 api1 cluster 0 online 0% 44.0mb
3 api1 cluster 0 online 0% 44.0mb
4 api2 cluster 0 online 0% 43.6mb
5 api2 cluster 0 online 0% 44.0mb
6 api2 cluster 0 online 0% 43.5mb
7 api2 cluster 0 online 0% 45.3mb
aashish@aashish-VirtualBox:/var/www/myapp$


aashish@aashish-VirtualBox: /var/www/myapp
aashish@aashish-VirtualBox:/var/www/myapp$ sudo pm2 delete 2
[PM2] Applying action deleteProcessId on app [2](ids: 2)
[PM2] [api1](2) ✓
id name mode ↺ status cpu memory
3 api1 cluster 0 online 0% 44.0mb
4 api2 cluster 0 online 0% 43.7mb
5 api2 cluster 0 online 0% 44.0mb
6 api2 cluster 0 online 0% 43.6mb
7 api2 cluster 0 online 0% 45.0mb
aashish@aashish-VirtualBox:/var/www/myapp$ sudo pm2 delete 3
[PM2] Applying action deleteProcessId on app [3](ids: 3)
[PM2] [api1](3) ✓
id name mode ↺ status cpu memory
4 api2 cluster 0 online 0% 43.7mb
5 api2 cluster 0 online 0% 44.0mb
6 api2 cluster 0 online 0% 43.6mb
7 api2 cluster 0 online 0% 45.0mb