

Architecture

Part-1

- Installing docker
- Verifying docker installation
- Installing Docker Compose.
- downloading MongoDB image.
- Running mongo container
- Installing NodeJs, Npm
- Installing VS-Code & Docker Plugin

Part-2

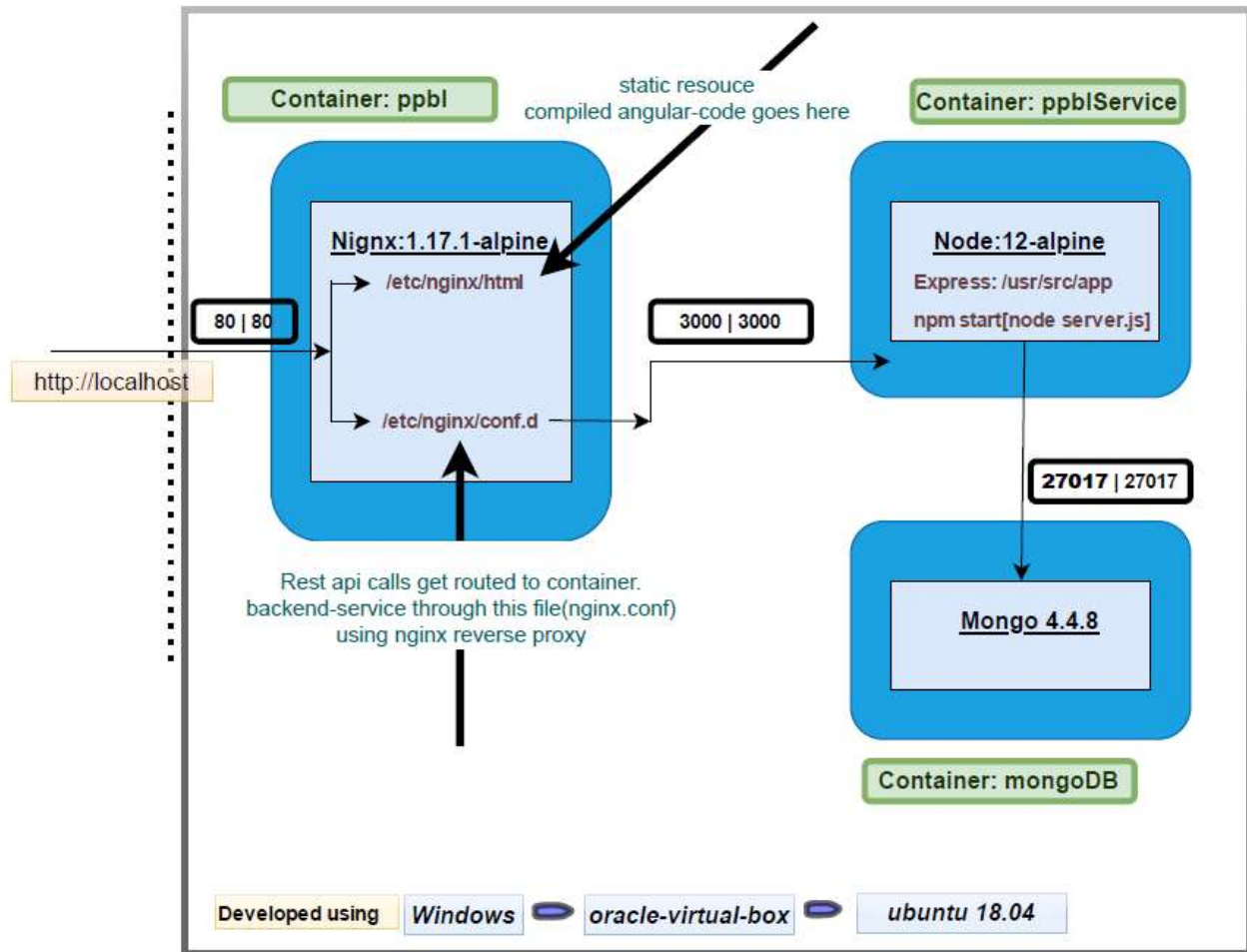
- creating docker file for backend service(ppblService):
- Building an image for backend-service ppblService.
- Running the ppblService in docker container.
- Testing the backend-service ppblService

Part-3

- Building docker file for frontend app(ppbl)
- Building image frontend angular app (ppbl)
- Creating DockerCompose file
- final results

Architecture:

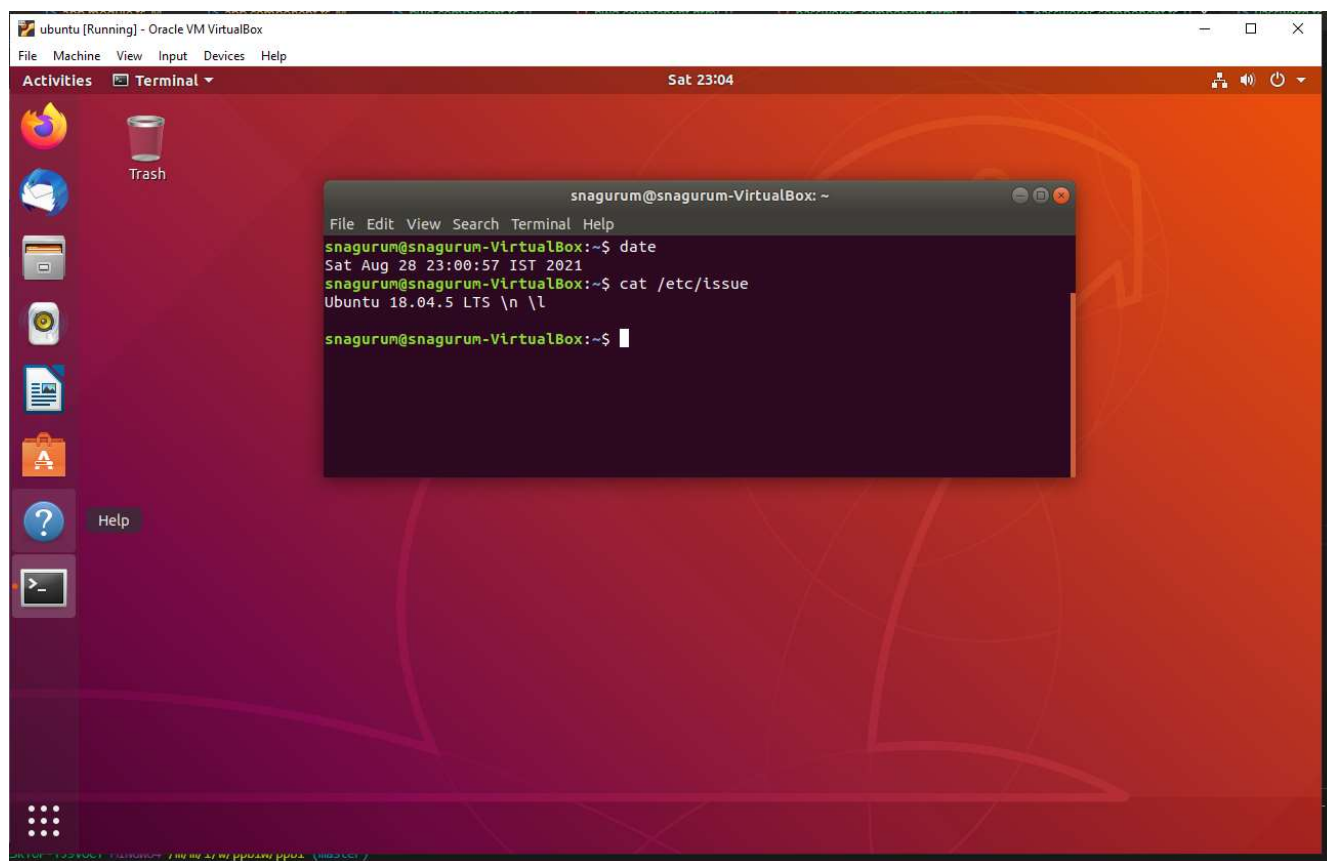
MEAN - stack app (Personal Password Locker)



Note:

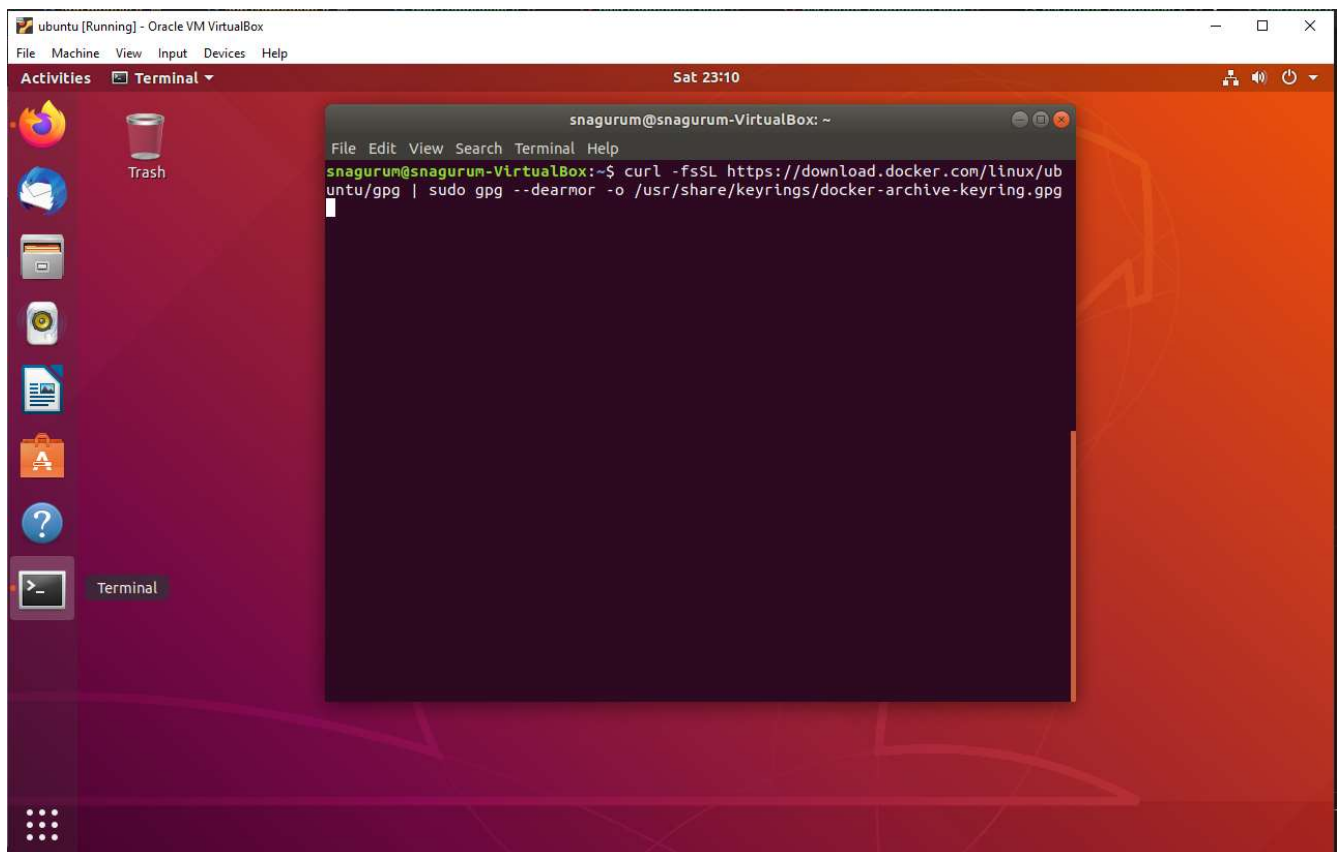
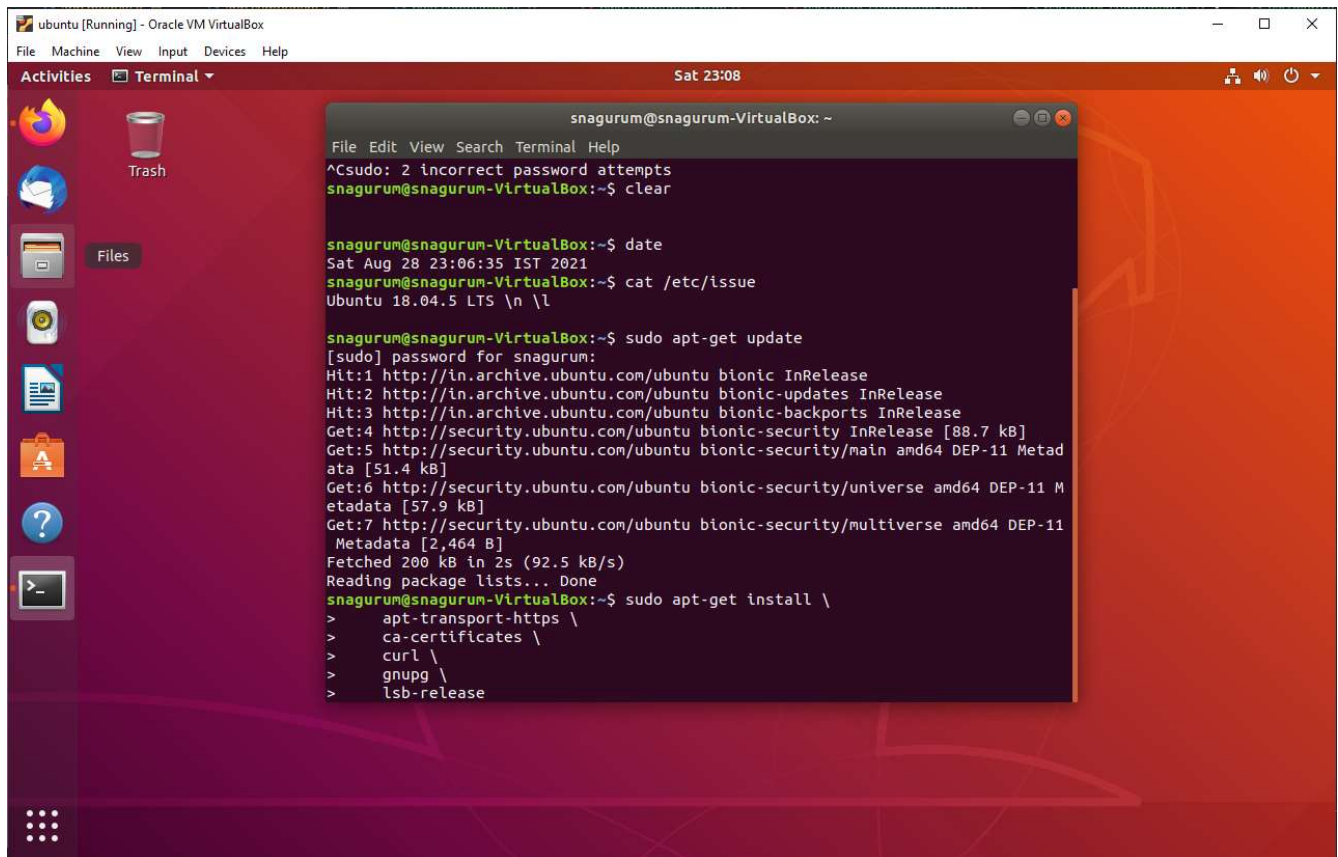
github link for source code:

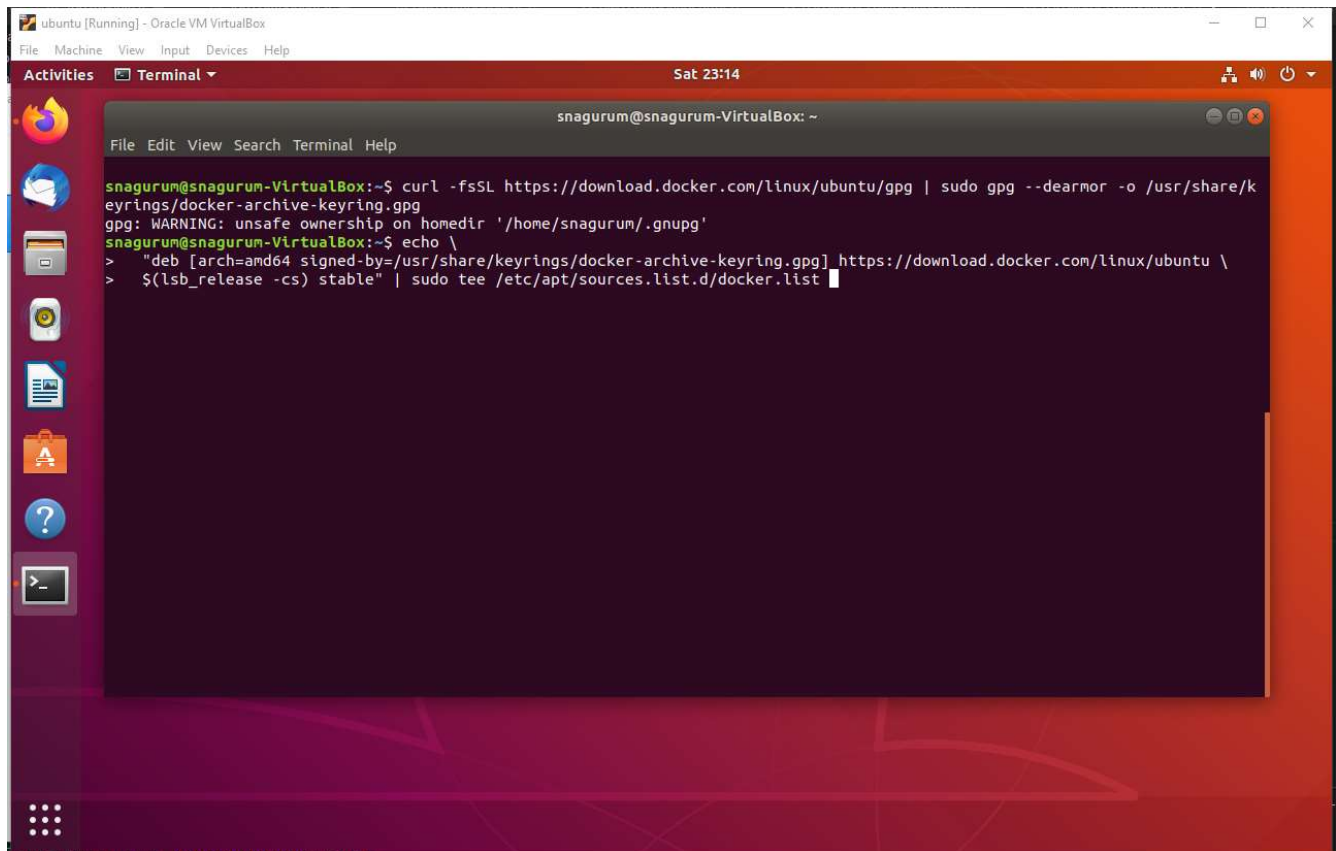
<https://github.com/snagurum/pp1w>



Part - 1

Installing Docker





```
snagurum@snagurum-VirtualBox:~$ sudo apt-get update
Get:1 https://download.docker.com/linux/ubuntu bionic InRelease [64.4 kB]
Hit:2 http://in.archive.ubuntu.com/ubuntu bionic InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu bionic-updates InRelease
Get:4 https://download.docker.com/linux/ubuntu bionic/stable amd64 Packages [19.8 kB]
Hit:5 http://in.archive.ubuntu.com/ubuntu bionic-backports InRelease
Hit:6 http://security.ubuntu.com/ubuntu bionic-security InRelease
Fetched 84.3 kB in 1s (147 kB/s)
Reading package lists... Done
snagurum@snagurum-VirtualBox:~$ sudo apt-get install docker-ce docker-ce-cli containerd.io
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  python3-click python3-colorama
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  docker-ce-rootless-extras docker-scan-plugin git git-man liberror-perl pigz
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite git-daemon-run | git-daemon-sysvinit git-doc git-el git-email git-gui gitk
  gitweb git-cvs git-mediawiki git-svn
Recommended packages:
  slirp4netns
The following NEW packages will be installed:
  containerd.io docker-ce docker-ce-cli docker-ce-rootless-extras docker-scan-plugin git git-man liberror-perl pigz
0 upgraded, 9 newly installed, 0 to remove and 1 not upgraded.
Need to get 101 MB of archives.
After this operation, 440 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

<https://docs.docker.com/release-notes/>

Got multiple Docker repositories?

If you have multiple Docker repositories enabled, installing or updating without specifying a version in the `apt-get install` or `apt-get update` command always installs the highest possible version, which may not be appropriate for your stability needs.

[Install from a package](#)

[Upgrade Docker Engine](#)

[Install using the convenience script](#)

Verifying docker installation

The screenshot shows a terminal window titled 'snagurum@snagurum-VirtualBox: ~' with the following commands and output:

```
snagurum@snagurum-VirtualBox:~$ sudo usermod -aG docker $USER
snagurum@snagurum-VirtualBox:~$ sudo groupadd docker
groupadd: group 'docker' already exists
snagurum@snagurum-VirtualBox:~$ sudo groupadd docker
groupadd: group 'docker' already exists
snagurum@snagurum-VirtualBox:~$ sudo usermod -aG docker $USER
snagurum@snagurum-VirtualBox:~$ newgrp docker
snagurum@snagurum-VirtualBox:~$ docker run hello-world
```

The output of the `docker run hello-world` command is displayed below the terminal window:

```
Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

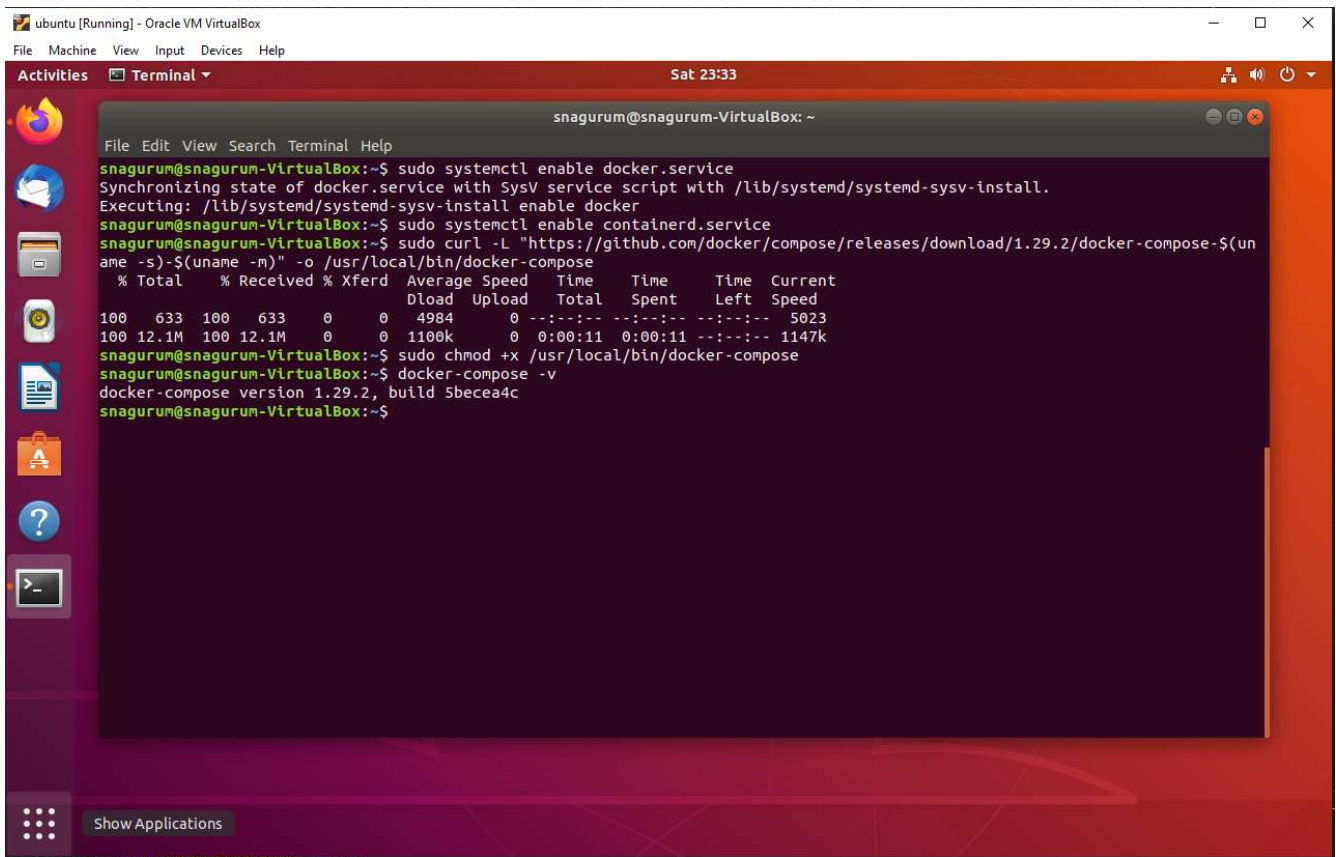
For more examples and ideas, visit:
https://docs.docker.com/get-started/
```

At the bottom of the terminal window, a warning message is displayed:

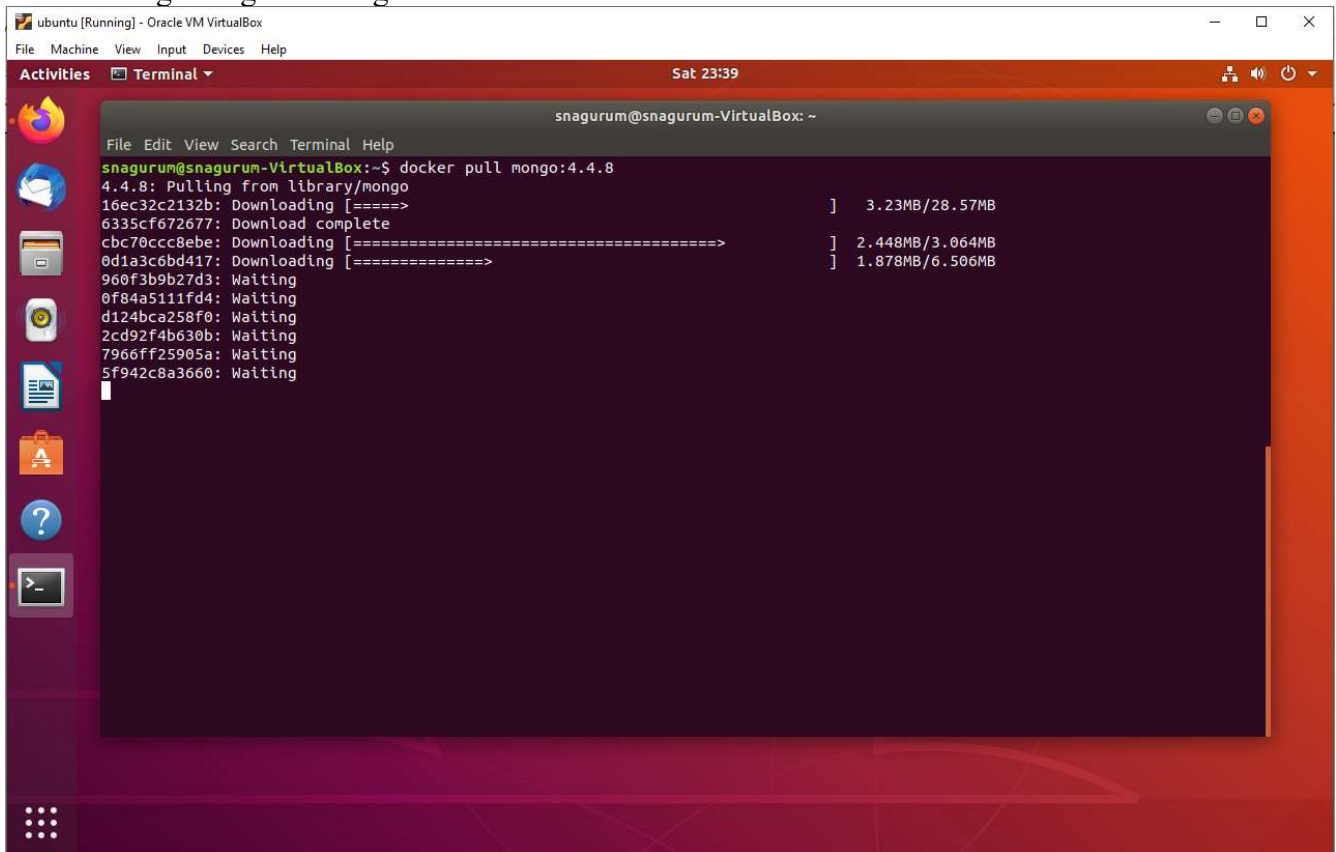
```
WARNING: Error loading config file: /home/user/.docker/config.json -
stat /home/user/.docker/config.json: permission denied
```

Below the warning message, there are links for 'Release notes', 'Superseded products and tools', 'Enable IPv6 on the Docker daemon', 'Troubleshooting', and 'Kernel compatibility'.

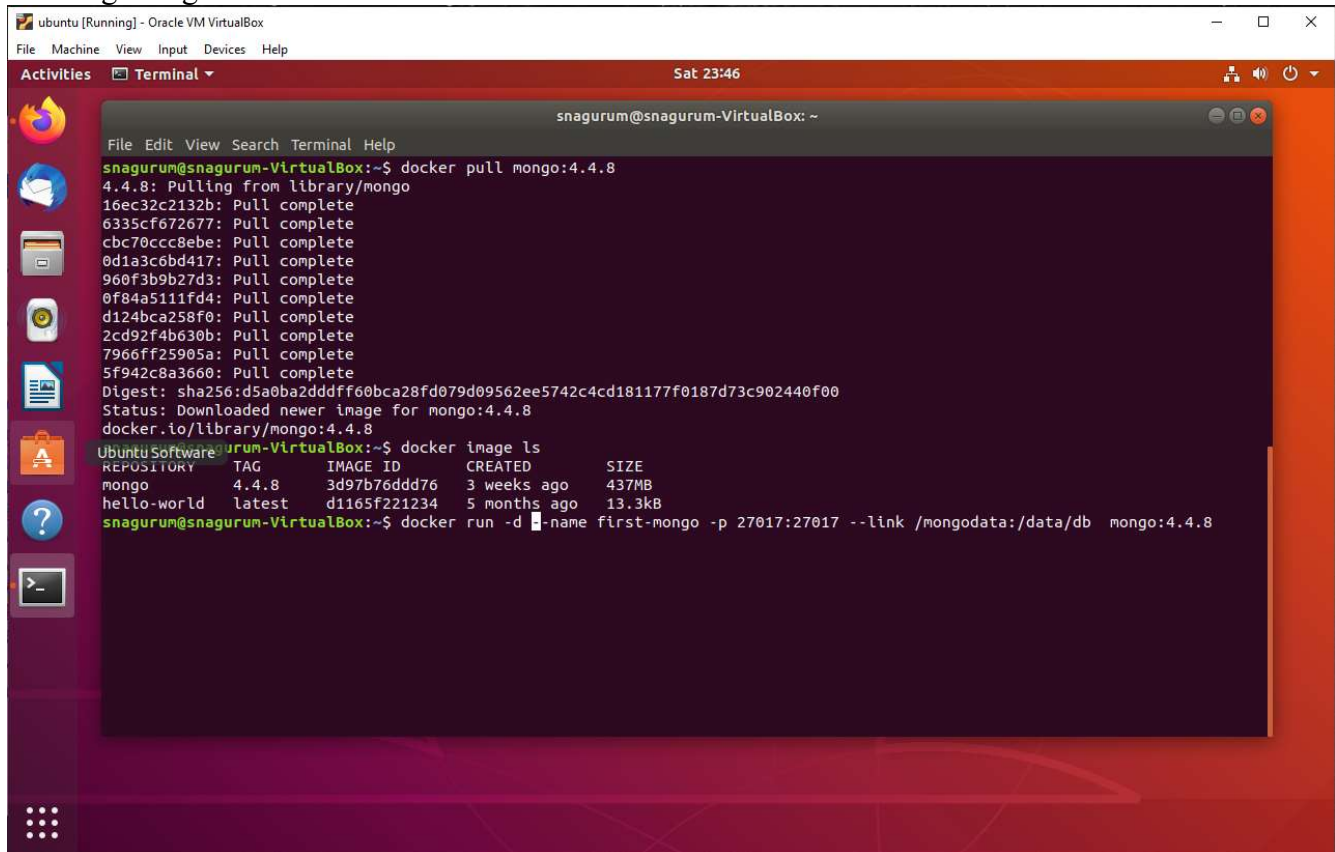
Installing Docker Compose.



downloading MongoDB image.



Running mongo container



The screenshot shows a terminal window titled "snagurum@snagurum-VirtualBox: ~" within an Ubuntu desktop environment. The terminal displays the following commands and output:

```
snagurum@snagurum-VirtualBox:~$ docker pull mongo:4.4.8
4.4.8: Pulling from library/mongo
16ec32c2132b: Pull complete
6335cf672677: Pull complete
cbc70ccc8ebe: Pull complete
0d1a3c6bd417: Pull complete
960f3b9b27d3: Pull complete
0f84a5111fd4: Pull complete
d124bca258f0: Pull complete
2cd92f4b630b: Pull complete
7966ff25905a: Pull complete
5f942c8a3660: Pull complete
Digest: sha256:d5a0ba2dddf60bca28fd079d09562ee5742c4cd181177f0187d73c902440f00
Status: Downloaded newer image for mongo:4.4.8
docker.io/library/mongo:4.4.8

snagurum@snagurum-VirtualBox:~$ docker image ls
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
mongo         4.4.8     3d97b76ddd76   3 weeks ago   437MB
hello-world   latest    d1165f221234   5 months ago   13.3kB

snagurum@snagurum-VirtualBox:~$ docker run -d --name first-mongo -p 27017:27017 --link /mongodata:/data/db mongo:4.4.8
```

The terminal window is part of an Ubuntu desktop environment, with a sidebar on the left showing various application icons. The top of the window displays the title bar and system status information, including the date and time (Sat 23:46).

```
ubuntu [Running] - Oracle VM VirtualBox
Sat 23:56
snagurum@snagurum-VirtualBox: ~

Activities Terminal
File Edit View Search Terminal Help

snagurum@snagurum-VirtualBox:~$ docker image ls
REPOSITORY TAG IMAGE ID CREATED SIZE
mongo 4.4.8 3d97b76ddd76 3 weeks ago 437MB
hello-world latest d1165f221234 5 months ago 13.3kB
snagurum@snagurum-VirtualBox:~$ docker run -d --name first-mongo -p 27017:27017 --volume /mongodata:/data/db mongo:4.4.8
ba1c567531ff51fc271586e2c202f6f385486f8ecc955e461df5a08aff19fad5
snagurum@snagurum-VirtualBox:~$ docker container ls
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
ba1c567531ff mongo:4.4.8 "docker-entrypoint.s..." 6 seconds ago Up 5 seconds 0.0.0.0:27017->27017/tcp, :::27017->27017/tcp first-mongo
snagurum@snagurum-VirtualBox:~$ docker exec -it first-mongo sh
# mongo
MongoDB shell version v4.4.8
connecting to: mongod://127.0.0.1:27017/?compressors=disabled&gssapiServiceName=mongod
Implicit session: session { "id" : UUID("a1d00570-8cd8-452d-8dda-f9d1ba29f20a") }
MongoDB server version: 4.4.8
Welcome to the MongoDB shell.
For interactive help, type "help".
For more comprehensive documentation, see
https://docs.mongodb.com/
Questions? Try the MongoDB Developer Community Forums
https://community.mongodb.com

---
The server generated these startup warnings when booting:
 2021-08-28T18:20:24.861+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See http://dochub.mongodb.org/core/prodnotes-filesystem
 2021-08-28T18:20:25.080+00:00: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted
---
---
Enable MongoDB's free cloud-based monitoring service, which will then receive and display
metrics about your deployment (disk utilization, CPU, operation statistics, etc).

The monitoring data will be available on a MongoDB website with a unique URL accessible to you
and anyone you share the URL with. MongoDB may use this information to make product
improvements and to suggest MongoDB products and deployment options to you.

To enable free monitoring, run the following command: db.enableFreeMonitoring()
To permanently disable this reminder, run the following command: db.disableFreeMonitoring()

---
> show dbs;
admin 0.000GB
config 0.000GB
local 0.000GB
>
```

Installing NodeJs, Npm

```
ubuntu [Running] - Oracle VM VirtualBox
Sat 23:59
snagurum@snagurum-VirtualBox: ~

Activities Terminal
File Edit View Search Terminal Help

snagurum@snagurum-VirtualBox:~$ curl -fsSL https://deb.nodesource.com/setup_14.x | sudo -E bash -
## Installing the NodeSource Node.js 14.x repo...

## Populating apt-get cache...
+ apt-get update
Hit:1 http://in.archive.ubuntu.com/ubuntu bionic InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu bionic-updates InRelease
Hit:3 https://download.docker.com/linux/ubuntu bionic InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu bionic-backports InRelease
Get:5 http://security.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Fetched 88.7 kB in 1s (64.4 kB/s)
Reading package lists... Done

## Confirming "bionic" is supported...
+ curl -sLf -o /dev/null 'https://deb.nodesource.com/node_14.x/dists/bionic/Release'

## Adding the NodeSource signing key to your keyring...
+ curl -s https://deb.nodesource.com/gpgkey/nodesource.gpg.key | gpg --dearmor | tee /usr/share/keyrings/nodesource.gpg >/dev/null
```

```
ubuntu [Running] - Oracle VM VirtualBox
Sun 00:00
snagurum@snagurum-VirtualBox: ~

File Edit View Search Terminal Help

snagurum@snagurum-VirtualBox:~$ sudo apt-get install -y nodejs
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  python3-click python3-colorama
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  libpython-stdlib python python-minimal python2.7 python2.7-minimal
Suggested packages:
  python-doc python-tk python2.7-doc binfmt-support
The following NEW packages will be installed:
  libpython-stdlib nodejs python python-minimal python2.7 python2.7-minimal
0 upgraded, 6 newly installed, 0 to remove and 1 not upgraded.
Need to get 26.8 MB of archives.
After this operation, 126 MB of additional disk space will be used.
Get:1 https://deb.nodesource.com/node_14.x bionic/main amd64 nodejs amd64 14.17.5-1nodesource1 [25.0 MB]
Get:2 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 python2.7-minimal amd64 2.7.17-1-18.04ubuntu1.6 [1,291 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 python-minimal amd64 2.7.15-rc1-1 [28.1 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 python2.7 amd64 2.7.17-1-18.04ubuntu1.6 [248 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libpython-stdlib amd64 2.7.15-rc1-1 [7,620 B]
Get:6 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 python amd64 2.7.15-rc1-1 [140 kB]
Fetched 26.8 MB in 27s (983 kB/s)
Selecting previously unselected package python2.7-minimal.
(Reading database ... 164961 files and directories currently installed.)
Preparing to unpack .../python2.7-minimal_2.7.17-1-18.04ubuntu1.6_amd64.deb ...
Unpacking python2.7-minimal (2.7.17-1-18.04ubuntu1.6) ...
Selecting previously unselected package python-minimal.
Preparing to unpack .../python-minimal_2.7.15-rc1-1_amd64.deb ...
Unpacking python-minimal (2.7.15-rc1-1) ...
Selecting previously unselected package python2.7.
Preparing to unpack .../python2.7_2.7.17-1-18.04ubuntu1.6_amd64.deb ...
Unpacking python2.7 (2.7.17-1-18.04ubuntu1.6) ...
Selecting previously unselected package libpython-stdlib:amd64.
Preparing to unpack .../libpython-stdlib_2.7.15-rc1-1_amd64.deb ...
Unpacking libpython-stdlib:amd64 (2.7.15-rc1-1) ...
Setting up python2.7-minimal (2.7.17-1-18.04ubuntu1.6) ...
Linking and byte-compiling packages for runtime python2.7...
Setting up python-minimal (2.7.15-rc1-1) ...
Selecting previously unselected package python.
(Reading database ... 165018 files and directories currently installed.)
Preparing to unpack .../python_2.7.15-rc1-1_amd64.deb ...
Unpacking python (2.7.15-rc1-1) ...
Selecting previously unselected package nodejs.
Preparing to unpack .../nodejs_14.17.5-1nodesource1_amd64.deb ...
Unpacking nodejs (14.17.5-1nodesource1) ...
```

```
Need to get 26.8 MB of archives.
After this operation, 126 MB of additional disk space will be used.
Get:1 https://deb.nodesource.com/node_14.x bionic/main amd64 nodejs amd64 14.17.5-1nodesource1 [25.0 MB]
Get:2 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 python2.7-minimal amd64 2.7.17-1-18.04ubuntu1.6 [1,291 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 python-minimal amd64 2.7.15-rc1-1 [28.1 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu bionic-updates/main amd64 python2.7 amd64 2.7.17-1-18.04ubuntu1.6 [248 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 libpython-stdlib amd64 2.7.15-rc1-1 [7,620 B]
Get:6 http://in.archive.ubuntu.com/ubuntu bionic/main amd64 python amd64 2.7.15-rc1-1 [140 kB]
Fetched 26.8 MB in 27s (983 kB/s)
Selecting previously unselected package python2.7-minimal.
(Reading database ... 164961 files and directories currently installed.)
Preparing to unpack .../python2.7-minimal_2.7.17-1-18.04ubuntu1.6_amd64.deb ...
Unpacking python2.7-minimal (2.7.17-1-18.04ubuntu1.6) ...
Selecting previously unselected package python-minimal.
Preparing to unpack .../python-minimal_2.7.15-rc1-1_amd64.deb ...
Unpacking python-minimal (2.7.15-rc1-1) ...
Selecting previously unselected package python2.7.
Preparing to unpack .../python2.7_2.7.17-1-18.04ubuntu1.6_amd64.deb ...
Unpacking python2.7 (2.7.17-1-18.04ubuntu1.6) ...
Selecting previously unselected package libpython-stdlib:amd64.
Preparing to unpack .../libpython-stdlib_2.7.15-rc1-1_amd64.deb ...
Unpacking libpython-stdlib:amd64 (2.7.15-rc1-1) ...
Setting up python2.7-minimal (2.7.17-1-18.04ubuntu1.6) ...
Linking and byte-compiling packages for runtime python2.7...
Setting up python-minimal (2.7.15-rc1-1) ...
Selecting previously unselected package python.
(Reading database ... 165018 files and directories currently installed.)
Preparing to unpack .../python_2.7.15-rc1-1_amd64.deb ...
Unpacking python (2.7.15-rc1-1) ...
Selecting previously unselected package nodejs.
Preparing to unpack .../nodejs_14.17.5-1nodesource1_amd64.deb ...
Unpacking nodejs (14.17.5-1nodesource1) ...
Setting up nodejs (14.17.5-1nodesource1) ...
Setting up python2.7 (2.7.17-1-18.04ubuntu1.6) ...
Setting up libpython-stdlib:amd64 (2.7.15-rc1-1) ...
Setting up python (2.7.15-rc1-1) ...
Processing triggers for desktop-file-utils (0.23-1ubuntu3.18.04.2) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for gnome-menus (3.13.3-11ubuntu1.1) ...
Processing triggers for mime-support (3.60ubuntu1) ...
snagurum@snagurum-VirtualBox:~$ node -v
v14.17.5
snagurum@snagurum-VirtualBox:~$ npm -v
6.14.14
snagurum@snagurum-VirtualBox:~$
```


Installing VS-Code & Docker Plugin

The screenshot shows a terminal window with the following content:

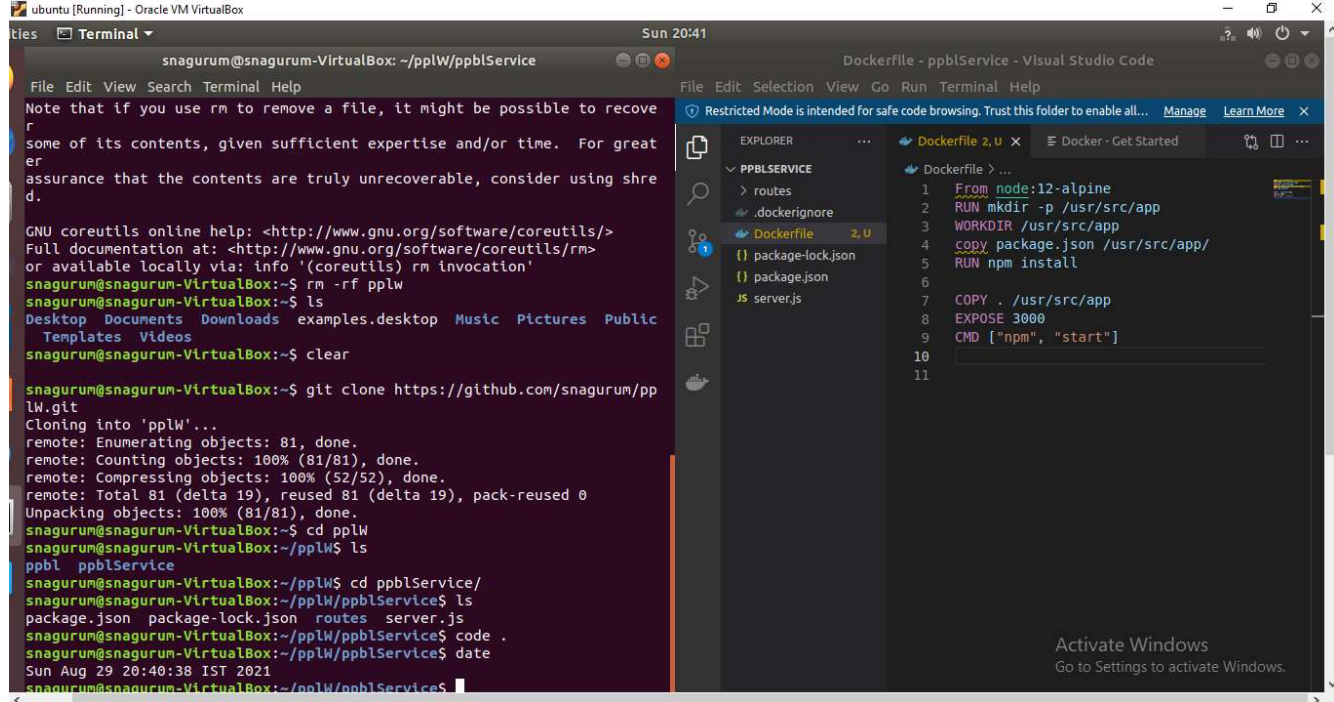
```
ubuntu [Running] - Oracle VM VirtualBox
Activities Firefox Web Browser
Sun 00:03
Welcome to Firefox x Firefox Privacy Notice x Install Docker Compose x distributions/README.m x Running Visual Studio Co x
https://code.visualstudio.com/docs/setup/linux
Visual Studio Code Docs Updates Blog API Extensions FAQ Learn
Overview
SETUP
Overview
Linux
macOS
Windows
Raspberry Pi
Network
Additional Components
GET STARTED
USER GUIDE
LANGUAGES
NODEJS / JAVASCRIPT
TYPESCRIPT
PYTHON
JAVA
C++
CONTAINERS
DATA SCIENCE
AZURE
You can install it by running:
sudo snap install --classic code # or code-insiders
Once installed, the Snap daemon will take care of automatically updating VS Code in the background. You will get an in-product update notification whenever a new update is available.
Note: If snap isn't available in your Linux distribution, please check the following Installing snapd guide, which can help you get that set up.
Learn more about snaps from the official Snap Documentation.
Debian and Ubuntu based distributions
The easiest way to install Visual Studio Code for Debian/Ubuntu based distributions is to download and install the .deb package (64-bit), either through the graphical software center if it's available, or through the command line with:
sudo apt install ./<file>.deb
# If you're on an older Linux distribution, you will need to run this instead:
# sudo dpkg -i <file>.deb
# sudo apt-get install -f # Install dependencies
Note that other binaries are also available on the VS Code download page.
Installing the .deb package will automatically install the apt repository and signing key to enable auto-updating using the system's package manager. Alternatively, the repository and key can also be installed manually with the following script:
wget -qO- https://packages.microsoft.com/keys/microsoft.asc | gpg --dearmor > packages.microsoft.gpg
sudo install -o root -g root -m 644 packages.microsoft.gpg /etc/apt/trusted.gpg.d/
sudo sh -c 'echo "deb [arch=amd64,arm64,armhf signed-by=/etc/apt/trusted.gpg.d/packages.micro
```

The screenshot shows a terminal window with the following content:

```
ubuntu [Running] - Oracle VM VirtualBox
Activities Visual Studio Code
Sun 00:07
snagurum@snagurum-VirtualBox: ~/Downloads
Extension: Docker - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXTENSIONS
Search Extensions in Marketplace
INSTALLED
Docker
Makes it easy to create, manage, and debug containerized applications.
POPULAR
Python
IntelliSense (Pylance), Lint...
Microsoft
C/C++
C/C++ IntelliSense, debug...
Microsoft
Jupyter
Jupyter notebook support, ...
Microsoft
ESLint
Integrates ESLint JavaScrip...
Dirk Baumeier
Prettier - C...
Code formatter using prett...
Prettier
Live Server
Launch a development loc...
Ritwick Dey
Pylance
RECOMMENDED
Remote - Co...
Open any folder or reposit...
Microsoft
Docker
Makes it easy to create, ma...
Microsoft
Docker v1.16.0
Microsoft | 10,369,394 | ★★★★★ (63)
Makes it easy to create, manage, and debug containerized applications.
This extension is enabled globally.
This extension is recommended because you have Docker installed.
Details Feature Contributions Changelog Dependencies
Docker for Visual Studio Code | Visual Studio Marketplace | v1.16.0
Installs 10.37M Azure Pipelines succeeded
Categories
Programming
Languages
Linters
Azure
Resources
Marketplace
Repository
License
More Info
Released 14/11/2015, on 01:14:30
Last 16/08/2021,
Help improve VS Code by allowing Microsoft to collect usage data. Read our privacy statement and learn how to opt out.
Read More
```

Part – 2

creating docker file for backend service(ppblService):



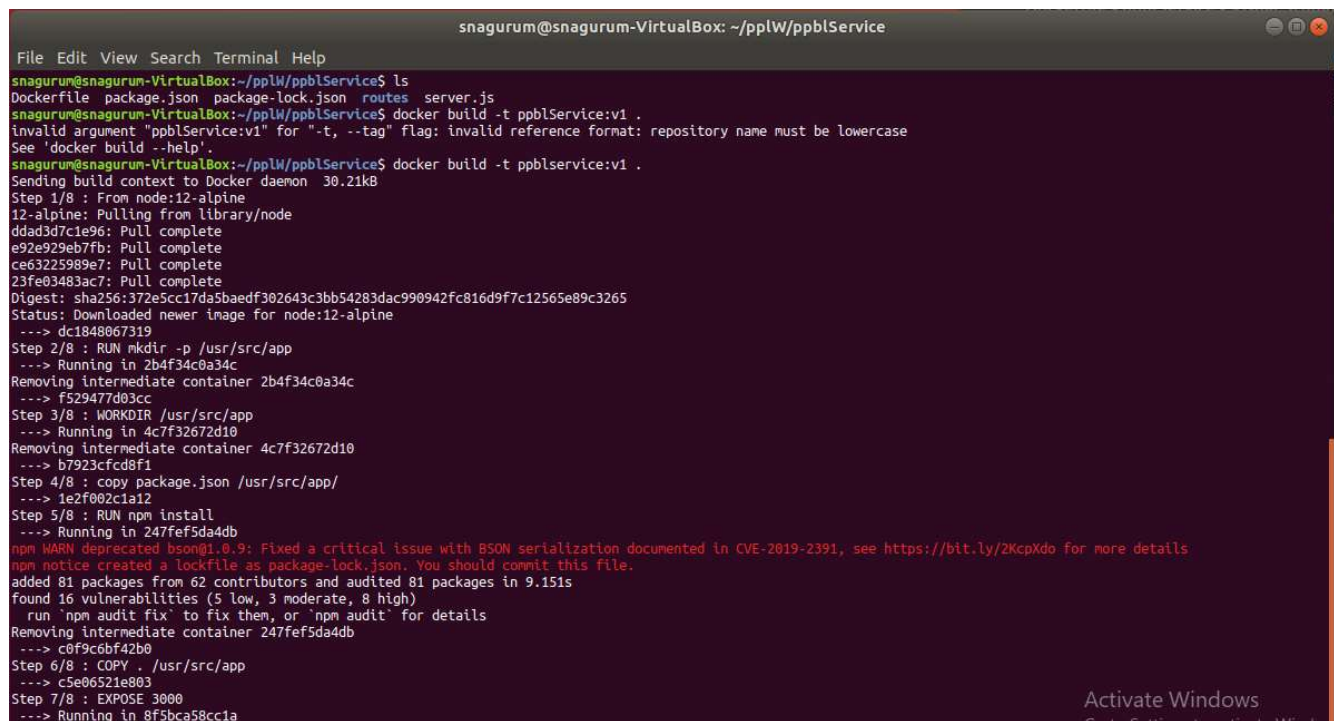
The screenshot shows a terminal window and a Visual Studio Code editor. The terminal window is titled 'snagurum@snagurum-VirtualBox: ~/pplw/ppblService' and shows the following commands and output:

```
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ rm -rf pplw
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ ls
Desktop Documents Downloads examples.desktop Music Pictures Public
Templates Videos
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ clear
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ git clone https://github.com/snagurum/pp
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ git clone https://github.com/snagurum/pp
Cloning into 'pplw'...
remote: Enumerating objects: 81, done.
remote: Counting objects: 100% (81/81), done.
remote: Compressing objects: 100% (52/52), done.
remote: Total 81 (delta 19), reused 81 (delta 19), pack-reused 0
Unpacking objects: 100% (81/81), done.
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ cd pplw
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ ls
ppbl ppblService
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ cd ppblService/
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ ls
package.json package-lock.json routes server.js
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ code .
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ date
Sun Aug 29 20:40:38 IST 2021
snagurum@snagurum-VirtualBox:~/pplw/ppblService$
```

The Visual Studio Code editor shows the 'Dockerfile - ppblService' file with the following content:

```
Dockerfile
1 From node:12-alpine
2 RUN mkdir -p /usr/src/app
3 WORKDIR /usr/src/app
4 COPY package.json /usr/src/app/
5 RUN npm install
6
7 COPY . /usr/src/app
8 EXPOSE 3000
9 CMD ["npm", "start"]
10
11
```

Building an image for backend-service ppblService.



The screenshot shows a terminal window titled 'snagurum@snagurum-VirtualBox: ~/pplw/ppblService' with the following commands and output:

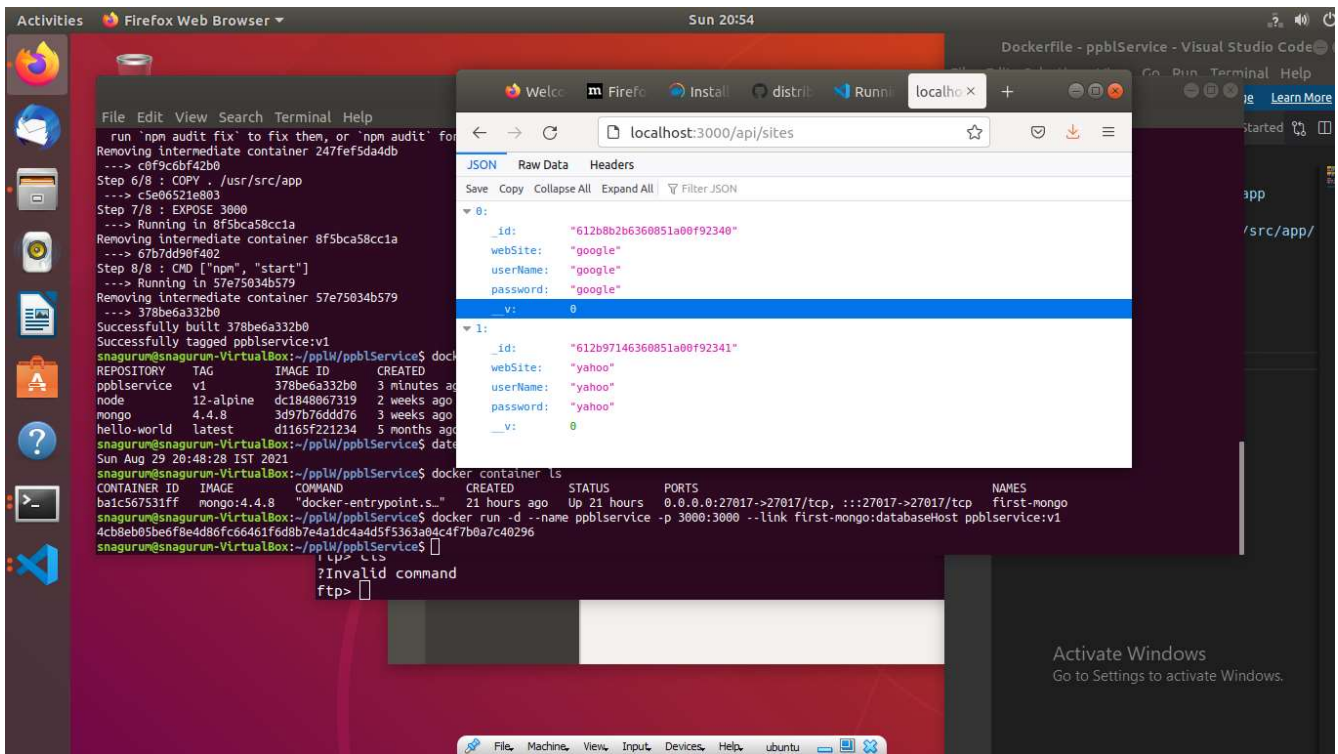
```
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ ls
Dockerfile package.json package-lock.json routes server.js
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ docker build -t ppblService:v1 .
invalid argument "ppblService:v1" for "-t, --tag" flag: repository name must be lowercase
See 'docker build --help'.
snagurum@snagurum-VirtualBox:~/pplw/ppblService$ docker build -t ppblservice:v1 .
Sending build context to Docker daemon 30.21kB
Step 1/8 : From node:12-alpine
12-alpine: Pulling from library/node
ddad3d7c1e96: Pull complete
e92e929eb7fb: Pull complete
ce63225989e7: Pull complete
23fe03483ac7: Pull complete
Digest: sha256:372e5cc17da5baedf302643c3bb54283dac990942fc816d9f7c12565e89c3265
Status: Downloaded newer image for node:12-alpine
----> dc1848067319
Step 2/8 : RUN mkdir -p /usr/src/app
----> Running in 2b4f34c0a34c
Removing intermediate container 2b4f34c0a34c
----> f529477d03cc
Step 3/8 : WORKDIR /usr/src/app
----> Running in 4c7f32672d10
Removing intermediate container 4c7f32672d10
----> b7923cfd8f1
Step 4/8 : COPY package.json /usr/src/app/
----> 1e2f002c1a12
Step 5/8 : RUN npm install
----> Running in 247fef5da4db
npm WARN deprecated bson@1.0.9: Fixed a critical issue with BSON serialization documented in CVE-2019-2391, see https://bit.ly/2KcpXdo for more details
npm notice created a lockfile as package-lock.json. You should commit this file.
added 81 packages from 62 contributors and audited 81 packages in 9.151s
found 16 vulnerabilities (5 low, 3 moderate, 8 high)
run 'npm audit fix' to fix them, or 'npm audit' for details
Removing intermediate container 247fef5da4db
----> c0f9c6bf42b0
Step 6/8 : COPY . /usr/src/app
----> c5e06521e003
Step 7/8 : EXPOSE 3000
----> Running in 8f5bca58cc1a
```

Running the ppblService in docker container.


```
snagurum@snagurum-VirtualBox: ~/pplW/ppblService
File Edit View Search Terminal Help
---> c0f9c6bf42b0
Step 6/8 : COPY . /usr/src/app
---> c5e06521e803
Step 7/8 : EXPOSE 3000
---> Running in 8f5bca58cc1a
Removing intermediate container 8f5bca58cc1a
---> 67b7dd90f402
Step 8/8 : CMD ["npm", "start"]
---> Running in 57e75034b579
Removing intermediate container 57e75034b579
---> 378be6a332b0
Successfully built 378be6a332b0
Successfully tagged ppblservice:v1
snagurum@snagurum-VirtualBox:~/pplW/ppblService$ docker image ls
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
ppblservice    v1        378be6a332b0   3 minutes ago  103MB
node           12-alpine dc1848067319   2 weeks ago    88.9MB
mongo          4.4.8     3d97b76ddd76   3 weeks ago    437MB
hello-world    latest    d1165f221234   5 months ago   13.3kB
snagurum@snagurum-VirtualBox:~/pplW/ppblService$ date
Sun Aug 29 20:48:28 IST 2021
snagurum@snagurum-VirtualBox:~/pplW/ppblService$
```

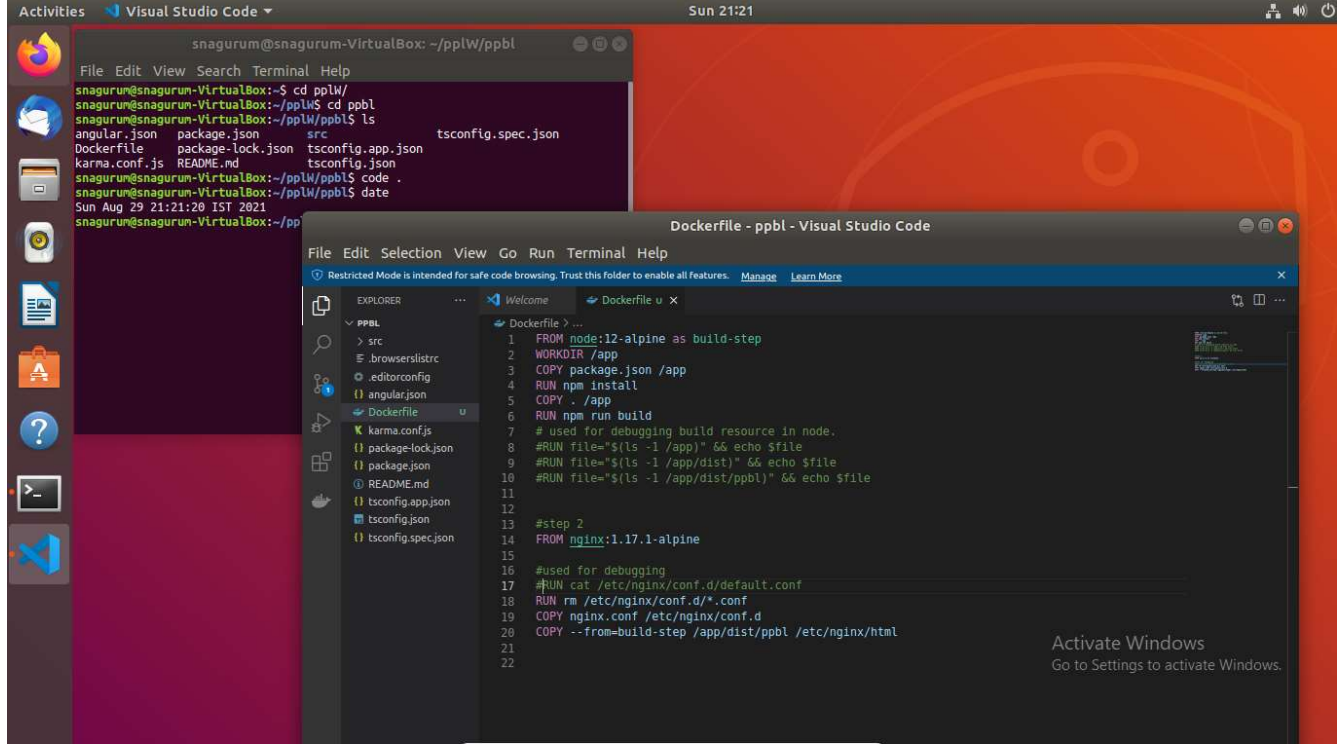
```
snagurum@snagurum-VirtualBox: ~/pplW/ppblService
File Edit View Search Terminal Help
run 'npm audit fix' to fix them, or 'npm audit' for details
Removing intermediate container 247fef5da4db
---> c0f9c6bf42b0
Step 6/8 : COPY . /usr/src/app
---> c5e06521e803
Step 7/8 : EXPOSE 3000
---> Running in 8f5bca58cc1a
Removing intermediate container 8f5bca58cc1a
---> 67b7dd90f402
Step 8/8 : CMD ["npm", "start"]
---> Running in 57e75034b579
Removing intermediate container 57e75034b579
---> 378be6a332b0
Successfully built 378be6a332b0
Successfully tagged ppblservice:v1
snagurum@snagurum-VirtualBox:~/pplW/ppblService$ docker image ls
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
ppblservice    v1        378be6a332b0   3 minutes ago  103MB
node           12-alpine dc1848067319   2 weeks ago    88.9MB
mongo          4.4.8     3d97b76ddd76   3 weeks ago    437MB
hello-world    latest    d1165f221234   5 months ago   13.3kB
snagurum@snagurum-VirtualBox:~/pplW/ppblService$ date
Sun Aug 29 20:48:28 IST 2021
snagurum@snagurum-VirtualBox:~/pplW/ppblService$ docker container ls
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
ba1c567531ff  mongo:4.4.8   "docker-entrypoint.s..." 21 hours ago   Up 21 hours   0.0.0.0:27017->27017/tcp, :::27017->27017/tcp  first-mongo
snagurum@snagurum-VirtualBox:~/pplW/ppblService$ docker run -d --name ppblservice -p 3000:3000 --link first-mongo:databaseHost ppblservice:v1
4cb8eb05be6f8e4d86fc66461f6d8b7e4a1dc4a4d5f5363a04c4f7b0a7c40296
snagurum@snagurum-VirtualBox:~/pplW/ppblService$
```

Testing the backend-service ppblService



Part – 3

Building docker file for frontend app(ppbl)

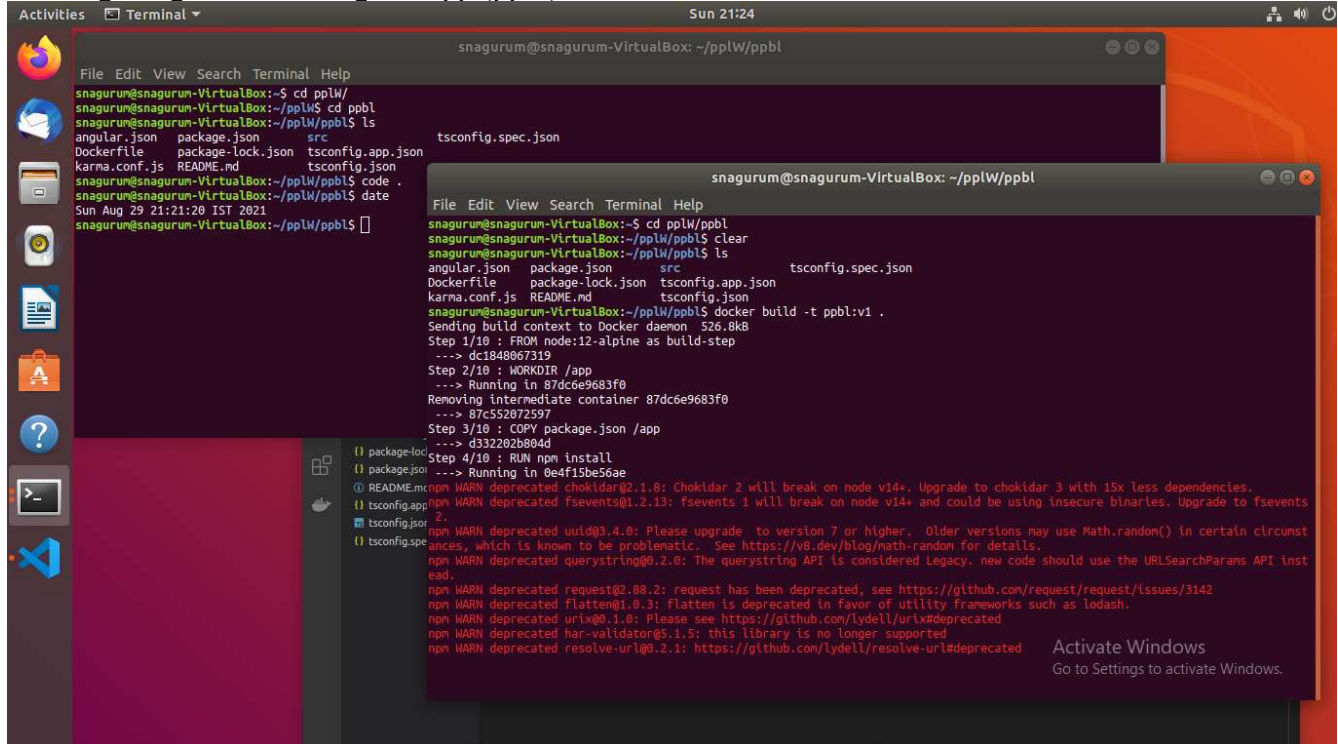


The screenshot shows the Visual Studio Code interface with a Dockerfile open in the editor. The Dockerfile contains the following instructions:

```
1 FROM node:12-alpine as build-step
2 WORKDIR /app
3 COPY package.json /app
4 RUN npm install
5 COPY . /app
6 RUN npm run build
7 # used for debugging build resource in node.
8 #RUN file=$(ls -l /app)" && echo $file
9 #RUN file=$(ls -l /app/dist)" && echo $file
10 #RUN file=$(ls -l /app/dist/ppbl)" && echo $file
11
12
13 #step 2
14 FROM nginx:1.17.1-alpine
15
16 #used for debugging
17 #RUN cat /etc/nginx/conf.d/default.conf
18 RUN rm /etc/nginx/conf.d/*.conf
19 COPY nginx.conf /etc/nginx/conf.d
20 COPY --from=build-step /app/dist/ppbl /etc/nginx/html
21
22
```

The Explorer sidebar on the left shows the file structure of the project, including files like angular.json, package.json, src, tsconfig.spec.json, Dockerfile, package-lock.json, karma.conf.js, README.md, tsconfig.app.json, and tsconfig.json.

building image frontend angular app (ppbl)



The screenshot shows a terminal window with the following commands and output:

```
snagurum@snagurum-VirtualBox: ~/ppbl/ppbl
snagurum@snagurum-VirtualBox:~$ cd ppbl/
snagurum@snagurum-VirtualBox:~/ppbl$ cd ppbl
snagurum@snagurum-VirtualBox:~/ppbl$ ls
angular.json  package.json  src  tsconfig.spec.json
Dockerfile    package-lock.json  tsconfig.app.json
karma.conf.js  README.md  tsconfig.json
snagurum@snagurum-VirtualBox:~/ppbl/ppbl$ code .
snagurum@snagurum-VirtualBox:~/ppbl/ppbl$ date
Sun Aug 29 21:21:20 IST 2021
snagurum@snagurum-VirtualBox:~/ppbl/ppbl$
```

The Docker build process is shown with the following steps:

```
Step 1/10 : FROM node:12-alpine as build-step
--> dc1848867319
Step 2/10 : WORKDIR /app
--> Running in 87dc6e9683f0
Removing intermediate container 87dc6e9683f0
--> 87c552072597
Step 3/10 : COPY package.json /app
--> d332202b804d
Step 4/10 : RUN npm install
--> Running in 0e4f15be56ae
npm WARN deprecated chokidar@2.1.8: Chokidar 2 will break on node v14+. Upgrade to chokidar 3 with 15x less dependencies.
npm WARN deprecated fsevents@1.2.13: fsevents 1 will break on node v14+ and could be using insecure binaries. Upgrade to fsevents 2.
npm WARN deprecated uid@0.3.4: Please upgrade to version 7 or higher. Older versions may use Math.random() in certain circumstances, which is known to be problematic. See https://v8.dev/blog/math-random for details.
npm WARN deprecated querystring@0.2.0: The querystring API is considered Legacy. new code should use the URLSearchParams API instead.
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.com/request/request/issues/3142
npm WARN deprecated flatten@1.0.3: flatten is deprecated in favor of utility frameworks such as lodash.
npm WARN deprecated url@0.11.0: Please see https://github.com/lydell/url#deprecated
npm WARN deprecated har-validator@5.1.5: this library is no longer supported
npm WARN deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecated
```

```
Activities Terminal ▾ Sun 21:25
snagurum@snagurum-VirtualBox: ~/pplw/ppbl
File Edit View Search Terminal Help
snagurum@snagurum-VirtualBox:~$ cd pplw/
snagurum@snagurum-VirtualBox:~/pplw$ cd ppbl
snagurum@snagurum-VirtualBox:~/pplw/ppbl$ ls
angular.json  package.json  src
Dockerfile    package-lock.json  tsconfig.js
karma.conf.js  README.md     tsconfig
snagurum@snagurum-VirtualBox:~/pplw/ppbl$ cat
snagurum@snagurum-VirtualBox:~/pplw/ppbl$
Sun Aug 29 21:21:20 IST 2021
snagurum@snagurum-VirtualBox:~/pplw/ppbl$

node-gyp-build
> core-js@3.16.0 postinstall /app/node_modules/core-js
node -e "try(require('..postinstall'))catch(e){}"
Thank you for using core-js ( https://github.com/zloirock/core-js ) for polyfilling JavaScript standard library!
The project needs your help! Please consider supporting of core-js:
> https://opencollective.com/core-js
> https://patreon.com/zloirock
> https://paypal.me/zloirock
> bitcoin: bc1qlea754qtsnj2rayg0lthvza9fau63ux0fstcz

Also, the author of core-js ( https://github.com/zloirock ) is looking for a good job -)

> esbuild@0.12.17 postinstall /app/node_modules/esbuild
node install.js

> @angular/cli@12.2.3 postinstall /app/node_modules/@angular/cli
node ./bin/postinstall/scrip.js

npm notice created a lockfile as package-lock.json. You should commit this file.
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@2.3.2 (node_modules/chokidar/node_modules/fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@2.3.2: wanted {"os":"darwin","arch":"any"} (current: {"os":"linux","arch":"x64"})
npm WARN optional SKIPPING OPTIONAL DEPENDENCY: fsevents@1.2.7 (node_modules/webpack-dev-server/node_modules/chokidar/node_modules/fsevents):
npm WARN notsup SKIPPING OPTIONAL DEPENDENCY: Unsupported platform for fsevents@1.2.7: wanted {"os":"darwin","arch":"any"} (current: {"os":"linux","arch":"x64"})
npm WARN ajv-keywords@3.5.2 requires a peer of ajv@6.0.1 but none is installed. You must install peer dependencies yourself.
> added 1312 packages from 1251 contributors and audited 1317 packages in 119.543s
> 87 packages are looking for funding
  run `npm fund` for details
> found 1 moderate severity vulnerability
  run `npm audit fix` to fix them, or `npm audit` for details
Removing intermediate container 0e4f15be56ae
--> a5679252ef7
Step 5/10 : COPY ./app
--> aab5f6f32fc
Step 6/10 : RUN npm run build
--> Running in 3a1cb2684d1

> pplw@0.0.0 build /app
ng build

- Generating browser application bundles (phase: setup)...
Compiling @angular/core : es2015 as esm2015
Compiling @angular/common : es2015 as esm2015
Compiling @angular/platform-browser : es2015 as esm2015
Compiling @angular/router : es2015 as esm2015
Compiling @angular/platform-browser-dynamic : es2015 as esm2015
Compiling @angular/common/http : es2015 as esm2015
✓ Browser application bundle generation complete.
✓ Copying assets...
✓ Copying assets complete.
✓ Generating index.html...
✓ Index.html generation complete.

Initial Chunk Files | Names | Size
├─ main.180d7d30102b57d4e710.js | main | 209.25 kB
├─ polyfills.ba428337ebc2f4e1ca44.js | polyfills | 36.19 kB
├─ runtime.357c00833287dda21691.js | runtime | 1.01 kB
├─ styles.11dcf8e0d1a0e931b73c.css | styles | 0 bytes
└─ Initial Total | 246.45 kB

Build at: 2021-08-29T15:55:43.916Z - Hash: eb2a3cb873cf490a0916 - Time: 24366ms
Removing intermediate container 3a1cb2684d1
--> bf482e42f926
Step 7/10 : FROM nginx:1.17.1-alpine
1.17.1-alpine: Pulling from library/nginx
e7c96db7181b: Pull complete
3fb6217217ef: Pull complete
Digest: sha256:17d160318e9c0f9ba2c5ed49f53d69684da7fe3e019b855c352528d57be
Status: Downloaded newer image for nginx:1.17.1-alpine
--> ea1193fd3dde
Step 8/10 : RUN rm /etc/nginx/conf.d/*conf
--> Running in 103c5442c6fb
Removing intermediate container 103c5442c6fb
--> 94c875cfff
Step 9/10 : COPY nginx.conf /etc/nginx/conf.d
COPY failed: file not found in build context or excluded by .dockerignore: stat nginx.conf: file does not exist
snagurum@snagurum-VirtualBox:~/pplw/ppbl$
```

```
Activities Terminal ▾ Sun 21:26
snagurum@snagurum-VirtualBox: ~/pplw/ppbl
File Edit View Search Terminal Help
snagurum@snagurum-VirtualBox:~$ cd pplw/
snagurum@snagurum-VirtualBox:~/pplw$ cd ppbl
snagurum@snagurum-VirtualBox:~/pplw/ppbl$ ls
angular.json  package.json  src
Dockerfile    package-lock.json  tsconfig.js
karma.conf.js  README.md     tsconfig
snagurum@snagurum-VirtualBox:~/pplw/ppbl$ cat
snagurum@snagurum-VirtualBox:~/pplw/ppbl$
Sun Aug 29 21:21:20 IST 2021
snagurum@snagurum-VirtualBox:~/pplw/ppbl$

87 packages are looking for funding
run `npm fund` for details

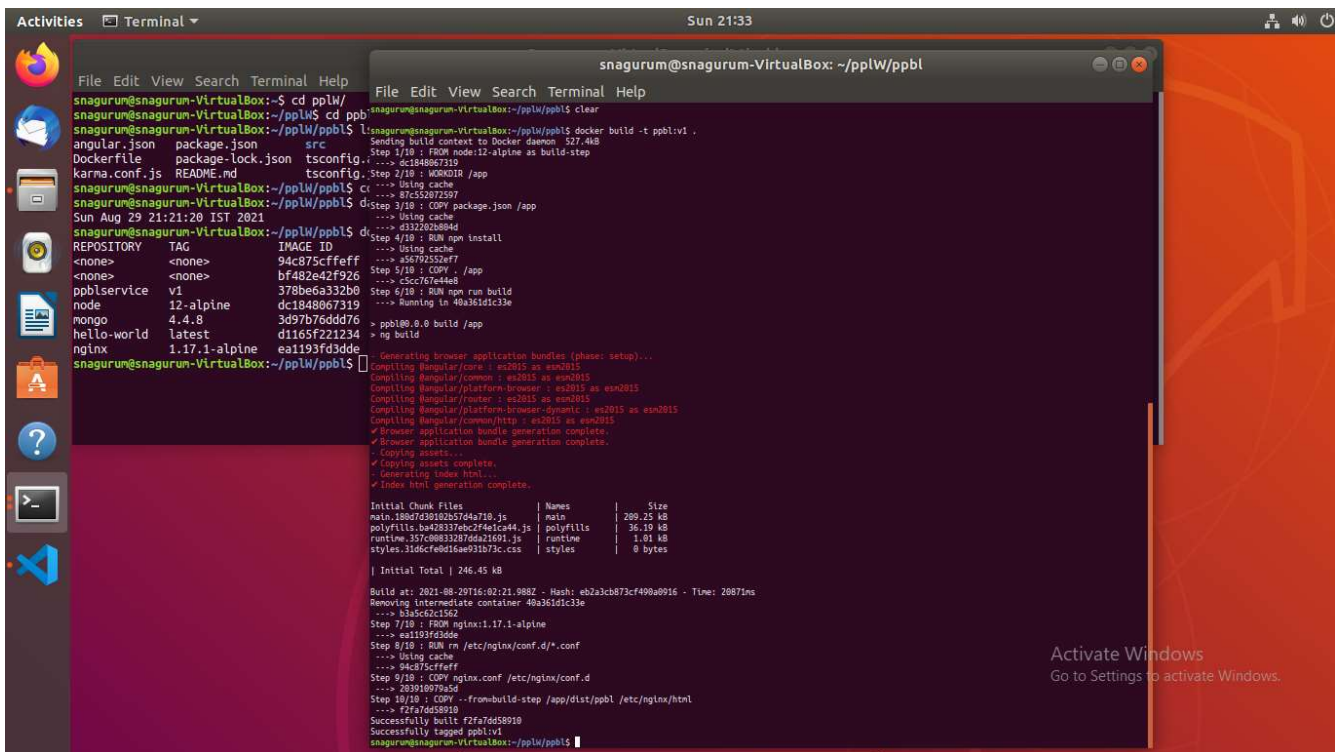
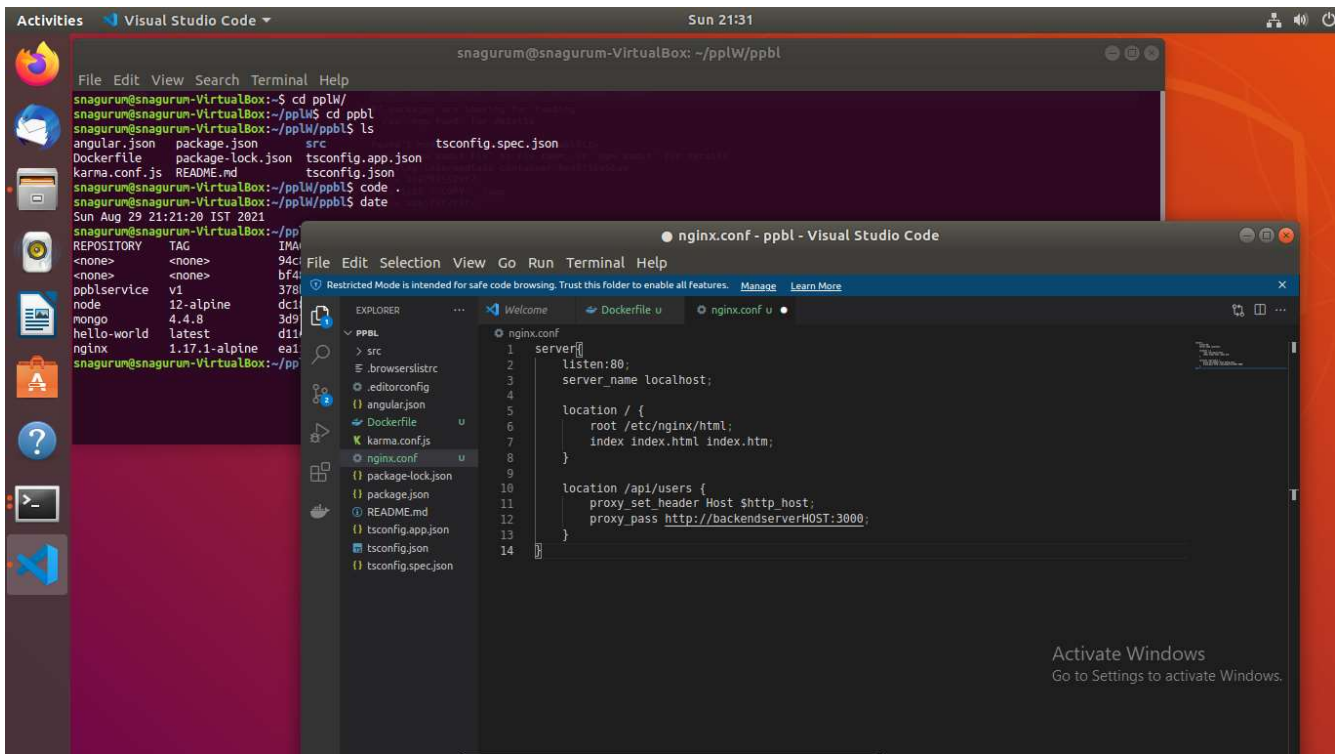
found 1 moderate severity vulnerability
run `npm audit fix` to fix them, or `npm audit` for details
Removing intermediate container 0e4f15be56ae
--> a5679252ef7
Step 5/10 : COPY ./app
--> aab5f6f32fc
Step 6/10 : RUN npm run build
--> Running in 3a1cb2684d1

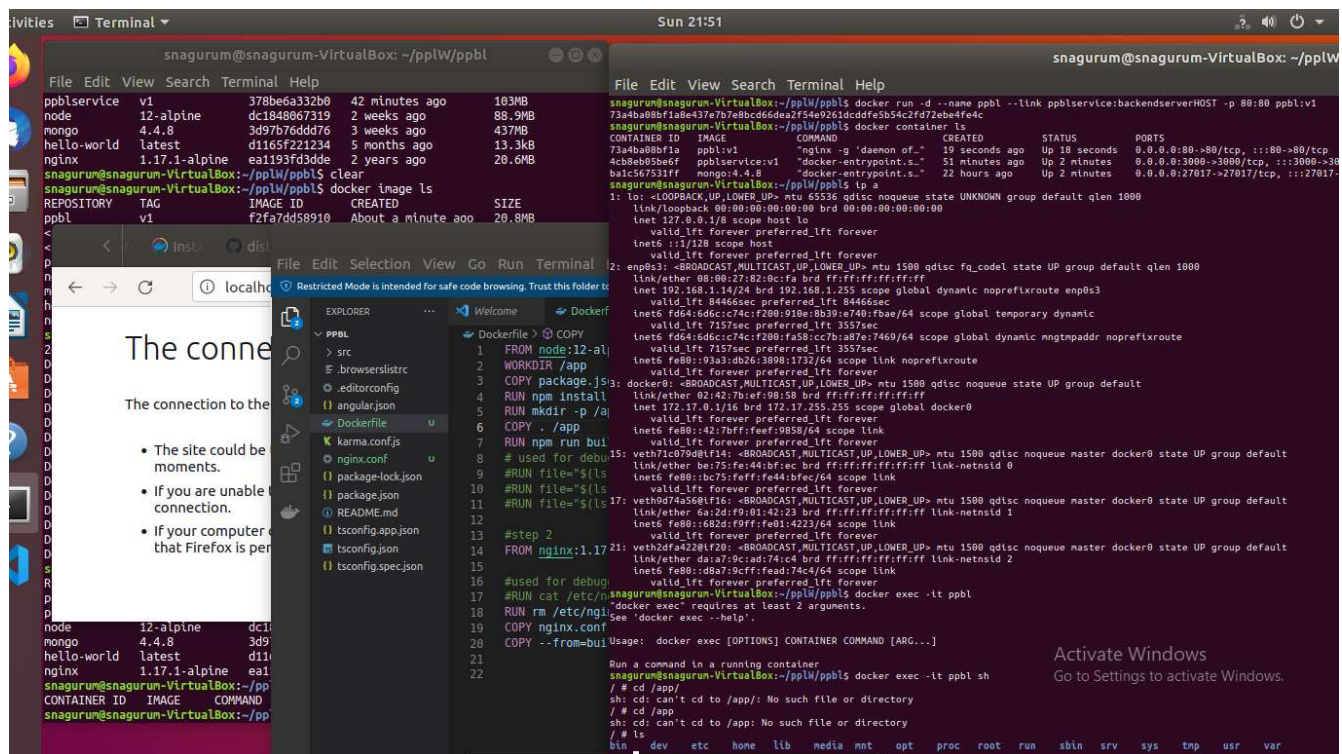
> pplw@0.0.0 build /app
ng build

- Generating browser application bundles (phase: setup)...
Compiling @angular/core : es2015 as esm2015
Compiling @angular/common : es2015 as esm2015
Compiling @angular/platform-browser : es2015 as esm2015
Compiling @angular/router : es2015 as esm2015
Compiling @angular/platform-browser-dynamic : es2015 as esm2015
Compiling @angular/common/http : es2015 as esm2015
✓ Browser application bundle generation complete.
✓ Copying assets...
✓ Copying assets complete.
✓ Generating index.html...
✓ Index.html generation complete.

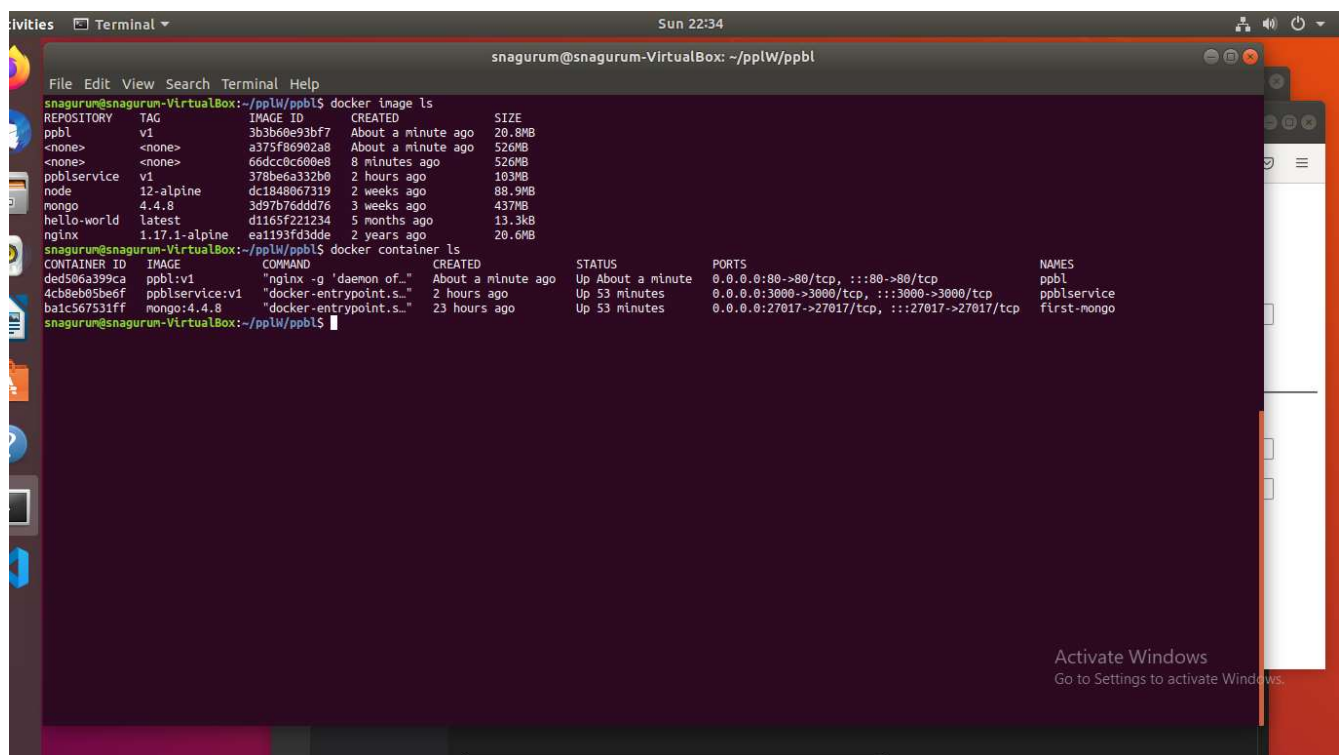
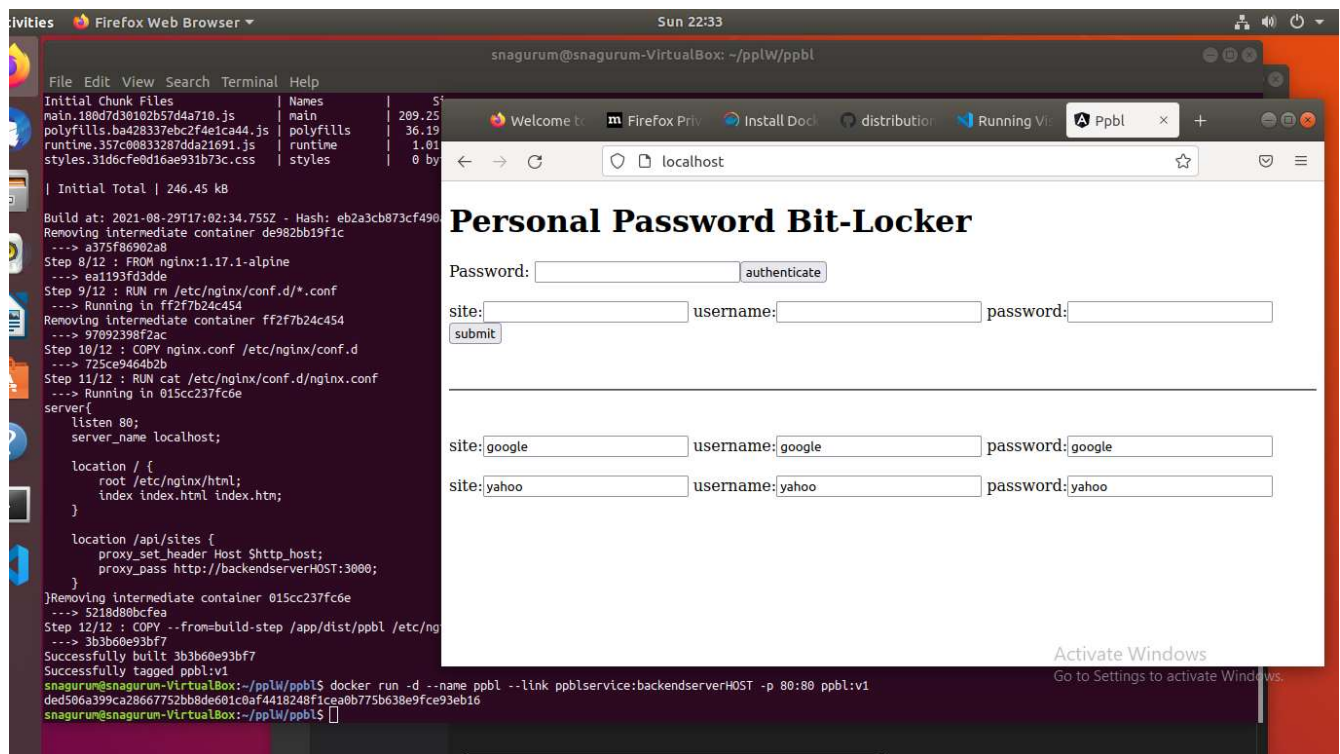
Initial Chunk Files | Names | Size
├─ main.180d7d30102b57d4e710.js | main | 209.25 kB
├─ polyfills.ba428337ebc2f4e1ca44.js | polyfills | 36.19 kB
├─ runtime.357c00833287dda21691.js | runtime | 1.01 kB
├─ styles.11dcf8e0d1a0e931b73c.css | styles | 0 bytes
└─ Initial Total | 246.45 kB

Build at: 2021-08-29T15:55:43.916Z - Hash: eb2a3cb873cf490a0916 - Time: 24366ms
Removing intermediate container 3a1cb2684d1
--> bf482e42f926
Step 7/10 : FROM nginx:1.17.1-alpine
1.17.1-alpine: Pulling from library/nginx
e7c96db7181b: Pull complete
3fb6217217ef: Pull complete
Digest: sha256:17d160318e9c0f9ba2c5ed49f53d69684da7fe3e019b855c352528d57be
Status: Downloaded newer image for nginx:1.17.1-alpine
--> ea1193fd3dde
Step 8/10 : RUN rm /etc/nginx/conf.d/*conf
--> Running in 103c5442c6fb
Removing intermediate container 103c5442c6fb
--> 94c875cfff
Step 9/10 : COPY nginx.conf /etc/nginx/conf.d
COPY failed: file not found in build context or excluded by .dockerignore: stat nginx.conf: file does not exist
snagurum@snagurum-VirtualBox:~/pplw/ppbl$
```

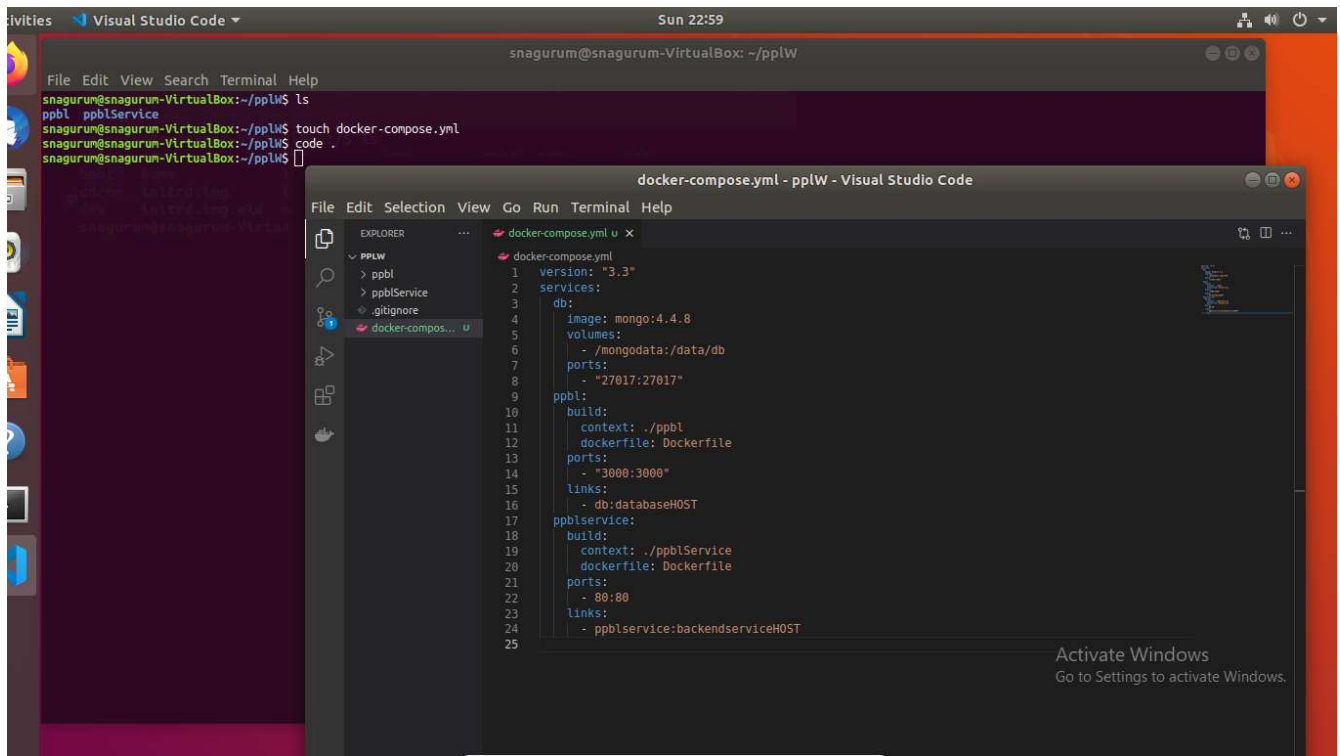





App did not launch. Nginx.conf did not get created and also had issues.



Creating DockerCompose file



final results:

