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| VIT Vidyalankar Institute of Technology ACCREDITED A+ BY NAAC | **Department of Information Technology** |

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| Semester | B.E. Semester VIII – INFT |
| Subject | DevOps Lab |
| Subject Professor In -charge | Prof. Rohit Barve |

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| Experiment Number | 3 | |
| Experiment Title | To Install and Configure Docker for creating Containers. | |
| Resources / Apparatus Required | Hardware:<br>● Intel Core i3/i5/i7 Processor with Intel VT-X support.<br>● 4 GB RAM<br>● 500 GB Hard disks | Software:<br>Operating systems: Linux |
| Theory | **DOCKER**<br>Docker is an open-source containerization platform. It enables developers to package applications into containers—standardized executable components combining application source code with the operating system (OS) libraries and dependencies required to run that code in any environment. Containers simplify delivery of distributed applications, and have become increasingly | |

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| | popular as organizations shift to cloud-native development and hybrid multicloud environments.<br><br>Developers can create containers without Docker, but the platform makes it easier, simpler, and safer to build, deploy and manage containers. Docker is essentially a toolkit that enables developers to build, deploy, run, update, and stop containers using simple commands and work-saving automation through a single API.<br><br>**CONTAINER**<br><br>Containers are made possible by process isolation and virtualization capabilities built into the Linux kernel. These capabilities – such as control *groups* (Cgroups) for allocating resources among processes, and *namespaces* for restricting a processes access or visibility into other resources or areas of the system – enable multiple application components to share the resources of a single instance of the host operating system in much the same way that a hypervisor enables multiple virtual machines (VMs) to share the CPU, memory and other resources of a single hardware server. |

| Steps | |
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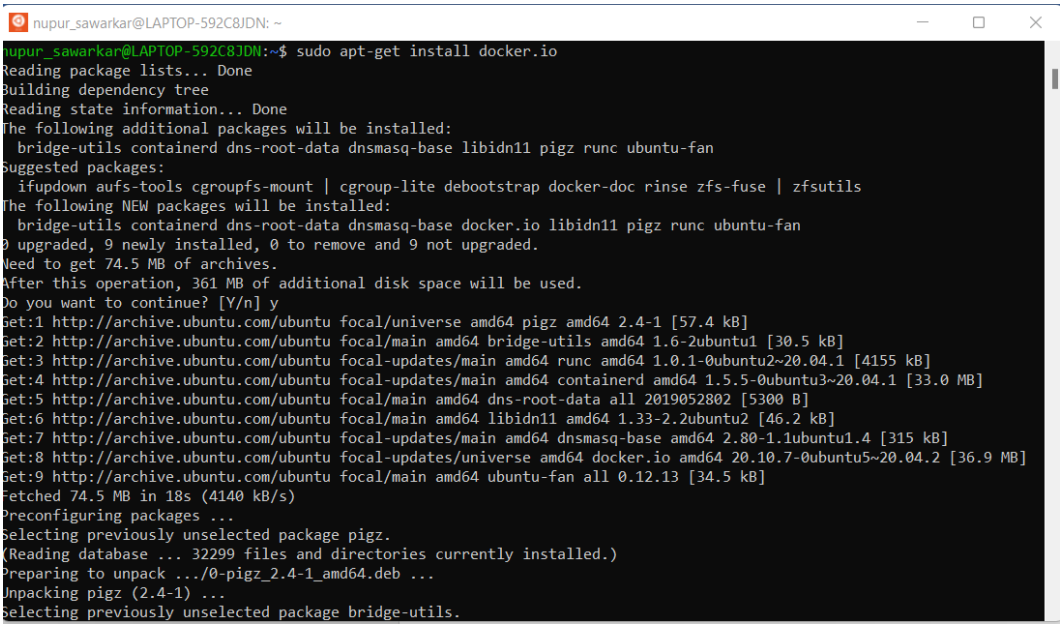
**sudo apt-get install docker.io**

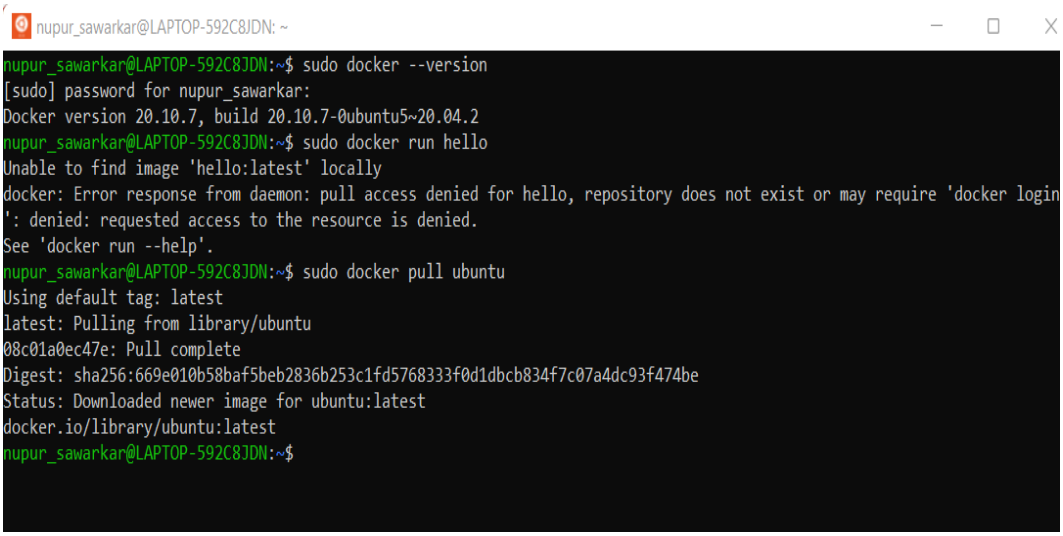
The sudo command is used to ensure that the command runs with root access.

Apt -get This method installs packages from the Internet on to the Linux system.




**sudo docker –version**

It is used to ensure the Docker command returns the Docker version installed.



**sudo docker pull ubuntu**

**sudo docker images**

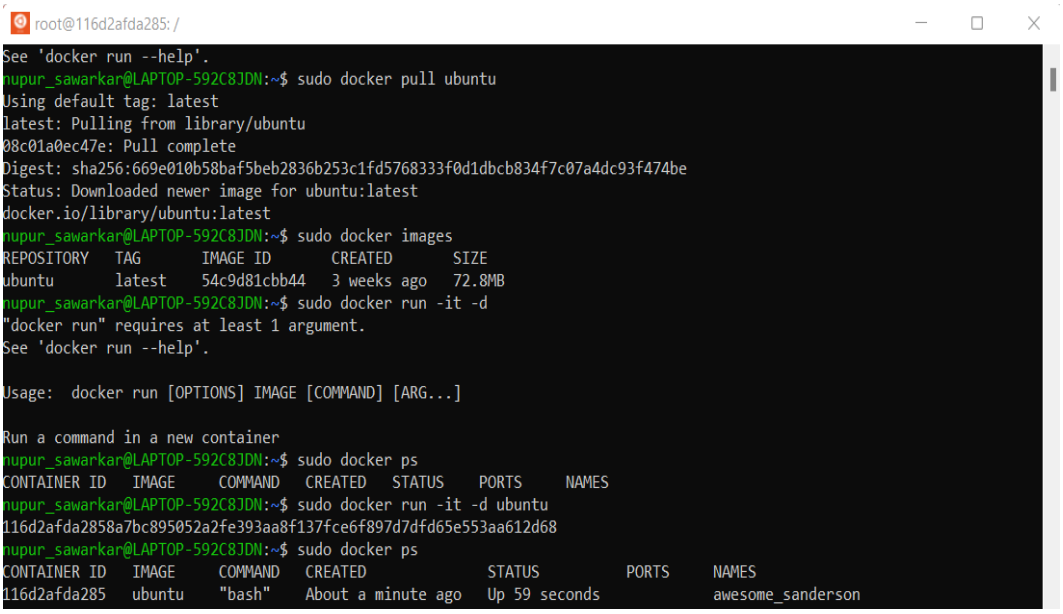
This command is used to display all the images currently installed on the system.

**sudo docker run -it -d ubuntu**

This command is used to create a container from an image.

**sudo docker ps**

This command is used to list the running containers.




**sudo docker exec -it 'Container Id' bash**

This command is used to access the running container.

```
root@116d2afda285: /
nupur_sawarkar@LAPTOP-592C8JDN:~$ sudo docker exec -it 116d2afda285 bash
root@116d2afda285:/# apt-get update
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:2 http://archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:3 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [25.8 kB]
Get:4 http://archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [1580 kB]
Get:6 http://archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:7 http://archive.ubuntu.com/ubuntu focal/universe amd64 Packages [11.3 MB]
Get:8 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 Packages [982 kB]
Get:9 http://security.ubuntu.com/ubuntu focal-security/universe amd64 Packages [842 kB]
Get:10 http://archive.ubuntu.com/ubuntu focal/main amd64 Packages [1275 kB]
Get:11 http://archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [33.4 kB]
Get:12 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [177 kB]
Get:13 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [1136 kB]
Get:14 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2008 kB]
Get:15 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [29.4 kB]
Get:16 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [1052 kB]
Get:17 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [25.2 kB]
Get:18 http://archive.ubuntu.com/ubuntu focal-backports/main amd64 Packages [50.8 kB]
Fetched 21.2 MB in 6s (3549 kB/s)
Reading package lists... Done
root@116d2afda285:/#
```

## Apt-get install apache2

To install apache2

```
root@116d2afda285: /
root@116d2afda285:/# apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils ca-certificates file krb5-locales libapr1 libaprutil1 libaprutil1-dbd-sqlite3
  libaprutil1-ldap libasn1-8-heimdal libbrotli1 libcurl4 libexpat1 libgdbm-compat4 libgdbm6 libgssapi-krb5-2
  libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal libheimntlm0-heimdal libhx509-5-heimdal libicu66
  libjansson4 libk5crypto3 libkeyutils1 libkrb5-26-heimdal libkrb5-3 libkrb5support0 libldap-2.4-2 libldap-common
  liblua5.2-0 libmagic-mgc libmagic1 libnghttp2-14 libperl5.30 libpsl5 libroken18-heimdal librtmp1 libsasl2-2
  libsasl2-modules libsasl2-modules-db libsqlite3-0 libssh-4 libssl1.1 libwind0-heimdal libxml2 mime-support netbase
  openssl perl perl-modules-5.30 publicsuffix ssl-cert tzdata xz-utils
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser ufw gdbm-l10n krb5-doc krb5-user
  libsasl2-modules-gssapi-mit | libsasl2-modules-gssapi-heimdal libsasl2-modules-ldap libsasl2-modules-otp
  libsasl2-modules-sql perl-doc libterm-readline-gnu-perl | libterm-readline-perl-perl make libb-debug-perl
  liblocale-codes-perl openssl-blacklist
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils ca-certificates file krb5-locales libapr1 libaprutil1
  libaprutil1-dbd-sqlite3 libaprutil1-ldap libasn1-8-heimdal libbrotli1 libcurl4 libexpat1 libgdbm-compat4 libgdbm6
  libgssapi-krb5-2 libgssapi3-heimdal libhcrypto4-heimdal libheimbase1-heimdal libheimntlm0-heimdal libhx509-5-heimdal
  libicu66 libjansson4 libk5crypto3 libkeyutils1 libkrb5-26-heimdal libkrb5-3 libkrb5support0 libldap-2.4-2
  libldap-common liblua5.2-0 libmagic-mgc libmagic1 libnghttp2-14 libperl5.30 libpsl5 libroken18-heimdal librtmp1
  libsasl2-2 libsasl2-modules libsasl2-modules-db libsqlite3-0 libssh-4 libssl1.1 libwind0-heimdal libxml2
  mime-support netbase openssl perl perl-modules-5.30 publicsuffix ssl-cert tzdata xz-utils
0 upgraded, 57 newly installed, 0 to remove and 10 not upgraded.
Need to get 24.1 MB of archives.
After this operation, 117 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 perl-modules-5.30 all 5.30.0-9ubuntu0.2 [2738 kB]
```

## Service apache2 start

To start the service

```
root@116d2afda285:/# service apache2 start
 * Starting Apache httpd web server apache2
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 172.17.0.2. Set the 'Serv
erName' directive globally to suppress this message
 *
root@116d2afda285:/# ls
bin  boot  dev  etc  home  lib  lib32  lib64  libx32  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
root@116d2afda285:/#
```

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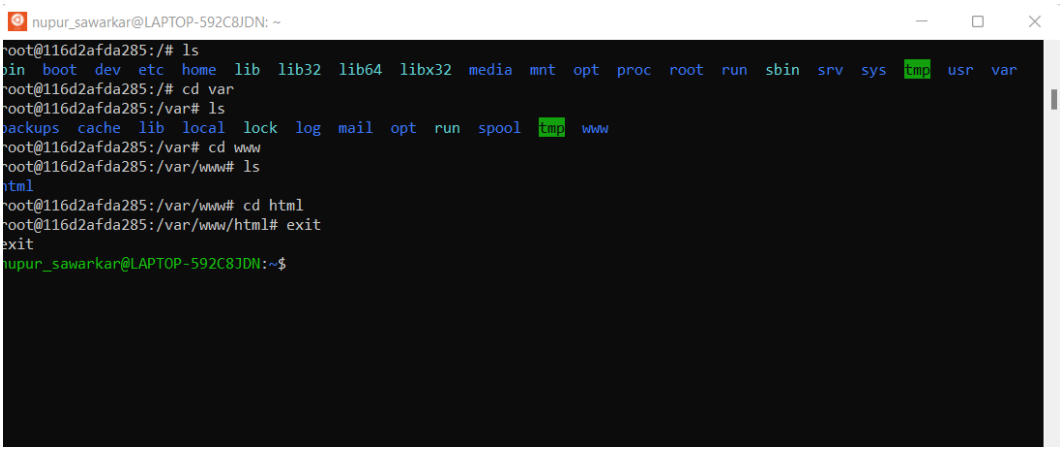
| | **exit**<br><br>To exit the container.<br><br>  |
| Conclusion: | Thus installed and configured Docker for creating container. |