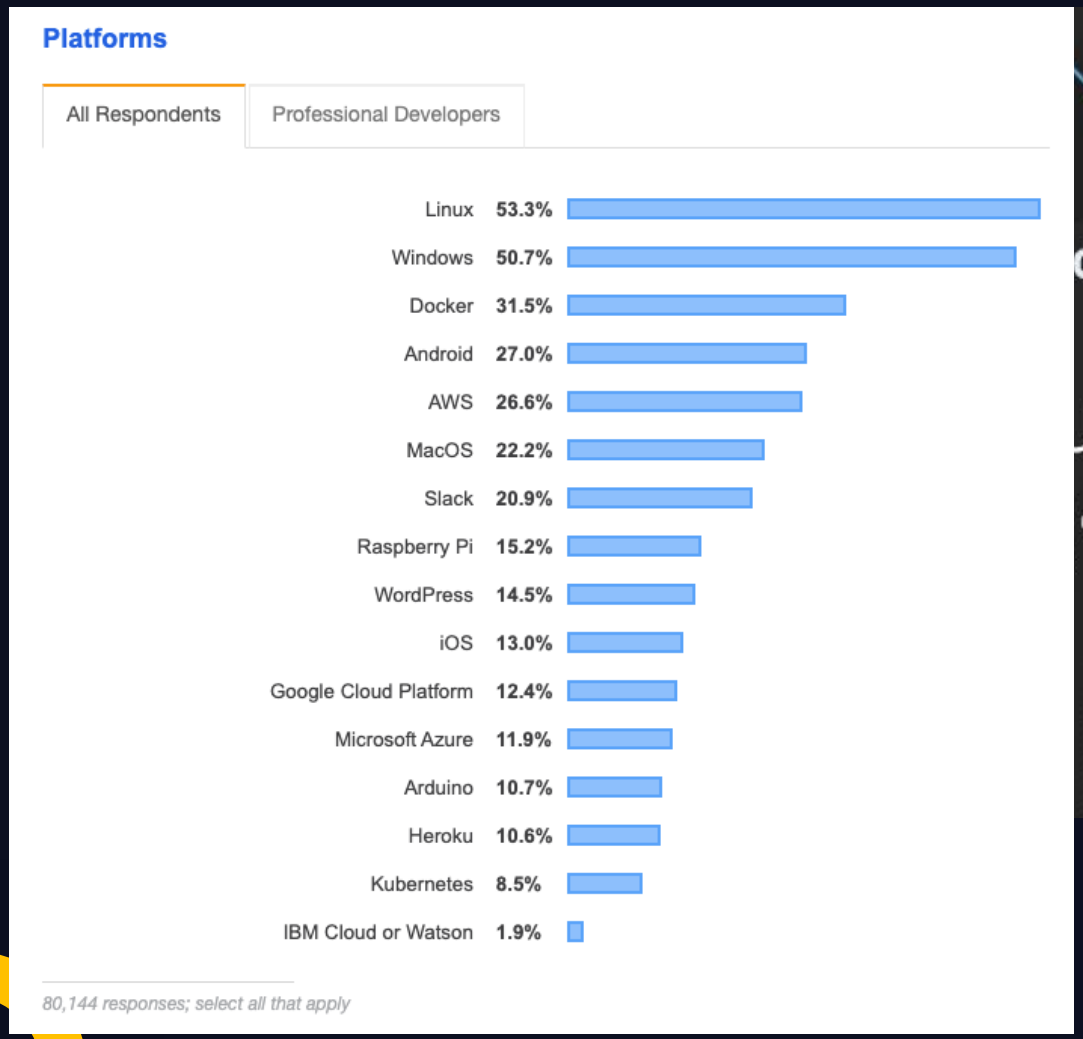
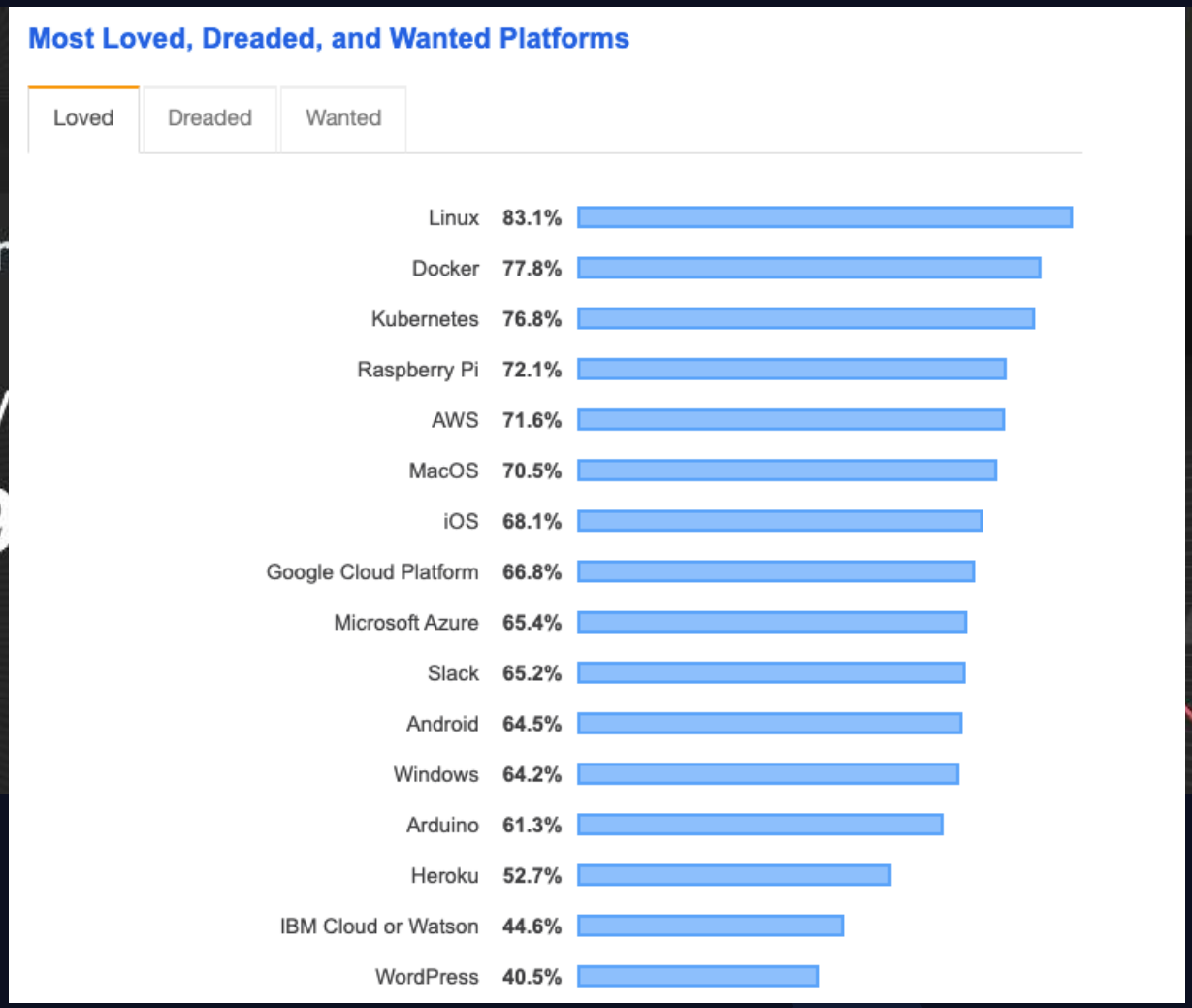
KodeKloud

Learn more about DevOps and Cloud courses with KodeKloud: https://kode.wiki/3N3A4kt

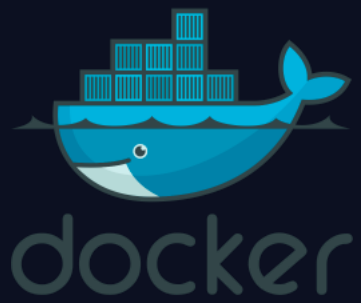
Why Linux?





https://insights.stackoverflow.com/survey/2019

Why Linux?



2013 - Docker was born
2016– Docker for Windows was born

Can Ansible run on Windows?

No, Ansible can only manage Windows hosts. Ansible cannot run on a Windows host natively, though it can run under the Windows Subsystem for Linux (WSL).

https://docs.ansible.com/ansible/latest/user_guide/windows_faq.html

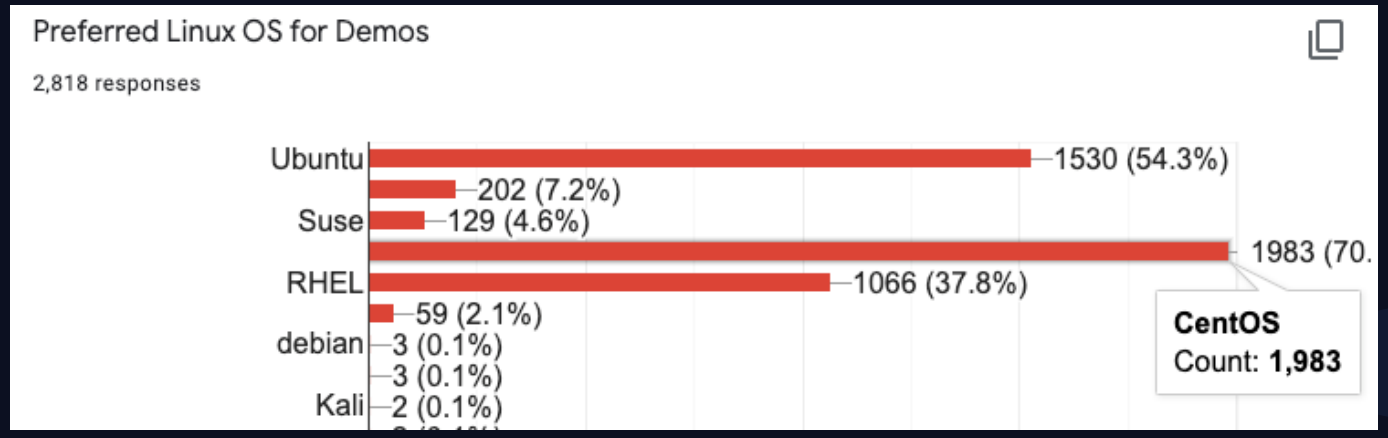
> **Note:** The Kubernetes control plane, including the master components, continues to run on Linux. There are no plans to have a Windows-only Kubernetes cluster.

Kubernetes Documentation

Check out our full course on DevOps Pre-R equisites: https://kode.wiki/43z8frg

Linux Basics

- Linux CLI
- VI Editor
- Package Management
- Service Management



*Allowed multiple selections

uisites: https://kode.wiki/43z8frg

Linux Basics Course

www.kodekloud.com

just enough

LINUX

Check out our full course on DevOps Pre-Requisites: https://kode.wiki/43z8frg

Shell Types

```
echo $SHELL
/bin/bash
```

- Broune Shell (Sh Shell)
- C Shell (csh or tcsh)
- Z Shell (zsh)
- Bourne again Shell (bash)

Basic Commands

```
echo Hi
```
```
Hi
```

Print to screen

```
ls
```
```
File.txt my_dir1 file2.conf
```

List files & folders

```
cd my_dir1
```

Change directory

```
pwd
```
```
/home/my_dir1
```

Present Working Directory

```
mkdir new_directory
```

Make Directory

```
cd new_directory; mkdir www; pwd
```
```
/home/my_dir1/new_directory
```

Multiple commands

Commands - Directories

/tmp/asia/india/bangalore

```
mkdir  /tmp/asia
mkdir  /tmp/asia/india
mkdir  /tmp/asia/india/bangalore
```

```
mkdir -p /tmp/asia/india/bangalore
```

Make Directory Hierarchy

```
rm -r /tmp/my_dir1
```

Remove Directory

```
cp -r my_dir1 /tmp/my_dir1
```

Copy Directory

Commands - Files

```
touch new_file.txt
Hi
```

Create a new file (no contents)

```
cat > new_file.txt
This is some sample contents
CTLR + D
```

Add contents to file

```
cat new_file.txt
This is some sample contents
```

View contents of file

```
cp new_file.txt copy_file.txt
```

Copy File

```
mv new_file.txt sample_file.txt
```

Move (Rename) File

```
rm new_file.txt
```

Remove (Delete) File

Check out our full course on DevOps Pre-Requisites: https://kode.wiki/43z8frg

Labs

- NOTE: These labs should NOT have the user require to use sudo
- Have a file and folder tree structure created. Ask MCQ questions (only based on the previous slides) to users, such as
  - Identify number of files and directories in a path
  - What is a file not present in a directory
  - Navigate to some directory(don’t specify the full path) and ask user to find the present working directory
- Ask user to perform operations
  - Create empty file
  - Create file with some content
  - Create directory
  - Create directory hierarchy
  - Copy file to a different place (Stage a file with some data)
  - Copy directory
  - Remove file
  - Remove directory and all contents

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just a bit more

LINUX

User Accounts

```
whoami
matthew
```

```
id
uid=1001(matthew) gid=1001(matthew) groups=1001(matthew)
```

```
su aparna
Password:
```

```
ssh aparna@192.168.1.2
```

matthew

User Accounts

```
ls /root
```

```
ls: cannot open directory /root: Permission denied
```

```
sudo ls /root
```

```
anaconda-ks.cfg  initial-setup-ks.cfg
```

matthew root

SUDO
/etc/sudoers

Download Files

```
curl http://www.some-site.com/some-file.txt -O
```

```
some-file.txt
```

```
wget http://www.some-site.com/some-file.txt -O some-file.txt
```

```
some-file.txt
```

Check OS Version

```
ls /etc/*release*
```

```
/etc/centos-release        /etc/os-release     /etc/system-release
/etc/centos-release-upstream  /etc/redhat-release  /etc/system-release-cpe
```

```
cat /etc/*release*
```

```
CentOS Linux release 7.7.1908 (Core)
Derived from Red Hat Enterprise Linux 7.7 (Source)
NAME="CentOS Linux"
VERSION="7 (Core)"
ID="centos"
ID_LIKE="rhel fedora"
VERSION_ID="7"
PRETTY_NAME="CentOS Linux 7 (Core)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:centos:centos:7"
HOME_URL="https://www.centos.org/"
BUG_REPORT_URL="https://bugs.centos.org/"
```

- Wget
- Curl
- Cat /etc/*release*

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Package Managers

RPM (Red Hat Package Manager)

```
rpm -i telnet.rpm
```

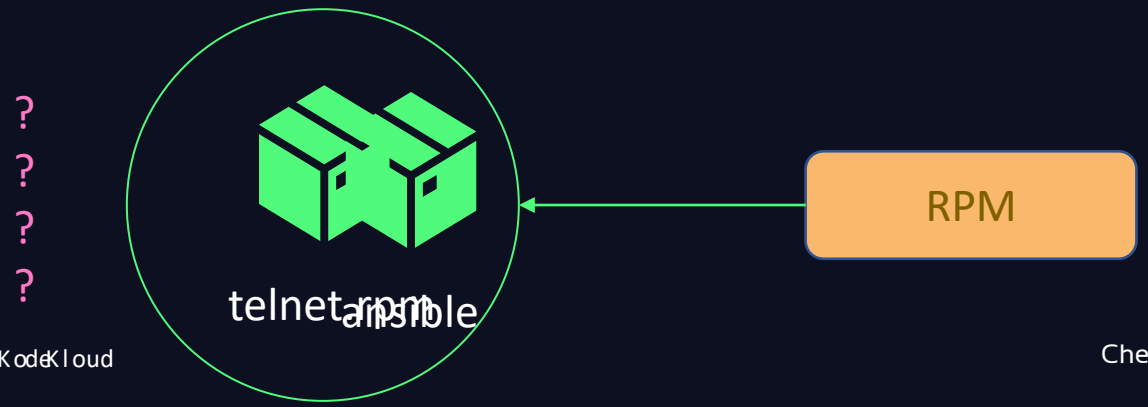
Install Package

```
rpm -e telnet.rpm
```

Uninstall Package

```
rpm -q telnet.rpm
```

Query Package



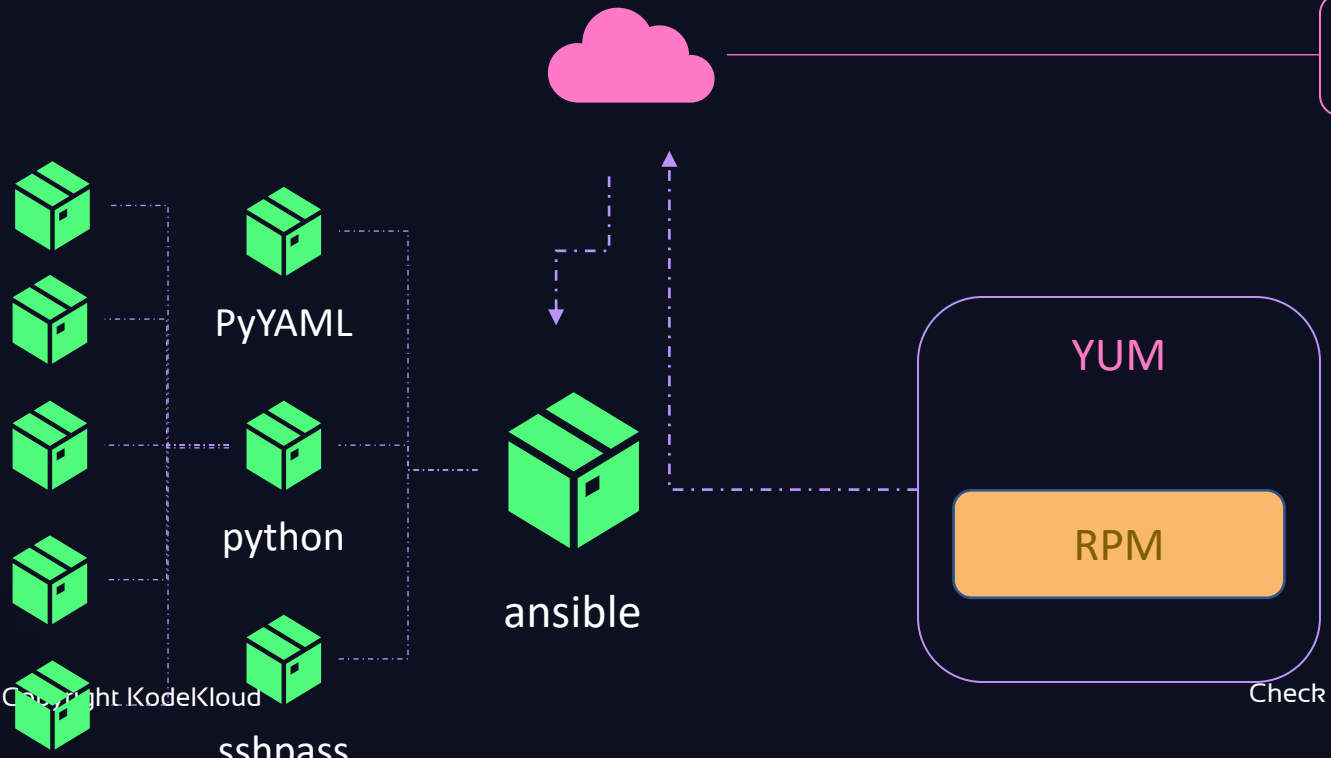
Check out our full course on DevOps Pre-Requisites: https://kode.wiki/43z8frg

YUM

```
yum install ansible
```

Install Package

/etc/yum.repos.d



Check out our full course on DevOps Pre-Requisites: https://kode.wiki/43z8frg

YUM Repos

yu

repo id
base/7
extras/
mongo
mysql-
mysql-
mysql8
update

ls

CentOS
CentOS
CentOS
CentOS

ca

[extras]
name=
baseurl=

Extra Packages for Enterprise Linux (EPEL)

Welcome to the home of the EPEL Special Interest Group.

Quickstart

- epel-release-latest-6
- epel-release-latest-7
- epel-release-latest-8

You may retrieve signed binary configuration files from one the above two links (varying by the major release nu
automatically installed by root thus:

- RHEL/CentOS 6:

```
# yum install https://dl.fedoraproject.org/pub/epel/epel-release-latest-6.noarch.rpm
```

- RHEL/CentOS 7:

```
# yum install https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm
```

scription

YUM

```
yum list ansible
```

```
Installed Packages
ansible.noarch        2.9.6-1.el7                  @epel
```

```
yum remove ansible
```

```
yum --showduplicates list ansible
```

```
Available Packages
ansible.noarch        2.4.2.0-2.el7                extras
ansible.noarch        2.9.6-1.el7                  epel
```

```
yum install ansible-2.4.2.0
```

Labs

- View installed packages
- Identify versions of installed packages
- Install specific packages using yum
- Install specific packages using yum with specific versions
- Remove packages

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Services

Services

```
service httpd start
```

Or

```
systemctl start httpd
```

Start HTTPD service

Start HTTPD service

```
systemctl stop httpd
```

Stop HTTPD service

```
systemctl status httpd
```

Check HTTPD service Status

```
systemctl enable httpd
```

Configure HTTPD to start at startup

```
systemctl disable httpd
```

Configure HTTPD to not start at startup

Services

```
/usr/bin/python3 /opt/code/my_app.py
```

```
* Serving Flask app "my_app" (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: off
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
```

```
curl http://localhost:5000
```

```
Hello, World!
```

```
systemctl start my_app
```

```
systemctl stop my_app
```

/etc/systemd/system

Services

/etc/systemd/system

```
/usr/bin/python3 /opt/code/my_app.py
```

```
* Serving Flask app "my_app" (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: off
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
```

my_app.service

```
[Service]
ExecStart=
```

```
curl http://localhost:5000
```

```
Hello, World!
```

```
systemctl daemon-reload
```

```
systemctl start my_app
```

Services

/etc/systemd/system

```
systemctl status my_app
```

```
● my_app.service
   Loaded: loaded (/etc/systemd/system/my_app.service; static; vendor preset: disabled)
   Active: active (running) since Tue 2020-04-07 09:01:39 UTC; 2s ago
 Main PID: 5038 (python3)
   CGroup: /system.slice/my_app.service
           └─5038 /usr/bin/python3 /tmp/app/my_app.py

Apr 07 09:01:39 systemd[1]: Started my_app.service.
Apr 07 09:01:39 python3[5038]: * Serving Flask app "my_app" (lazy loading)
Apr 07 09:01:39 python3[5038]: * Environment: production
Apr 07 09:01:39 python3[5038]: WARNING: This is a development server. Do not use it in a produ...ent.
Apr 07 09:01:39 python3[5038]: Use a production WSGI server instead.
Apr 07 09:01:39 python3[5038]: * Debug mode: off
Apr 07 09:01:39 python3[5038]: * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
Hint: Some lines were ellipsized, use -l to show in full.
```

my_app.service

```
[Service]
ExecStart= /usr/bin/python3 /opt/code/my_app.py
```

```
systemctl daemon-reload
```

```
systemctl start my_app
```

```
systemctl stop my_app
```

```
curl http://localhost:5000
```

```
Hello, World!
```


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Services

/etc/systemd/system

```
systemctl status my_app
```

```
● my_app.service
   Loaded: loaded (/etc/systemd/system/my_app.service; static; vendor preset: disabled)
   Active: active (running) since Tue 2020-04-07 09:01:39 UTC; 2s ago
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Apr 07 09:01:39 systemd[1]: Started my_app.service.
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Apr 07 09:01:39 python3[5038]: * Environment: production
Apr 07 09:01:39 python3[5038]: WARNING: This is a development server. Do not use it in a produ...ent.
Apr 07 09:01:39 python3[5038]: Use a production WSGI server instead.
Apr 07 09:01:39 python3[5038]: * Debug mode: off
Apr 07 09:01:39 python3[5038]: * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
Hint: Some lines were ellipsized, use -l to show in full.
```

my_app.service

```
[Service]
ExecStart= /usr/bin/python3 /opt/code/my_app.py



[Install]
WantedBy=multi-user.target
```

```
systemctl daemon-reload
```

```
systemctl start my_app
```

```
systemctl stop my_app
```

```
systemctl enable my_app
```

```
curl http://localhost:5000
```

```
Hello, World!
```


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Services

/etc/systemd/system

```
systemctl status my_app
```

```
● my_app.service
   Loaded: loaded (/etc/systemd/system/my_app.service; static; vendor preset: disabled)
   Active: active (running) since Tue 2020-04-07 09:01:39 UTC; 2s ago
 Main PID: 5038 (python3)
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Apr 07 09:01:39 systemd[1]: Started my_app.service.
Apr 07 09:01:39 python3[5038]: * Serving Flask app "my_app" (lazy loading)
Apr 07 09:01:39 python3[5038]: * Environment: production
Apr 07 09:01:39 python3[5038]: WARNING: This is a development server. Do not use it in a produ...ent.
Apr 07 09:01:39 python3[5038]: Use a production WSGI server instead.
Apr 07 09:01:39 python3[5038]: * Debug mode: off
Apr 07 09:01:39 python3[5038]: * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
Hint: Some lines were ellipsized, use -l to show in full.
```

my_app.service

```
[Unit]
Description=My python web application


[Service]
ExecStart= /usr/bin/python3 /opt/code/my_app.py
ExecStartPre=/opt/code/configure_db.sh
ExecStartPost=/opt/code/email_status.sh


[Install]
WantedBy=multi-user.target
```

```
curl http://localhost:5000
```

```
Hello, World!
```



```
systemctl daemon-reload
```

Check out our full course on DevOps Pre-Requisites: https://kode.wiki/43z8frg

```
systemctl start my_app
```

Services

/etc/systemd/system

```
systemctl status my_app
```

```
● my_app.service
   Loaded: loaded (/etc/systemd/system/my_app.service; static; vendor preset: disabled)
   Active: active (running) since Tue 2020-04-07 09:01:39 UTC; 2s ago
 Main PID: 5038 (python3)
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Apr 07 09:01:39 systemd[1]: Started my_app.service.
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Apr 07 09:01:39 python3[5038]: * Environment: production
Apr 07 09:01:39 python3[5038]: WARNING: This is a development server. Do not use it in a produ...ent.
Apr 07 09:01:39 python3[5038]: Use a production WSGI server instead.
Apr 07 09:01:39 python3[5038]: * Debug mode: off
Apr 07 09:01:39 python3[5038]: * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
Hint: Some lines were ellipsized, use -l to show in full.
```

my_app.service

```
[Unit]
Description=My python web application


[Service]
ExecStart= /usr/bin/python3 /opt/code/my_app.py
ExecStartPre=/opt/code/configure_db.sh
ExecStartPost=/opt/code/email_status.sh
Restart=always


[Install]
WantedBy=multi-user.target
```

```
curl http://localhost:5000
```

```
Hello, World!
```



```
systemctl daemon-reload
```

Check out our full course on DevOps Pre-Requisites: https://kode.wiki/43z8frg

```
systemctl start my_app
```

Service Unit File - Docker

/lib/systemd/system/docker.service

```
[Unit]
Description=Docker Application Container Engine
Documentation=https://docs.docker.com
BindsTo=containerd.service
After=network-online.target firewalld.service containerd.service
Wants=network-online.target
Requires=docker.socket

[Service]
Type=notify
ExecStart=/usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock
ExecReload=/bin/kill -s HUP $MAINPID
Restart=always
StartLimitBurst=3
StartLimitInterval=60s
LimitNOFILE=infinity
LimitNPROC=infinity
LimitCORE=infinity

[Install]
WantedBy=multi-user.target
```

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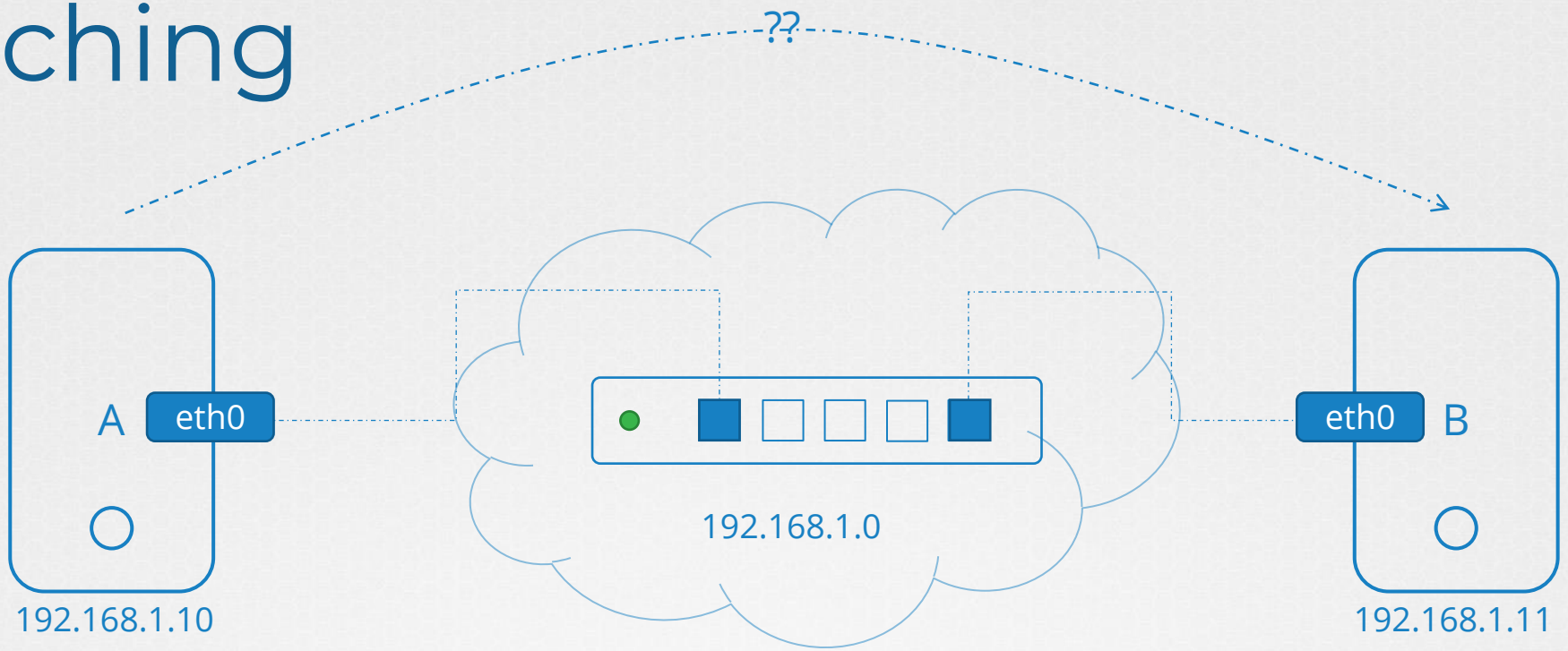
Networking Basics

Networking Pre-Requisite

- Switching
- Routing
- Default Gateway
- DNS Configuration on Linux

Switching




```
ip link
```

```
eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc
fq_codel state UP mode DEFAULT group default qlen 1000
```

```
ip addr add 192.168.1.10/24 dev eth0
```

```
ip link
```

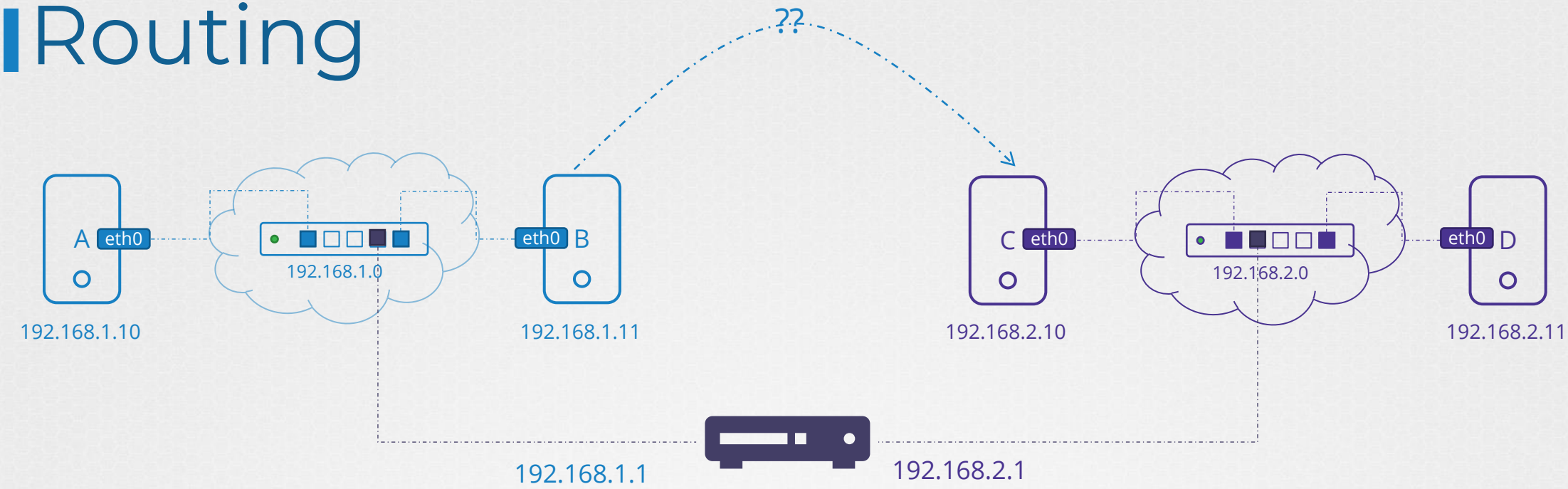
```
eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc
fq_codel state UP mode DEFAULT group default qlen 1000
```

```
ip addr add 192.168.1.11/24 dev eth0
```

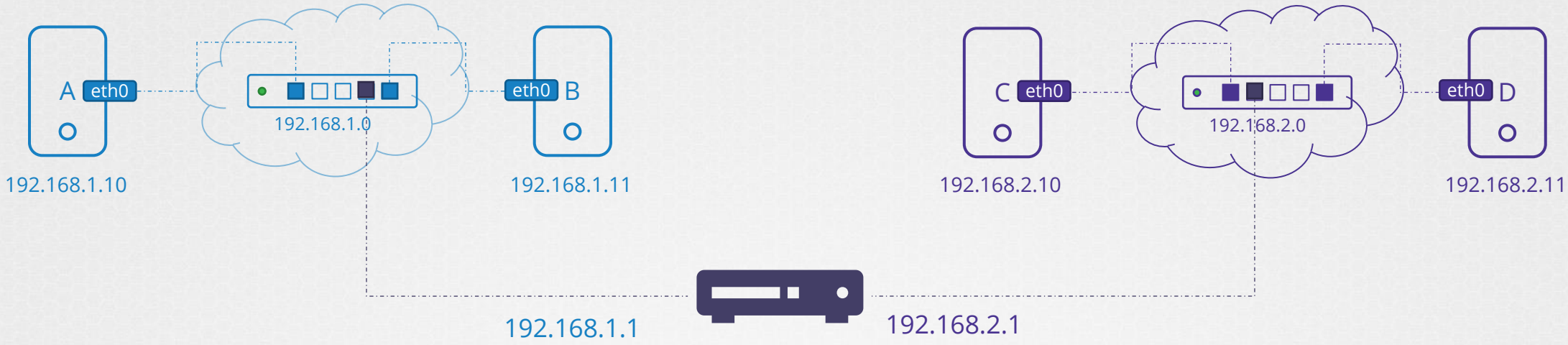
```
ping 192.168.1.11
```

```
Reply from 192.168.1.11: bytes=32 time=4ms TTL=117
Reply from 192.168.1.11: bytes=32 time=4ms TTL=117
```

Routing



Gateway




```
route
```

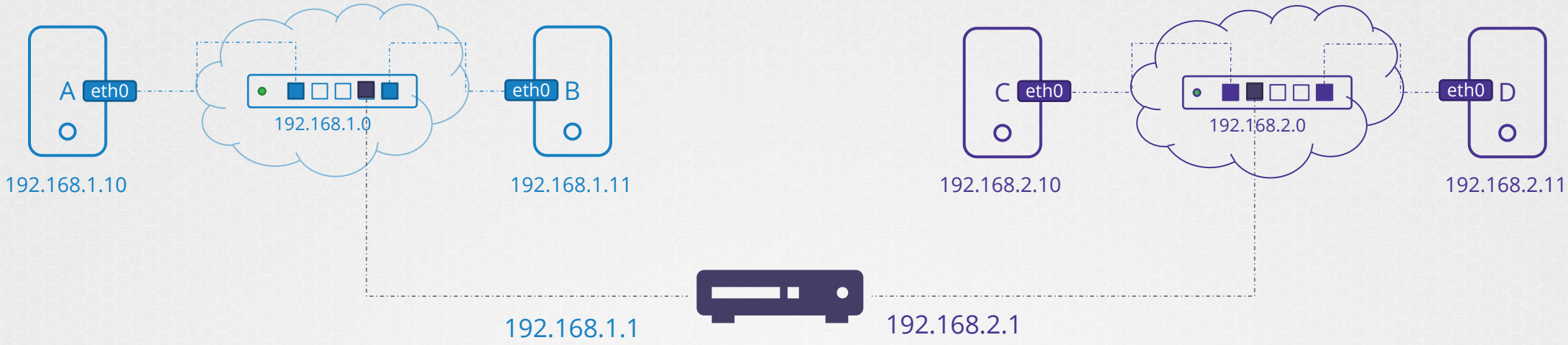
```
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
```

```
ip route add 192.168.2.0/24 via 192.168.1.1
```

```
route
```

```
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
192.168.2.0     192.168.1.1     255.255.255.0   UG    0      0        0 eth0
```

Gateway

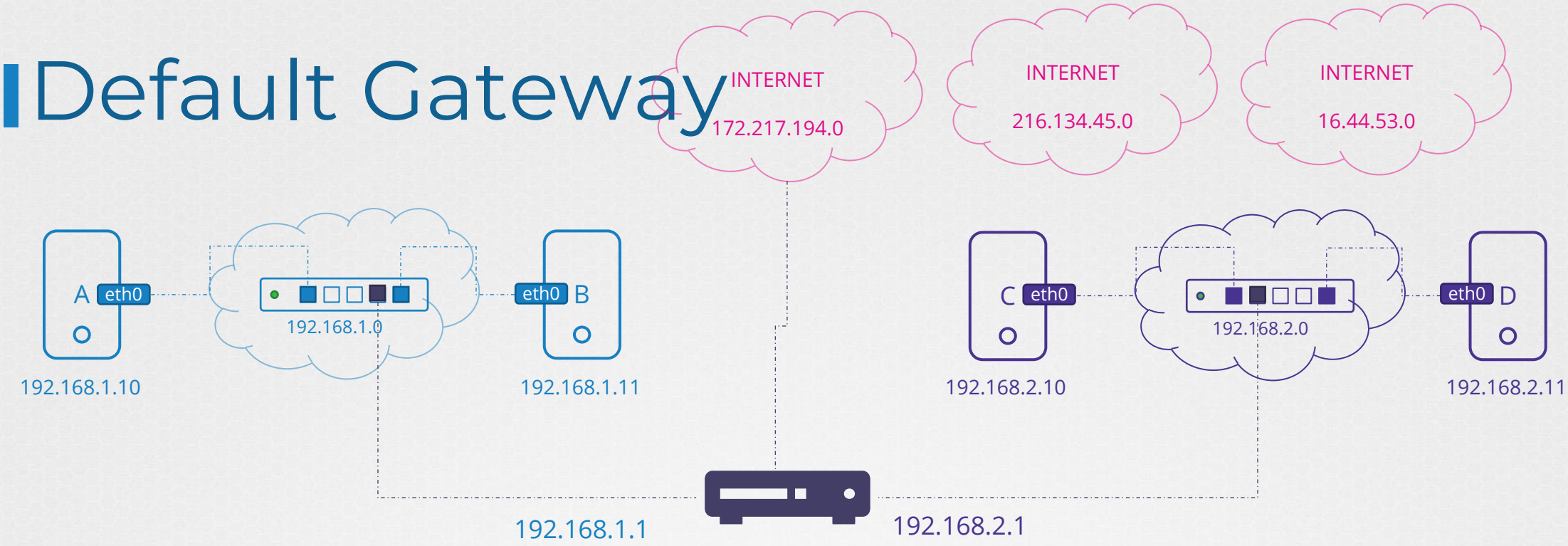



```
ip route add 192.168.1.0/24 via 192.168.2.1
```

```
route
```

```
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
192.168.1.0     192.168.2.1     255.255.255.0   UG    0      0        0 eth0
```

Default Gateway



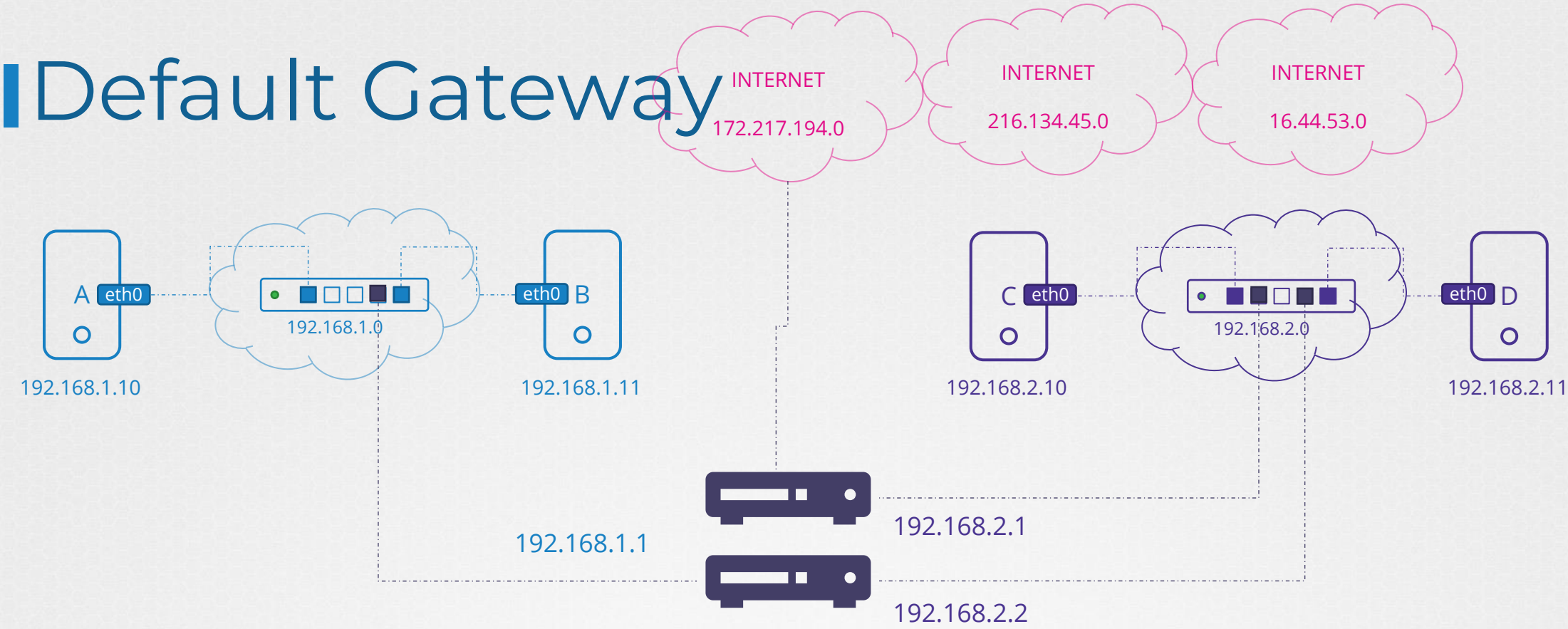

```
ip route add 192.168.1.0/24 via 192.168.2.1
```

```
ip route add default via 192.168.2.1
```

```
route
```

```
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
192.168.1.0     192.168.2.1     255.255.255.0   UG    0      0        0 eth0
0.0.0.0         192.168.2.1     255.255.255.0   UG    0      0        0 eth0
192.168.2.0     0.0.0.0         255.255.255.0   UG    0      0        0 eth0
```

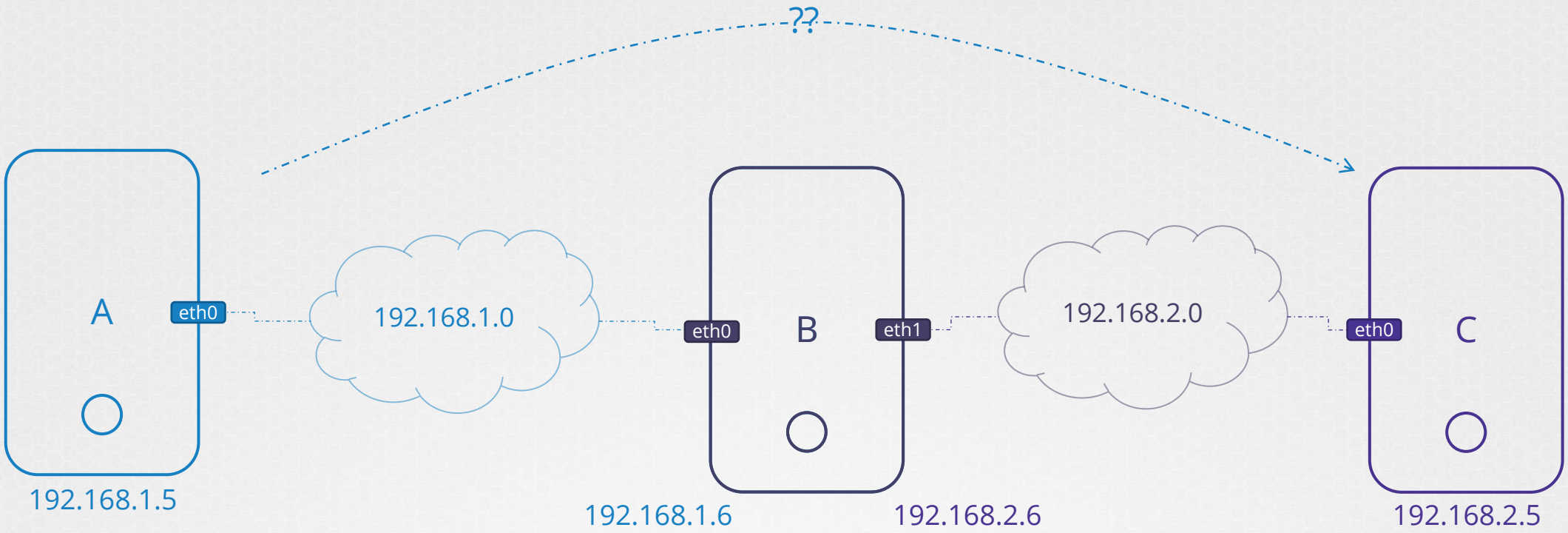
Default Gateway




```
ip route add 192.168.1.0/24 via 192.168.2.2
```

```
route
```

```
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         192.168.2.1     255.255.255.0   UG    0      0        0 eth0
192.168.1.0     192.168.2.2     255.255.255.0   UG    0      0        0 eth0
```




```
ping 192.168.2.5
```

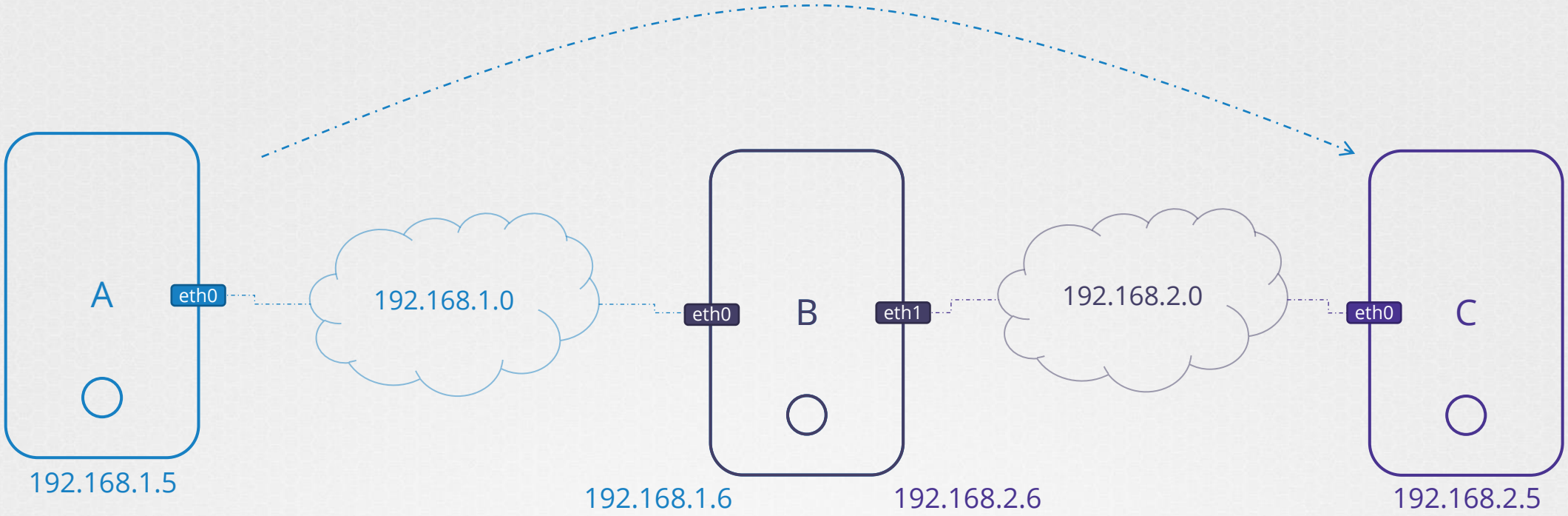
```
Connect: Network is unreachable
```

```
ip route add 192.168.2.0/24 via 192.168.1.6
```

```
ip route add 192.168.1.0/24 via 192.168.2.6
```

```
ping 192.168.2.5
```

```
```




```
cat /proc/sys/net/ipv4/ip_forward
```

```
0
```

```
.6
```

```
echo 1 > /proc/sys/net/ipv4/ip_forward
```

```
1
```

/etc/sysctl.conf

```
...
net.ipv4.ip_forward = 1
...
```

```
ping 192.168.2.5
```

```
Reply from 192.168.2.5: bytes=32 time=4ms TTL=117
Reply from 192.168.2.5: bytes=32 time=4ms TTL=117
Reply from 192.168.2.5: bytes=32 time=4ms TTL=117
Reply from 192.168.2.5: bytes=32 time=4ms TTL=117
```

Take Aways

```
ip link
```

```
ip addr
```

```
ip addr add 192.168.1.10/24 dev eth0
```

```
ip route
```

```
route
```

```
ip route add 192.168.1.0/24 via 192.168.2.1
```

```
cat /proc/sys/net/ipv4/ip_forward
1
```

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Introduction

About Java

- Free
- Open-source
- Huge Community

Version	Date
13	2019
12	2019
11	2018
10	2018
9	2017
8	2014
7	2011
6	2006
5	2004

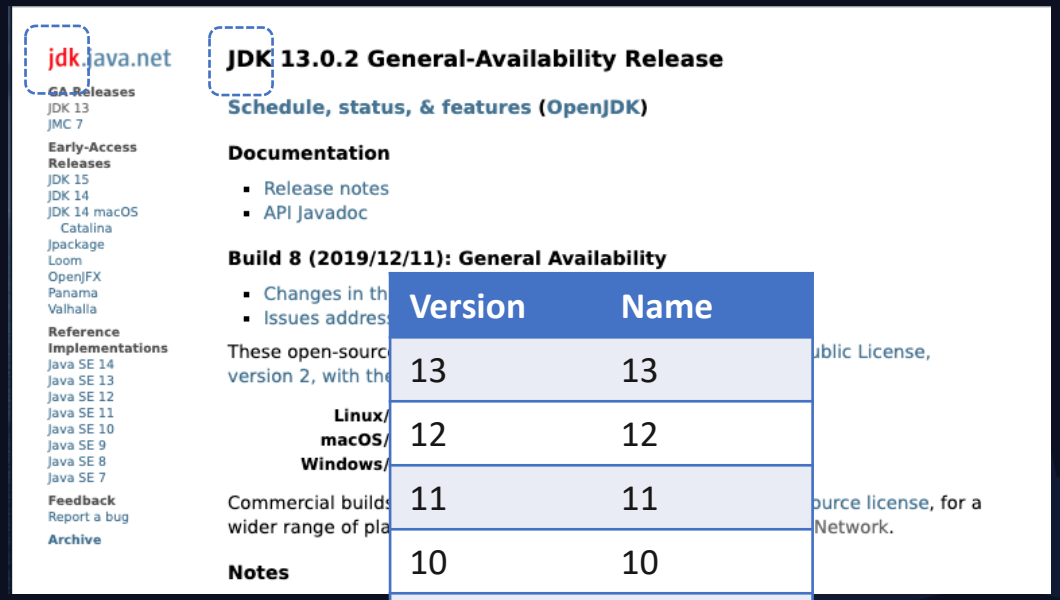
Install Java

```
wget https://download.java.net....
openjdk-13.0.2_linux-x64_bin.tar.gz
```

```
tar –xvf openjdk-13.0.2_linux-x64_bin.tar.gz
/opt/jdk-13/bin/java -version
```

```
jdk-13.0.2/bin/java -version
openjdk version "13.0.2" 2020-01-14
OpenJDK Runtime Environment (build 13.0.2+8)
OpenJDK 64-Bit Server VM (build 13.0.2+8, mixed mode,
sharing)
```

```
java -version
openjdk version "1.8.0_242"
OpenJDK Runtime Environment (build 1.8.0_242-b08)
OpenJDK 64-Bit Server VM (build 25.242-b08, mixed mode)
```



Version	Name
13	13
12	12
11	11
10	10
9	9
8	1.8
7	1.7
6	1.6
5	1.5

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https://jdk.java.net/13/

Java Development Kit (JDK)

Develop

- jdb
- javadoc

Build

- javac
- jar

Run

- JRE

(Java Runtime Environment)

- java

```
ls jdk-13.0.2/bin
```

```
jaotc    javadoc  jdeprscan jinfo  jps      jstatd   rmiregistry
jar      javap    jdeps    jjs    jrunscript keytool  serialver
jarsigner jcmd    jfr      jlink  jshell   pack200  unpack200
java     jconsole jhsdb    jmap   jstack   rmic
javac    jdb      jimage.  jmod   jstat    rmid
```

Before v9

Java Development Kit (JDK)

Develop	Build	Run
jdb	javac	java
javadoc	jar	

JRE

(Java Runtime Environment)

Check o

After v9

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Build

Compile

1. Develop Source Code

MyClass.java

```java
public class MyClass {
  public static void main(String[] args) {
    System.out.println("Hello World");
  }
}
```

2. Compile

```
javac MyClass.java
```

```
MyClass.class
```

3. Run

```
java MyClass
```

```
Hello World
```

Compile

MyClass.java

```java
public class MyClass {
  public static void main(String[] args) {
    System.out.println("Hello World");
  }
}
```

Compiler

Machine Code

```
01101000 10111100 10000001
01100100 01011100 00010111
00001010 00001110 11111010
10110001 01101000 10111100
10000001 01100100 01011100
00010111 00001010 00001110
11111010 10110001 10110001
```

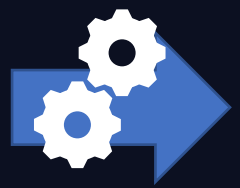
Human Readable
Source Code

Machine Readable
Machine Code

Java Virtual Machine

MyClass.java

```
public class MyClass {
  public static void main(String[] args) {
    System.out.println("Hello World");
  }
}
```



Compiler

MyClass.class

```
0: iconst_2
1: istore_1
2: iload_1
3: sipush 1000
6: if_icmpge 44
9: iconst_2
10: istore_2
11: iload_2
12: iload_1
13: if_icmpge 31
```

JVM

Machine Code

```
01101000 10111100 10000001
01100100 01011100 00010111
00001010 00001110 11111010
10110001 01101000 10111100
10000001 01100100 01011100
00010111 00001010 00001110
11111010 10110001 10110001
```

Human Readable Source Code

Intermediary Byte Code

Machine Readable Machine Code

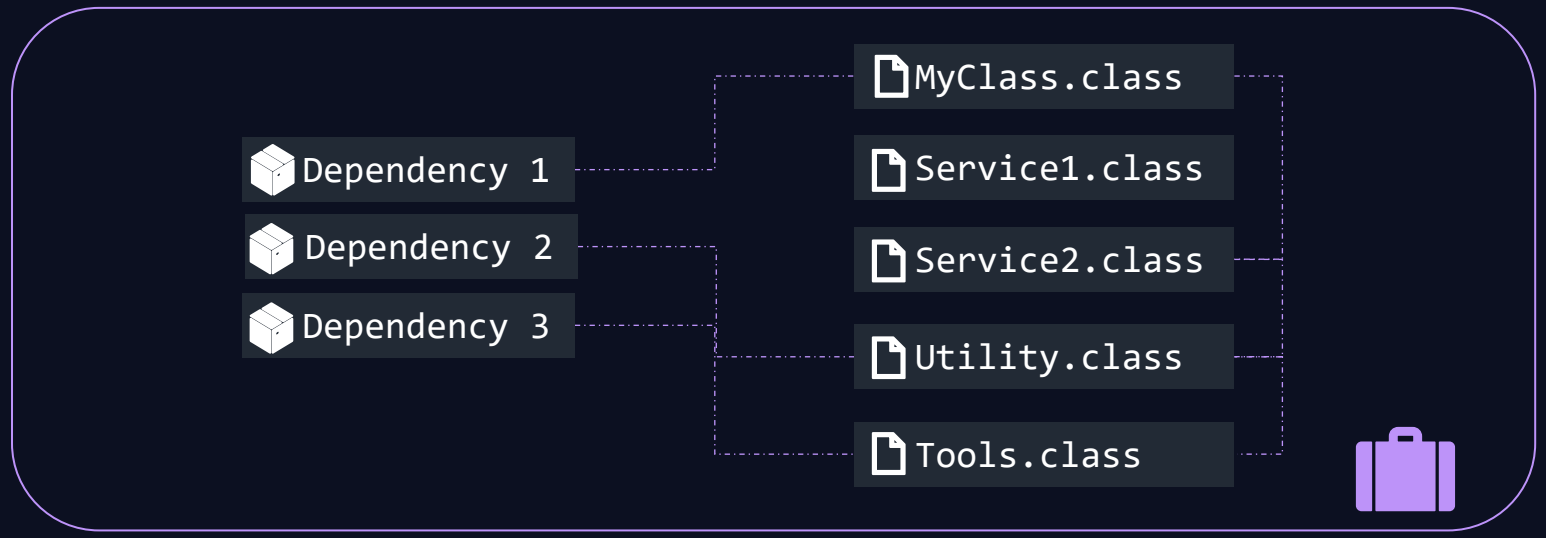
```
javac MyClass.java
```

```
MyClass.class
```

```
java MyClass
```

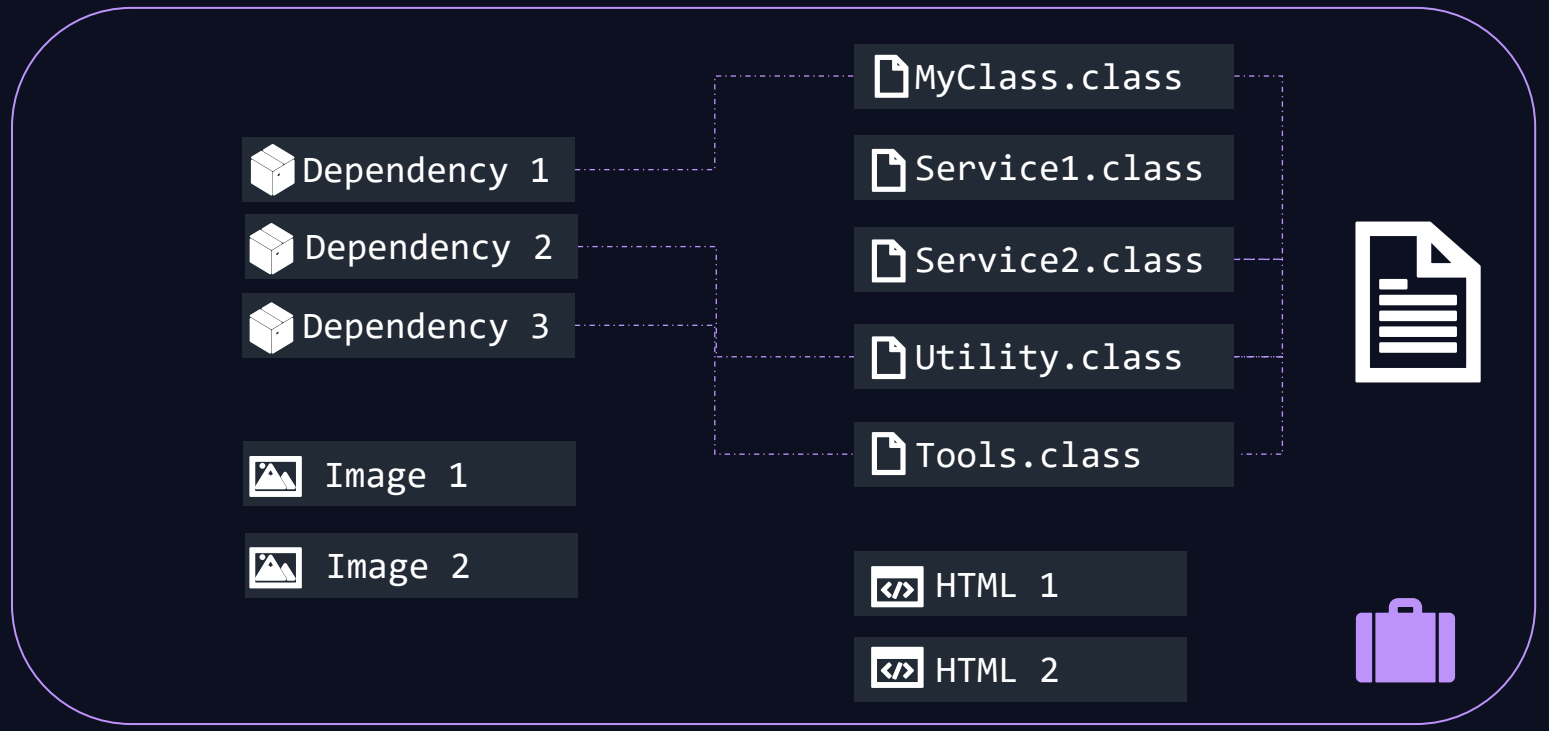
```
Hello World
```

Package



Java Archive
(JAR)

Package



META-INF/MANIFEST.MF

```
Manifest-Version: 1.0
Created-By: 1.8.0_242 (Private Build)
Main-Class: MyClass
```

Java Archive (JAR)

Web Archive (WAR)

```
jar cf MyApp.jar MyClass.class Service1.class Service2.class ...
```

```
MyApp.jar
```

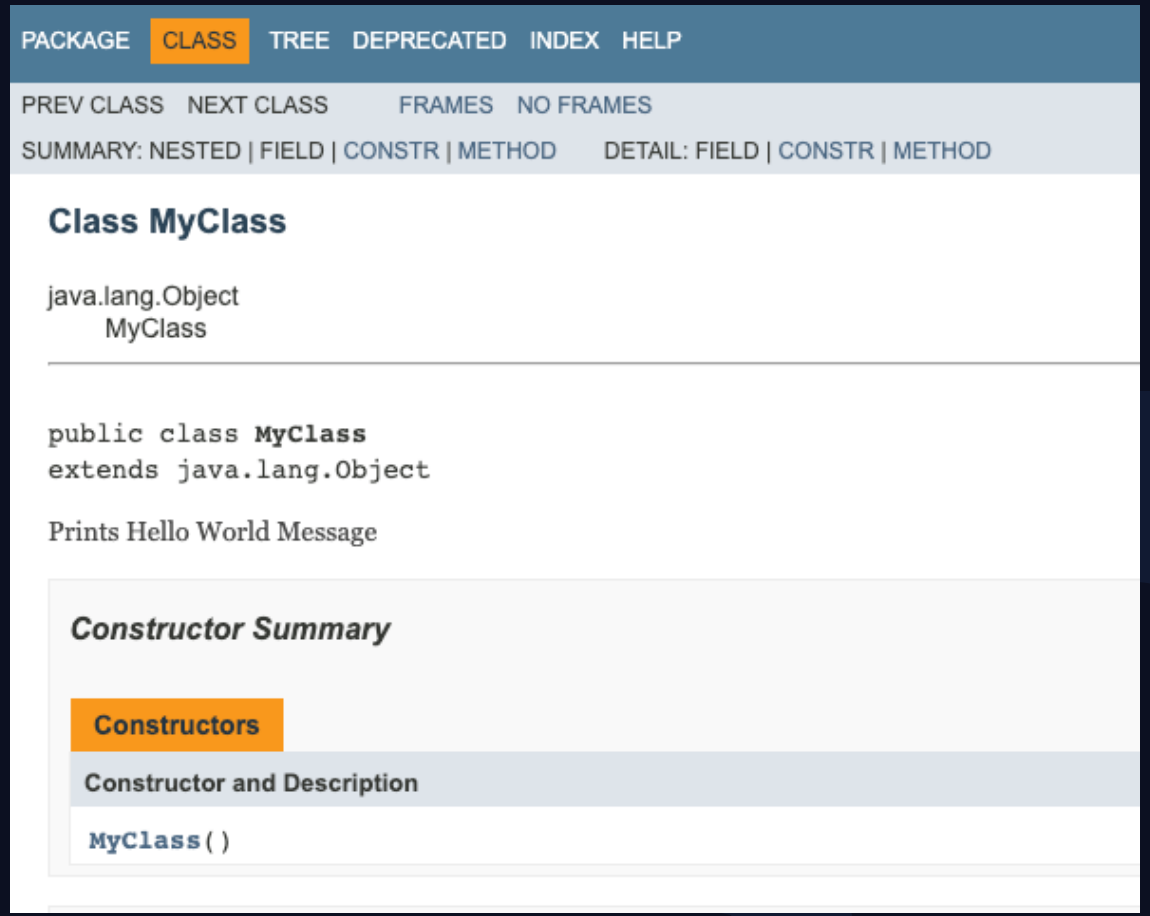
```
java -jar MyApp.jar
```

```
Hello World
```


Check out our full course on DevOps Pre-Requisites: https://kode.wiki/43z8frg

Document

```
javadoc -d doc MyClass.java
```


PACKAGE CLASS TREE DEPRECATED INDEX HELP

PREV CLASS NEXT CLASS FRAMES NO FRAMES

SUMMARY: NESTED | FIELD | CONSTR | METHOD DETAIL: FIELD | CONSTR | METHOD

Class MyClass

java.lang.Object
MyClass

```
public class MyClass
extends java.lang.Object
```

Prints Hello World Message

Constructor Summary

Constructors

Constructor and Description
`MyClass()`

Build Process

Develop

Compile

Package

Document

```
javac MyClass.java
```

```
jar cf MyClass.jar ..
```

```
javadoc MyClass.java
```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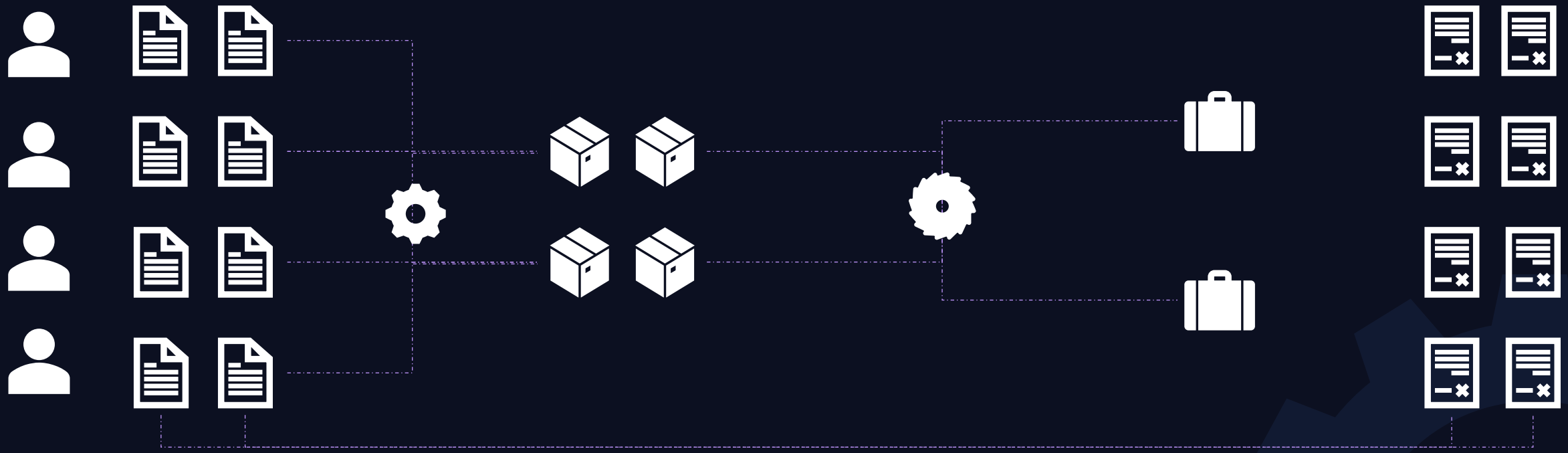
Build Process



Check out our full course on DevOps Pre-R equisites: https://kode.wiki/43z8frg

Build Tools

- Maven
- Gradle
- ANT

```
# Build Steps

1.Compile

2.Package

3.Document
```

ANT

```
ant  compile jar
BUILD SUCCESSFUL
Total time: 2 seconds
```

```
javac MyClass.java
```

```
javadoc MyClass.java
```

```
jar cf MyClass.jar ..
```

build.xml

```
<?xml version="1.0"?>
<project name="Ant" default="main" basedir=".">
    <!-- Compiles the java code (including the usage of library for JUnit -->
    <target name="compile">
        <javac srcdir="/app/src" destdir="/app/build">
        </javac>
    </target>
    <!-- Creates Javadoc -->
    <target name="docs" depends="compile">
        <javadoc packagenames="src" sourcepath="/app/src" destdir="/app/docs">
            <!-- Define which files / directory should get included, we include all -->
            <fileset dir="/app/src">
                <include name="**" />
            </fileset>
        </javadoc>
    </target>
    <!--Creates the deployable jar file  -->
    <target name="jar" depends="compile">
        <jar basedir="/app/build" destfile="/app/dist/MyClass.jar" >
            <manifest>
                <attribute name="Main-Class" value="MyClass" />
            </manifest>
        </jar>
    </target>
    <target name="main" depends="compile, jar, docs">
        <description>Main target</description>
    </target>
</project>
```

Maven

Branch: 2.9.0 ▾ **shopizer** / **pom.xml**

Dima removed duplicate dependencies

4 contributors

677 lines (592 sloc) | 20.7 KB

```xml
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.a
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <modelVersion>4.0.0</modelVersion>

  <groupId>com.shopizer</groupId>
  <artifactId>shopizer</artifactId>
  <version>2.9.0</version>
  <packaging>pom</packaging>

  <name>shopizer</name>
  <url>http://maven.apache.org</url>

  <licenses>
    <license>
      <name>Apache License, Version 2.0</name>
      <url>https://www.apache.org/licenses/LICENSE-2.0.txt</url>
    </license>
  </licenses>

```

Get the code:

Clone the repository:

```
$ git clone git://github.com/shopizer-ecomm
```

If this is your first time using Github, review http://help.g

You can also download the zip file containing the code

To build the application:

From the command line with Maven installed:

```
$ cd shopizer
$ mvnw clean install
```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https://github.com/shopizer-ecommerce/shopizer

Gradle

Branch: master ▾ docker-java-sample / build.gradle

arun-gupta upgrading the version to 3.0.6

2 contributors

45 lines (35 sloc) | 961 Bytes

```
1  buildscript {
2      repositories {
3          jcenter()
4      }
5
6      dependencies {
7          classpath 'com.bmuschko:gradle-docker-plugin:3.0.6'
8      }
9  }
10
11 apply plugin: 'java'
12 apply plugin: 'application'
13 apply plugin: 'com.bmuschko.docker-java-application'
14
15 import com.bmuschko.gradle.docker.tasks.container.*
16 import com.bmuschko.gradle.docker.tasks.image.*
17
```

Gradle

Classical

1. Build app: `./gradlew build`
2. Run app: `./gradlew run`

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https://github.com/arun-gupta/docker-java-sample

Summary

- Java
- Java Runtime Environment
- Java Development Kit
- Compiling a Java application
- Packaging a given application to JARs
- What are Build Tools?

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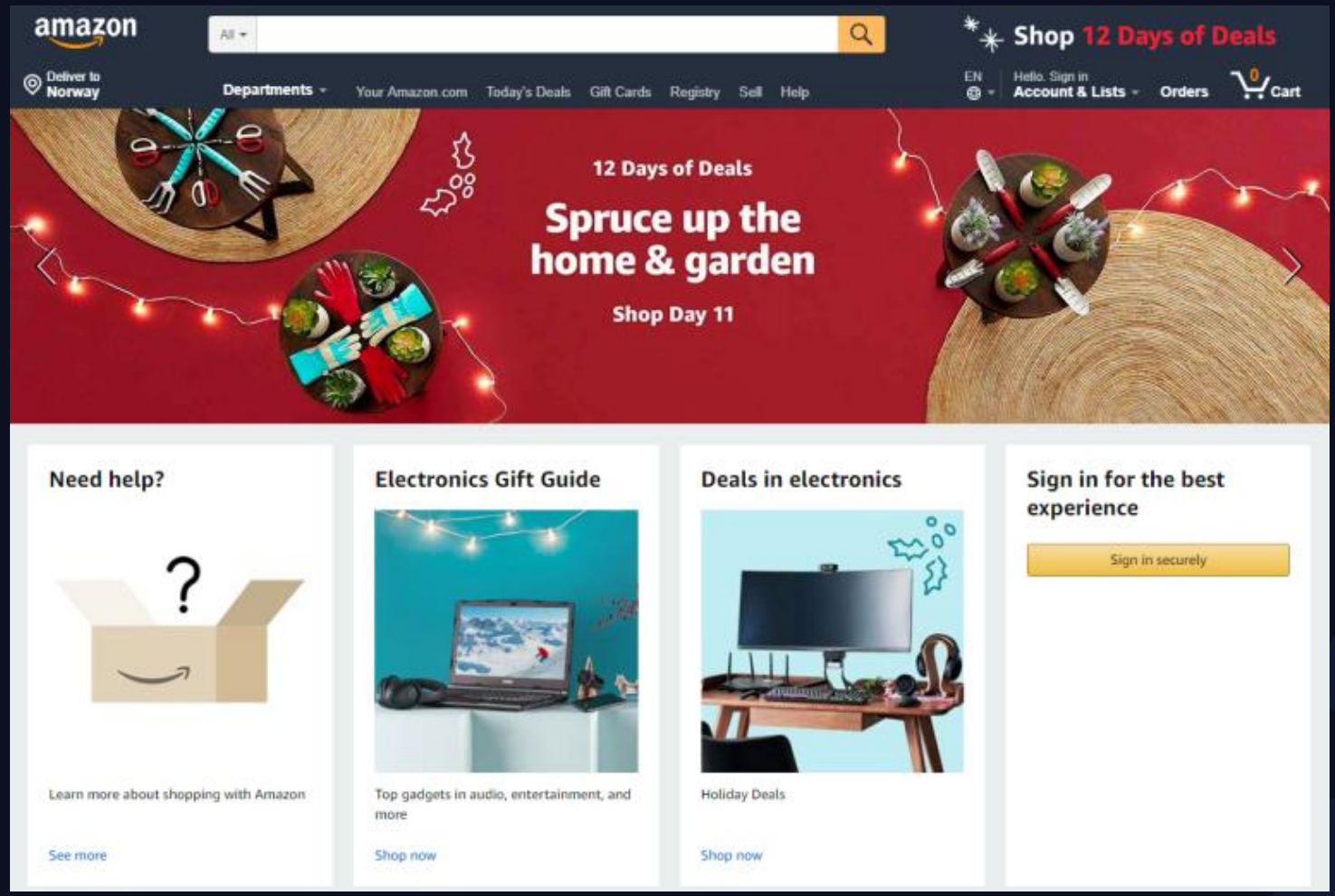
JavaScript



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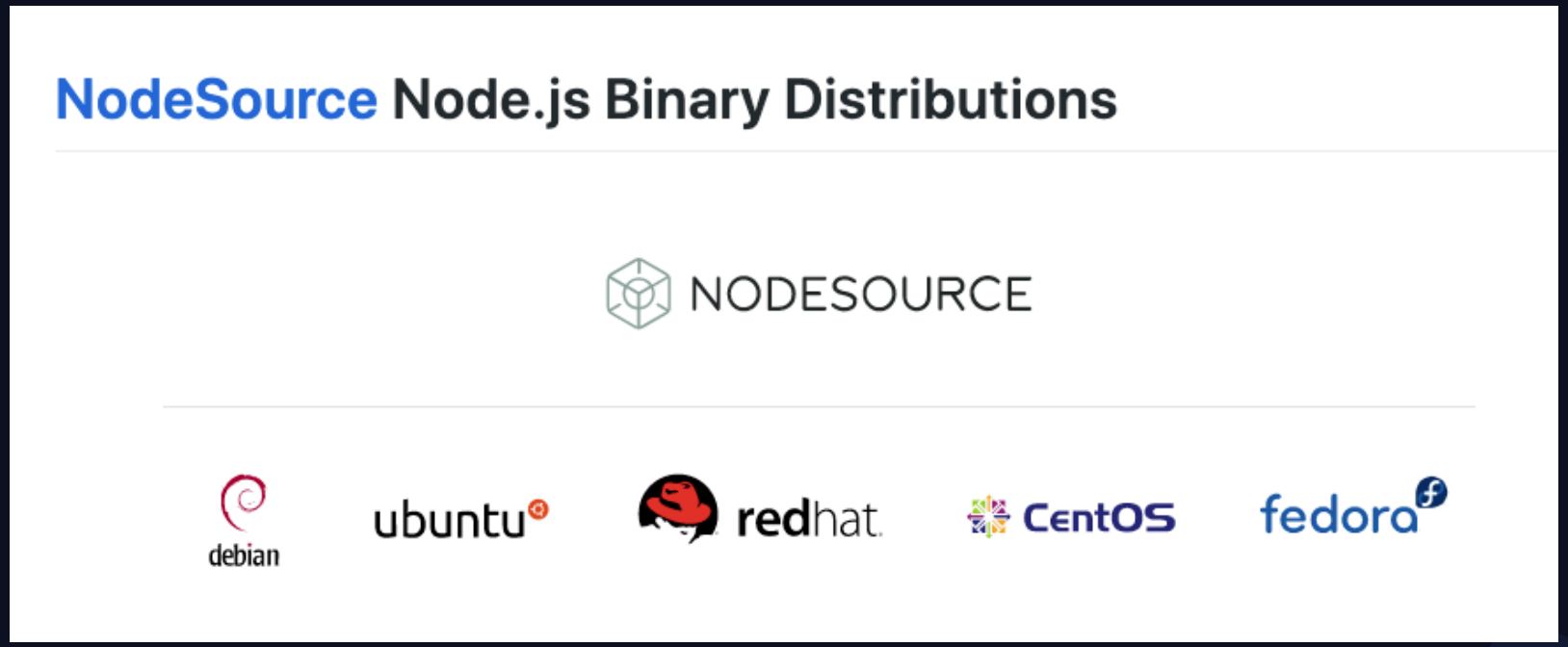
https://enonic.com/blog/websites-past-and-present

NodeJS

- Free
- Open source
- Cross Platform Compatible

Node.js 13.x
Node.js 12.x
Node.js 11.x
Node.js 10.x
Node.js 9.x
Node.js 8.x
Node.js 7.x
Node.js 6.x
Node.js 5.x
Node.js 4.x
Node.js 0.12.x
Node.js 0.10.x

Install NodeJS




```
curl -sL https://rpm.nodesource.com/setup_13.x | bash -
```

```
yum install nodejs
```

NodeJS Commands

```
node -v
```

```
V13.10.1
```

```
node add.js
```

```
Addition : 15
```

add.js

```
// Returns addition of two numbers
let add = function (a, b) {
    return a+b;
};

const a = 10, b = 5;

console.log("Addition : "+ add(a,b));
```

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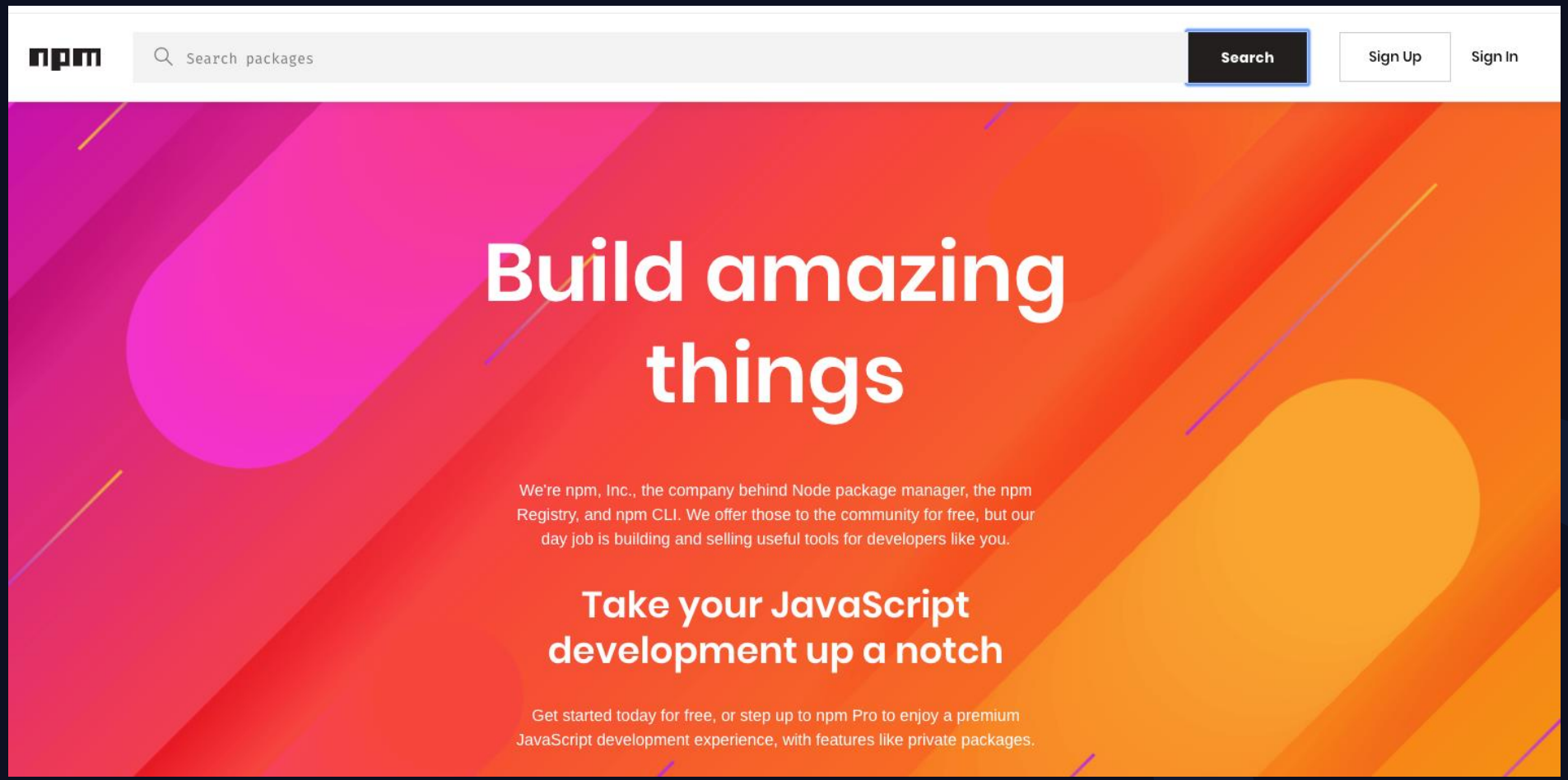
Node Package Manager (NPM)

- Files
- Web Servers
- Databases
- Security
- Many More



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https://www.npmjs.com/

NPM Commands

```
npm -v
```

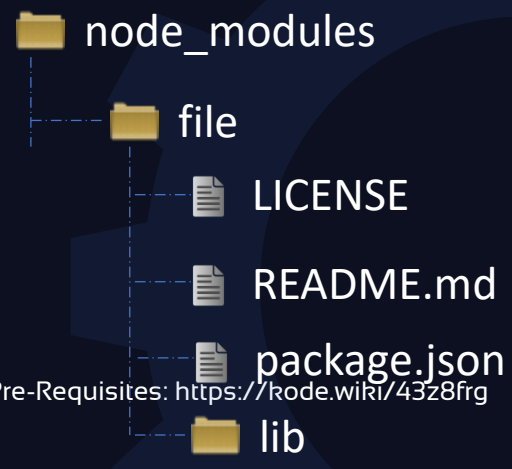
```
6.13.7
```

```
npm search file
```

```
NAME                | DESCRIPTION          | AUTHOR          | DATE
file                | Higher level path…   | =aconbere       | 2014-02-21
File                | HTML5 FileAPI…       | =coolaj86 =narf | 2014-10-24
dotenv              | Loads environment…   | =~jcblw…        | 2019-10-16
fs-extra            | fs-extra contains…   | =jprichardson…  | 2019-06-28
file-loader         | A file loader…       | =d3viant0ne…    | 2020-02-19
```

```
npm install file
```

```
+ file@0.2.2
added 1 package from 1 contributor and audited 1 package in 1.072s
found 0 vulnerabilities
```



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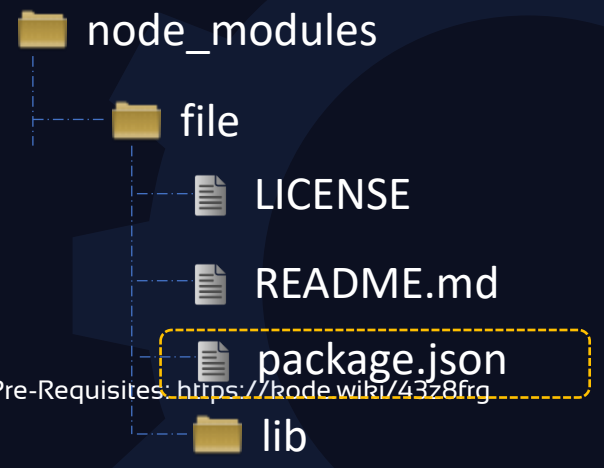
NPM Commands

package.json

```
{
  "author": {
    "name": "Anders Conbere",
    "email": "aconbere@gmail.com"
  },
  "bundleDependencies": false,
  "devDependencies": {
    "mocha": "1.9.x"
  },
  "directories": {
    "lib": "lib"
  },
  "homepage": "https://github.com/aconbere/node-file-utils#readme",
  "license": "MIT",
  "main": "./lib/file",
  "name": "file",
  "repository": {
    "type": "git",
    "url": "git+ssh://git@github.com/aconbere/node-file-utils.git"
  },
  "tags": [
    "file",
    "path",
    "fs",
    "walk"
  ],
  "version": "0.2.2"
}
```



NPM Commands

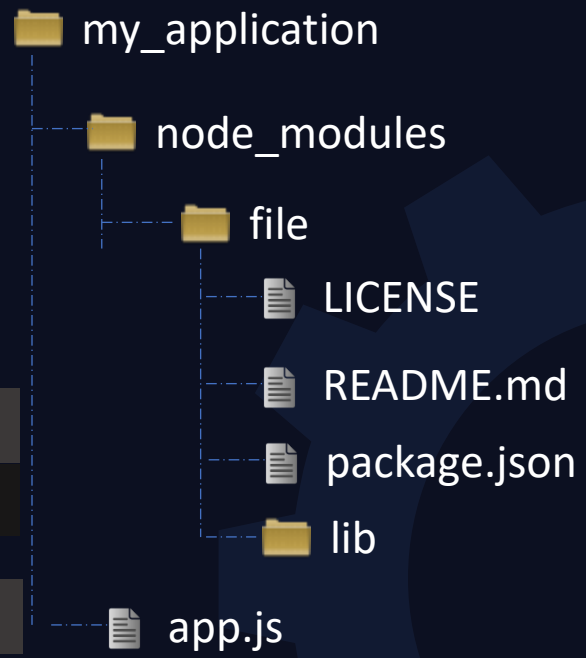
```
npm install file
```

```
+ file@0.2.2
added 1 package from 1 contributor and audited 1 package in 1.072s
found 0 vulnerabilities
```

app.js

```
var file = require("file");

file.mkdirs("/tmp/dir1")
```




```
node -e "console.log(module.paths)"
```

```
[ '/app/node_modules', '/node_modules' ]
```

```
npm install file -g
```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Common Modules

Built-In Modules	
fs	To handle filesystem
http	To host an HTTP server
os	To work with the Operating System
events	To handle events
tls	To implement TLS and SSL
url	To Parse URL Strings

External Modules	
express	Fast, unopinionated, minimalist web framework
react	To create user interfaces
debug	To debug applications
async	To work with asynchronous JS
lodash	To work with arrays, objects, strings etc

```
ls /usr/lib/node_modules/npm/node_modules/
```

```
ls /usr/lib/node_modules/
```

Application Dependencies

package.json

```
{
  "name": "example-contentful-theExampleApp-js",
  "version": "0.0.0",
  "private": true,
  "dependencies": {
    "body-parser": "^1.18.2",
    "contentful": "^6.0.0",
    "cookie-parser": "~1.4.3",
    "dotenv": "^5.0.0",
    "execa": "^0.9.0",
    "express": "^4.16.2",
    "helmet": "^3.11.0",
    "lodash": "^4.17.5",
    "marked": "^0.3.16",
    "morgan": "^1.9.1",
    "pug": "~2.0.0-beta6"
  }
}
```

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Python

- Free
- Open source
- Cross Platform Compatible

Download

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https://www.python.org/downloads/

Versions

- Python2 – (2000 – 2010)
- Python3 – (2008 to Present)

Install

```
yum install python2
```

```
yum install python36
```

```
python2
```

```
Python 2.7.16 (default, Nov 17 2019, 00:07:27)
[GCC 8.3.1 20190507 (Red Hat 8.3.1-4)] on linux2
Type "help", "copyright", "credits" or "license"
for more information.
>>> exit()
```

```
python3
```

```
Python 3.6.8 (default, Nov 21 2019, 19:31:34)
[GCC 8.3.1 20190507 (Red Hat 8.3.1-4)] on linux
Type "help", "copyright", "credits" or "license"
for more information.
>>> exit()
```

```
python2 -V
```

```
Python 2.7.16
```

```
python3 -V
```

```
Python 3.6.8
```

Python Commands

```
python2 main.py
Hello World
```

main.py

```
def print_message():
    print("Hello World")


if __name__ == '__main__':
    print_message()
```

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Python Package Manager (pip)

```
python2 -V
```

```
Python 2.7.16
```

```
python3 -V
```

```
Python 3.6.8
```

```
pip2 -V
```

```
pip 9.0.3 from /usr/lib/python2.7/site-packages
(python 2.7)
```

```
pip3 -V
```

```
pip 9.0.3 from /usr/lib/python3.6/site-packages
(python 3.6)
```

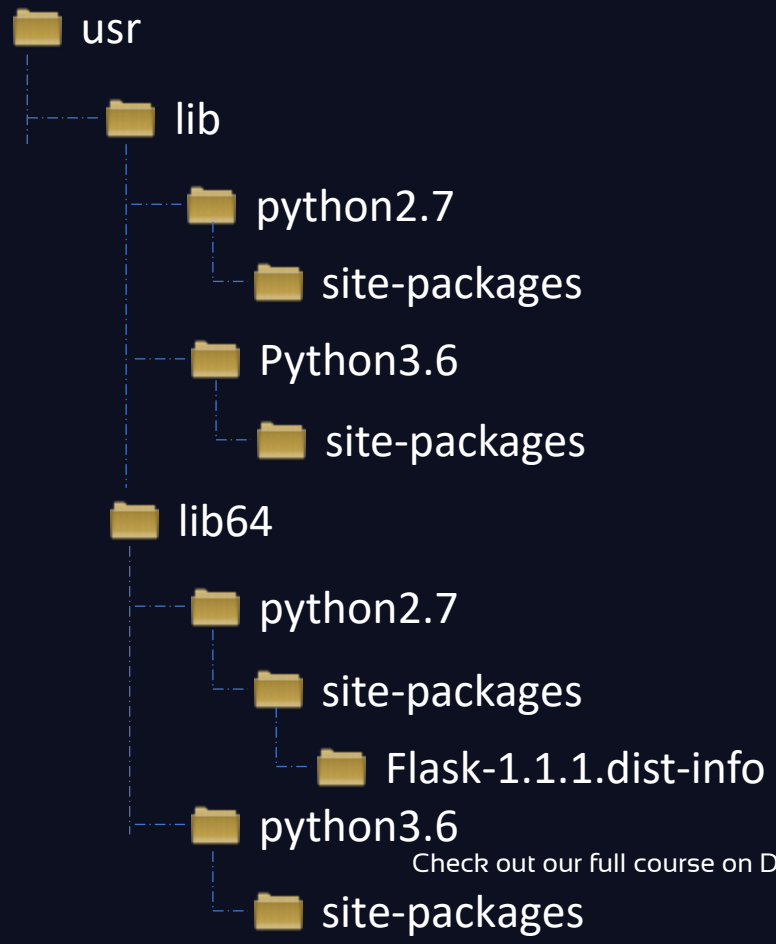
```
pip -V
```

```
pip 9.0.3 from /usr/lib/python2.7/site-packages (python 2.7)
```

```
pip install flask
```

Python Package Manager (pip)

```
pip install flask
```



Python Package Manager (pip)

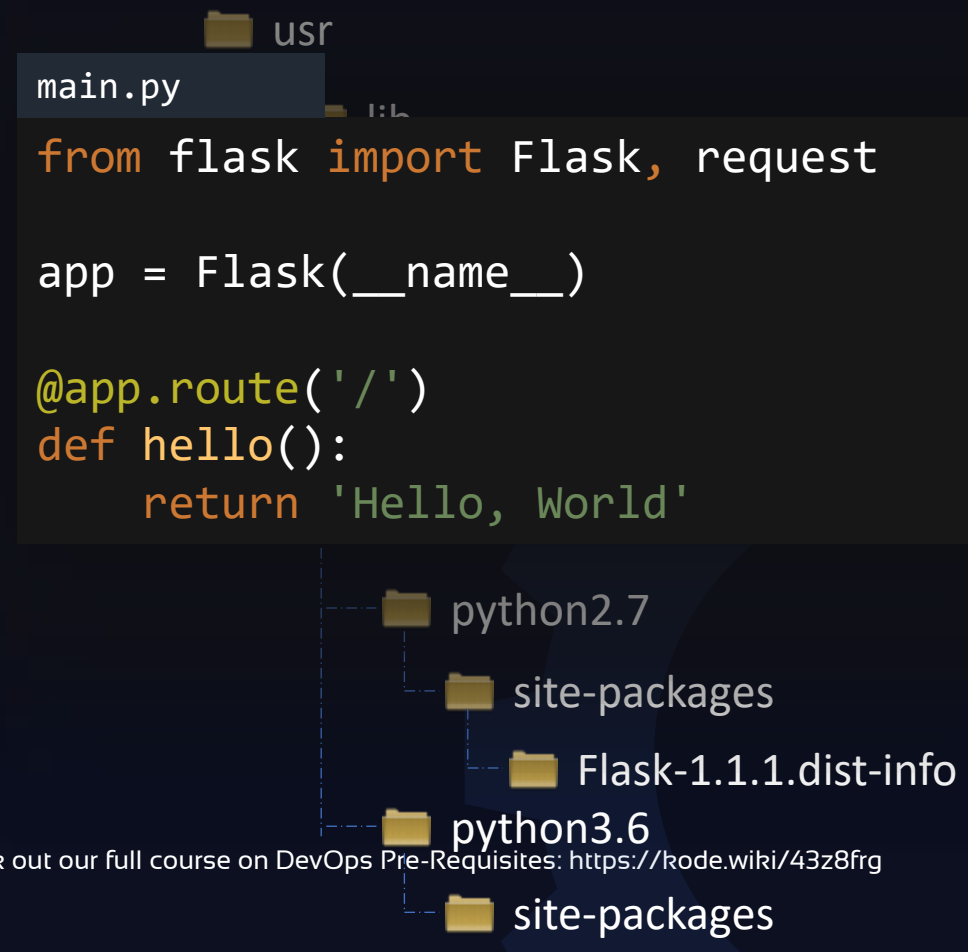
```
pip install flask
```

```
pip show flask
```

```
Name: Flask
Version: 1.1.1
Summary: A simple framework for building complex
web applications.
Home-page: https://palletsprojects.com/p/flask/
Author: Armin Ronacher
Author-email: armin.ronacher@active-4.com
License: BSD-3-Clause
Location: /usr/lib64/python2.7/site-packages
Requires: Werkzeug, click, Jinja2, itsdangerous
```

```
python2 -c "import sys; print(sys.path)"
```

```
'/usr/lib/python27.zip', '/usr/lib64/python2.7',
'/usr/lib64/python2.7/plat-linux2',
'/usr/lib64/python2.7/lib-tk',
'/usr/lib64/python2.7/lib-old',
'/usr/lib64/python2.7/lib-dynload',
'/usr/lib64/python2.7/site-packages',
'/usr/lib/python2.7/site-packages'
```



Requirements

```
pip install flask
```

```
pip install jinja2
```

```
pip install markupsafe
```

```
pip install Werkzeug
```

```
pip install requests
```

```
pip install gunicorn
```

requirements.txt

```
Flask==0.10.1

Jinja2==2.7.3

MarkupSafe==0.23

Werkzeug==0.9.6

requests==2.3.0

gunicorn==18.0
```

```
pip install flask jinja2 markupsafe
```

```
pip install -r requirements.txt
```

Upgrade/Uninstall Package

```
pip install flask --upgrade
```

```
Installing collected packages: click, flask
  Attempting uninstall: flask
    Found existing installation: Flask 0.10.1
    Uninstalling Flask-0.10.1:
      Successfully uninstalled Flask-0.10.1
Successfully installed click-7.1.1 flask-1.1.1
```

```
pip uninstall flask
```

```
Found existing installation: Flask 1.1.1
Uninstalling Flask-1.1.1:
  Would remove:
    /home/vagrant/.local/bin/flask
    /home/vagrant/.local/lib/python3.5/site-
packages/Flask-1.1.1.dist-info/*
    /home/vagrant/.local/lib/python3.5/site-
packages/flask/*
Proceed (y/n)? y
  Successfully uninstalled Flask-1.1.1
```

Other Package Managers

- easy_install

```
easy_install install app
```

- wheels

```
pip install app.whl
```

Check out our full course on DevOps Pre-Requisites: https://kode.wiki/43z8frg

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