

App Server Assignment

1. Glassfish:

Install Glassfish server and change HTTP port to 8088.

To install glassfish server, we have to download the zip file and unzip it.

```
~ wget https://download.eclipse.org/ee4j/glassfish/glassfish-6.2.2.zip
~ unzip glassfish-6.2.2.zip
```

Now to change the HTTP port we need to change it from the configuration file of the domain located where the file extracted above is, i.e., `glassfish6/glassfish/domains/domain1/config`, inside the `domain.xml` file. We will change the port in the xml.

```
<network-listeners>

<network-listener port="8088" protocol="http-listener-1"
transport="tcp" name="http-listener-1" thread-pool="http-thread-
pool"></network-listener>

</network-listeners>
```

To start the glassfish server, we need to add glassfish as a service. So, we will create a service file `/etc/systemd/system/glassfish.service`. This file should contain the settings as such:

```
[Unit]
Description = GlassFish Server v6.2
After = syslog.target network.target

[Service]
ExecStart=/opt/glassfish6/bin/asadmin start-domain
ExecReload=/opt/glassfish6/bin/asadmin restart-domain
ExecStop=/opt/glassfish6/bin/asadmin stop-domain
Type = forking

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

Now to enable and start the server we run the code

```
~ sudo systemctl daemon-reload
~ sudo systemctl enable glassfish
~ sudo systemctl start glassfish
```



```

tom@tom-VirtualBox:~$ mvn archetype:generate -DgroupId=com.demoapp -DartifactId=DemoProject -DarchetypeArtifactId=maven-archetype-webapp -DinteractiveMode=false
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by com.google.inject.internal.cglib.core.$ReflectUtils$1 (file:/usr/share/maven/lib/guice.jar) to method java.lang.ClassLoader.defineClass(java.lang.String,byte[],int,int,java.security.ProtectionDomain)
WARNING: Please consider reporting this to the maintainers of com.google.inject.internal.cglib.core.$ReflectUtils$1
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.apache.maven:standalone-pom >-----
[INFO] Building Maven Stub Project (No POM) 1
[INFO] -----[ pom ]-----
[INFO]
[INFO] >>> maven-archetype-plugin:3.2.0:generate (default-cli) > generate-sources @ standalone-pom >>>
[INFO]
[INFO] <<< maven-archetype-plugin:3.2.0:generate (default-cli) < generate-sources @ standalone-pom <<<
[INFO]
[INFO] --- maven-archetype-plugin:3.2.0:generate (default-cli) @ standalone-pom ---
[INFO] Generating project in Batch mode
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-webapp/1.0/maven-archetype-webapp-1.0.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-webapp/1.0/maven-archetype-webapp-1.0.pom (533 B at 1.0 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-bundles/2/maven-archetype-bundles-2.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-bundles/2/maven-archetype-bundles-2.pom (1.5 kB at 3.0 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetype/maven-archetype-parent/1/maven-archetype-parent-1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetype/maven-archetype-parent/1/maven-archetype-parent-1.pom (1.3 kB at 2.7 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/4/maven-parent-4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/4/maven-parent-4.pom (10.0 kB at 18 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/3/apache-3.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/3/apache-3.pom (3.4 kB at 7.2 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-webapp/1.0/maven-archetype-webapp-1.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/archetypes/maven-archetype-webapp/1.0/maven-archetype-webapp-1.0.jar (3.9 kB at 8.3 kB/s)
[INFO] -----
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-webapp:1.0
[INFO] -----
[INFO] Parameter: basedir, Value: /home/tom
[INFO] Parameter: package, Value: com.demoapp
[INFO] Parameter: groupId, Value: com.demoapp
[INFO] Parameter: artifactId, Value: DemoProject
[INFO] Parameter: packageName, Value: com.demoapp
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: /home/tom/DemoProject
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 16.877 s
[INFO] Finished at: 2021-11-15T01:57:58+05:45
[INFO] -----

```

Generate war package.

To deploy our Java Servlet application, we need to create war package of the application which can be created using maven.

Firstly, maven needs to set up to package the application as **war**, this can be done by updating **pom.xml** file of the project and adding line below inside the **<project>** tag:

```
<packaging>war</packaging>
```

Now to create the war package we need to build / package the application using the command:

```
~ mvn package
```

```

tom@tom-VirtualBox:~/DemoProject$ mvn package
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by com.google.inject.internal.cglib.core.$ReflectUtils$1 (file:/usr/share/maven/lib/guice.jar) to
method java.lang.ClassLoader.defineClass(java.lang.String,byte[],int,int,java.security.ProtectionDomain)
WARNING: Please consider reporting this to the maintainers of com.google.inject.internal.cglib.core.$ReflectUtils$1
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.demoapp:DemoProject >-----
[INFO] Building DemoProject Maven Webapp 1.0-SNAPSHOT
[INFO] -----[ war ]-----
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/2.6/maven-resources-pl
ugin-2.6.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/2.6/maven-resources-pl
ugin-2.6.pom (8.1 kB at 4.7 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/2.6/maven-resources-pl
ugin-2.6.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/2.6/maven-resources-pl
ugin-2.6.jar (30 kB at 48 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.1/maven-compiler-plu
gin-3.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.1/maven-compiler-plu
gin-3.1.pom (10 kB at 19 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.1/maven-compiler-plu
gin-3.1.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.1/maven-compiler-plu
gin-3.1.jar (43 kB at 69 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-surefire-plugin/2.12.4/maven-surefire-
plugin-2.12.4.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-surefire-plugin/2.12.4/maven-surefire-
plugin-2.12.4.pom (10 kB at 18 kB/s)

```

Deploy the war using glassfish app server.

To deploy the app to glassfish server, we can use **asadmin** utility.

```
~ deploy --host localhost <path-to-war-file>
```

```

tom@tom-VirtualBox:/opt/glassfish6/bin$ sudo ./asadmin
Use "exit" to exit and "help" for online help.
asadmin> deploy --host localhost ~/DemoProject/target/DemoProject.war
remote failure: File not found : /opt/glassfish6/bin/~/DemoProject/target/DemoProject.war
Command deploy failed.
asadmin> deploy --host localhost /home/tom/DemoProject/target/DemoProject.war
Application deployed with name DemoProject.
Command deploy executed successfully.
asadmin> exit
Command multimode executed successfully.

```



2. Gunicorn

Create Django starter project in a separate virtual environment.

A virtual environment needs to be created

```
~ python3 -m venv ~/cli
```

To access the virtual environment

```
~ source ~/cli/bin/activate
```

Now to install Django we will be using **pip**

```
~ pip install django
```

Creating a starter Django project

```
~ django-admin startproject demoproject
```

```
tom@tom-VirtualBox:~$ source cli/bin/activate
source: command not found
tom@tom-VirtualBox:~$ source cli/bin/activate
(cli) tom@tom-VirtualBox:~$ python freeze
python: can't open file 'freeze': [Errno 2] No such file or directory
(cli) tom@tom-VirtualBox:~$ pip freeze
certifi==2021.10.8
charset-normalizer==2.0.7
idna==3.3
requests==2.26.0
URL-scrapper==1.0
urllib3==1.26.7
(cli) tom@tom-VirtualBox:~$ pip install django
Collecting django
  Downloading Django-3.2.9-py3-none-any.whl (7.9 MB)
    | 7.9 MB 1.8 MB/s
Collecting sqlparse>=0.2.2
  Downloading sqlparse-0.4.2-py3-none-any.whl (42 kB)
    | 42 kB 334 kB/s
Collecting asgiref<4,>=3.3.2
  Downloading asgiref-3.4.1-py3-none-any.whl (25 kB)
Collecting pytz
  Downloading pytz-2021.3-py2.py3-none-any.whl (503 kB)
    | 503 kB 2.8 MB/s
Installing collected packages: sqlparse, asgiref, pytz, django
Successfully installed asgiref-3.4.1 django-3.2.9 pytz-2021.3 sqlparse-0.4.2
(cli) tom@tom-VirtualBox:~$ pip install gunicorn
Collecting gunicorn
  Downloading gunicorn-20.1.0-py3-none-any.whl (79 kB)
    | 79 kB 775 kB/s
Requirement already satisfied: setuptools>=3.0 in ./cli/lib/python3.8/site-packages (from gunicorn) (44.0.0)
Installing collected packages: gunicorn
Successfully installed gunicorn-20.1.0
```

Deploy the 3 instances of application using Gunicorn in 8089 port.

Installing of Gunicorn, app server for Django

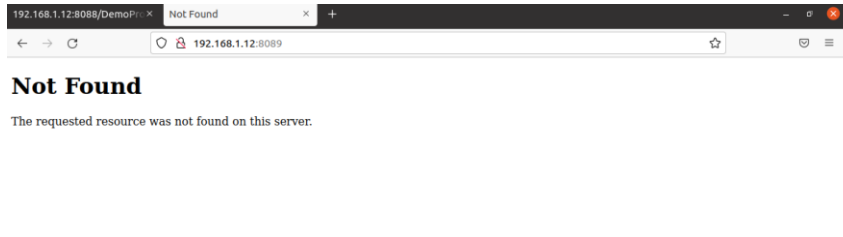
```
~ pip install gunicorn
```

Now to configure gunicorn server we need to create a configuration file, preferably in a config folder. Config file needs to be a **.py** file. Let's create a configuration file **gunicorn.conf.py** and write the settings as below:

```
command='<path-to-gunicorn-binary>'
pythonpath='<path-to-python-project>'
bind='<ip>:<port>'
workers=3
```

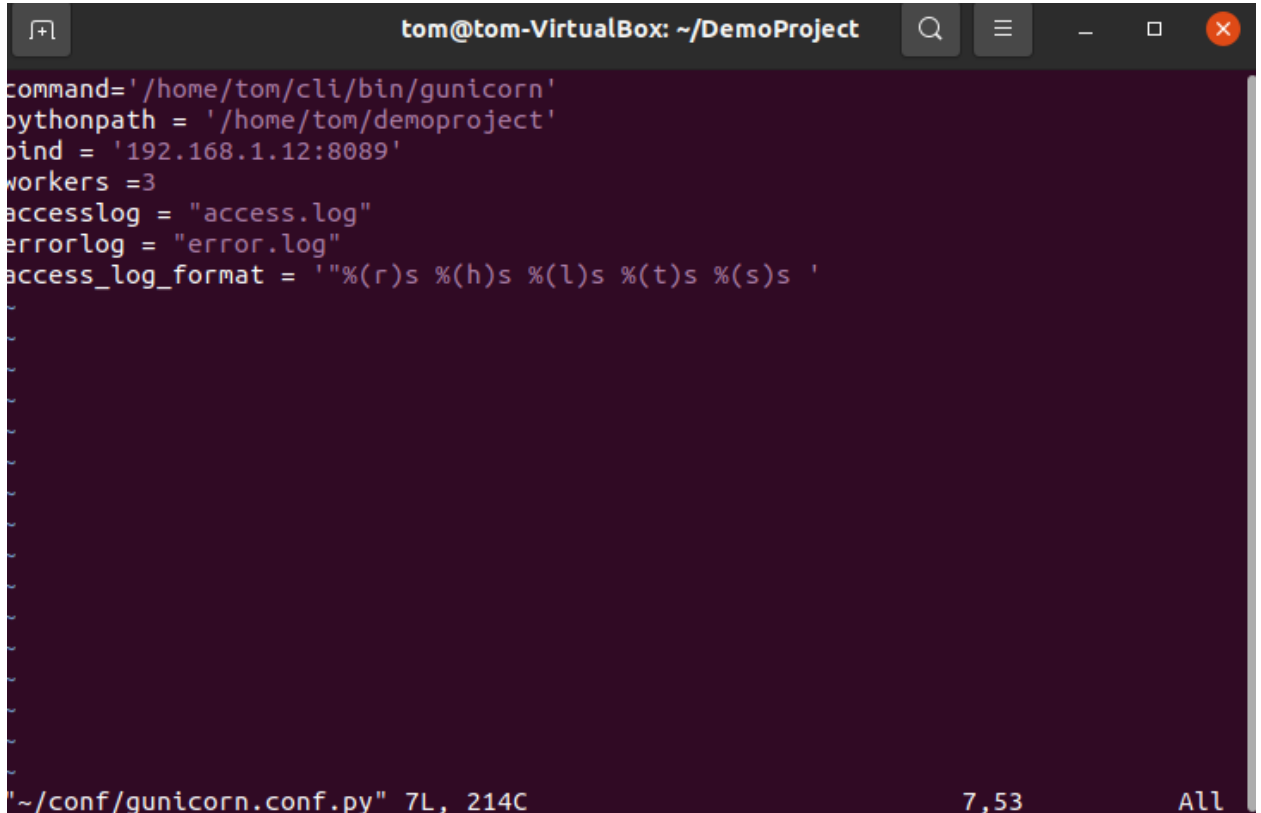
To deploy the application to gunicorn now we need to run the command:

```
~ gunicorn -c <path-to-config> projectname.[wsgi]
```



Dump access log in a file in non-default pattern.

To dump access log, we can change the Gunicorn config file with **accesslog** setting and we can change the patterns as well using **access_log_format** settings.



So, the new config file becomes:

```
command='<path-to-guincorn-binary>'
pythonpath='<path-to-python-project>'
bind='<ip>:<port>'
workers=3
accesslog ="access.log"
access_log_format = '%(r)s %(h)s %(l)s %(t)s %(s)s '
```

[Dump error log in a file.](#)

Similar to access log, error logs can be dumped using the config file with **errorlog** setting.

Config file at the end becomes:

```
command='<path-to-guincorn-binary>'
pythonpath='<path-to-python-project>'
bind='<ip>:<port>'
workers=3
accesslog ="access.log"
access_log_format = '%(r)s %(h)s %(l)s %(t)s %(s)s '
errorlog ="error.log"
```

```
(cli) tom@tom-VirtualBox:~/DemoProject$ cat access.log
"GET / HTTP/1.1 192.168.1.12 - [15/Nov/2021:05:04:38 +0000] 404
"GET / HTTP/1.1 192.168.1.12 - [15/Nov/2021:05:04:56 +0000] 404
"GET / HTTP/1.1 192.168.1.12 - [15/Nov/2021:05:04:56 +0000] 404
"GET / HTTP/1.1 192.168.1.12 - [15/Nov/2021:05:04:56 +0000] 404
"GET / HTTP/1.1 192.168.1.12 - [15/Nov/2021:05:04:57 +0000] 404
"GET / HTTP/1.1 192.168.1.12 - [15/Nov/2021:05:04:57 +0000] 404
"GET / HTTP/1.1 192.168.1.12 - [15/Nov/2021:05:04:57 +0000] 404
"GET / HTTP/1.1 192.168.1.12 - [15/Nov/2021:05:04:57 +0000] 404
(cli) tom@tom-VirtualBox:~/DemoProject$
```