

ADD and COPY

COPY and **ADD** are both **Dockerfile** instructions that serve similar purposes. They let you copy files from a specific location into a Docker image.

Purpose

Copy the files from source to destination. COPY and ADD both have two forms.

ADD [--chown=<user>:<group>] <src>... <dest>

ADD [--chown=<user>:<group>] ["<src>",... "<dest>"]

This latter form is required for paths containing whitespace.

And COPY

COPY [--chown=<user>:<group>] <src>... <dest>

COPY [--chown=<user>:<group>] ["<src>",... "<dest>"]

This latter form is required for paths containing whitespace.

Create two sample files.

```
$ mkdir copy_add
```

```
$ cd copy_add
```

```
$ echo "this is sample file" > sample.txt
```

```
$ echo "this is example file" > example.txt
```

Write a **Dockerfile** using **COPY** and **ADD**

```
FROM busybox
```

```
COPY sample.txt /tmp
```

```
ADD example.txt /tmp
```

```
CMD ["sh"]
```

Build the docker image

```
$ docker build -t copyaddtest .
```

Run as a container

```
$ docker run -it --name copyaddtest copyaddtest sh
```

Test it

```
# ls -ltr /tmp
```

```
[ec2-user@ip-172-31-47-246 copy_add]$ docker run -it --name copyaddtest copyaddtest sh
/ # ls -ltr /tmp
total 8
-rw-rw-r-- 1 root root 21 Oct 3 03:31 example.txt
-rw-rw-r-- 1 root root 20 Oct 3 03:31 sample.txt
/ #
```

Here as we seen COPY and ADD we can use same purpose but there are couple of difference, lets discuss

Difference

COPY

- ✚ The COPY instruction copies files or directories into the Docker image.
- ✚ It takes a src and destination as arguments.
- ✚ Source can be absolute or relative from current WORKDIR or wild cards.
- ✚ Destination path can be absolute or relative to current WORKDIR.

For Example:

```
COPY ./requirements.txt /app/requirements.txt
COPY package.json package-lock.json /app
COPY package*.json /app
COPY . /app
```

ADD

- ✚ The ADD instruction copies files, directories, remote file or tar archive into the Docker image.
- ✚ It takes a src and destination as arguments.
- ✚ Source can be files and directories.
- ✚ Source can be a URL. The ADD instruction will download the file from the URL and save it to the destination. We don't need to use curl or wget to download a file.
- ✚ Source can be a local tar/zip archive. The ADD instruction will automatically extract it to the destination. We don't need to run unarchive commands manually.
- ✚ Use ADD when you want download a file from a URL or extract local archive file.
- ✚ For Example:

For Example:

```
ADD ./example.tar.gz /tmp/
ADD https://bootstrap.pypa.io/get-pip.py /get-pip.py /get-pip.py
ADD example.txt /tmp/
ADD https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.58/bin/apache-tomcat-8.5.58.tar.gz /tmp/
```

Create sample tar

```
$ tar -cvzf example.tar.gz ./
```

```
[ec2-user@ip-172-31-47-246 copy_add]$ tar -cvzf example.tar.gz ./
./
./sample.txt
./Dockerfile
./example.txt
```

Use ADD

FROM busybox

ADD example.tar.gz /tmp/

CMD ["sh"]

Build the image

```
$ docker build -t copyaddtest:v1 .
```

Run the container

```
$ docker run -it --name copyaddtest1 copyaddtest:v1 sh
```

Test it

```
[ec2-user@ip-172-31-47-246 copy_add]$ docker run -it --name copyaddtest1 copyaddtest:v1 sh
/ # cd /tmp/
/tmp # ls -ltr
total 16
-rw-rw-r-- 1 500      500      21 Oct  3 03:31 example.txt
-rw-rw-r-- 1 500      500      20 Oct  3 03:31 sample.txt
-rw-rw-r-- 1 500      500      67 Oct  3 03:34 Dockerfile
-rw-rw-r-- 1 500      500     285 Oct  3 03:54 example.tar.gz
```

Use COPY

Write a sample Dockerfile

FROM busybox

COPY example.tar.gz /tmp/

CMD ["sh"]

Let's build the image

```
$ docker build -t copyaddtest:v2 .
```

Let's run the container

```
$ docker run -it --name copyaddtest2 copyaddtest:v2 sh
```

Let's test it

```
[ec2-user@ip-172-31-47-246 copy_add]$ docker run -it --name copyaddtest2 copyaddtest:v2 sh
/ # cd /tmp/
/tmp # ls -ltr
total 4
-rw-rw-r-- 1 root      root          635 Oct  3 03:54 example.tar.gz
```

Conclusion: here ADD command its copied and extracted where COPY only do copy the files.

If you want to extract the tar file need to add one more extra command in Dockerfile.

Let's see...

FROM busybox

COPY example.tar.gz /tmp/

WORKDIR /tmp/

RUN tar -xvzf example.tar.gz .

CMD ["sh"]

Build the docker image

\$ docker build -t copyaddtest:v3 .

Run the docker container

\$ docker run -it --name copyaddtest3 copyaddtest:v3 sh

Let's test it

```
[ec2-user@ip-172-31-47-246 copy_add]$ docker run -it --name copyaddtest3 copyaddtest:v3 sh
/tmp # ls -ltr
total 16
-rw-rw-r-- 1 500      500          21 Oct  3 03:31 example.txt
-rw-rw-r-- 1 500      500          20 Oct  3 03:31 sample.txt
-rw-rw-r-- 1 500      500          67 Oct  3 03:34 Dockerfile
-rw-rw-r-- 1 500      500         285 Oct  3 03:54 example.tar.gz
/tmp # █
```

FROM URL

FROM busybox

WORKDIR /tmp/

ADD https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.58/bin/apache-tomcat-8.5.58.tar.gz /tmp/

CMD ["sh"]

Build the image

\$ docker build -t test:v10 .

Run the container

```
$ docker run -it --name test10 test:v10 sh
```

Test the container

```
[ec2-user@ip-172-31-47-246 copy_add]$ docker run -it --name test10 test:v10 sh
/tmp # ls -ltr
total 10180
-rw----- 1 root    root      10420837 Sep 10 22:03 apache-tomcat-8.5.58.tar.gz
/tmp # █
```

If you want extract tar file you need add RUN tar command. Let's see

FROM busybox

WORKDIR /tmp/

ADD <https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.58/bin/apache-tomcat-8.5.58.tar.gz> /tmp/

RUN tar -xvzf apache-tomcat-8.5.58.tar.gz

CMD ["sh"]

Build the image

```
$ docker build -t test:v11 .
```

Run the container

```
$ docker run -it --name test11 test:v11 sh
```

Test the container

```
[ec2-user@ip-172-31-47-246 copy_add]$ docker run -it --name test11 test:v11 sh
/tmp # ls -ltr
total 10184
-rw----- 1 root    root      10420837 Sep 10 22:03 apache-tomcat-8.5.58.tar.gz
drwxr-xr-x 9 root    root         4096 Oct  6 04:39 apache-tomcat-8.5.58
/tmp # █
```

Best practices using ADD and Copy

Instead of using add to download form remote url use curl or wget and use && multiple commands to execute.

FROM ubuntu

WORKDIR /tmp/

RUN apt-get update && apt-get install wget -y && wget

<https://mirrors.estointernet.in/apache/tomcat/tomcat-8/v8.5.58/bin/apache-tomcat-8.5.58.tar.gz>

&& tar xvf apache-tomcat-8.5.58.tar.gz && rm -rf apache-tomcat-8.5.58.tar.gz

CMD ["sh"]

Build the image

```
$ docker build -t test:v12 .
```

Run the container

```
docker run -it --name test12 test:v12 bash
```

test the container

```
[ec2-user@ip-172-31-47-246 copy_add]$ docker run -it --name test12 test:v12 bash
root@5aabfa5fcd9d:/tmp# ls -ltr
total 4
drwxr-xr-x 9 root root 4096 Oct  6 10:58 apache-tomcat-8.5.58
```

Finally one more :

One more noteworthy difference between **ADD** and **COPY** is that **COPY** has the **--from=<name|index>** flag that lets you copy files from a previous build stage in a multi-stage build. **ADD** does not have this option.

This is another reason to use **COPY** as your preferred option.

