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How can I use matplotlib.pyplot in a docker container?

I have a certain setting of Python in an docker image named `deep`. I used to run python code

```
docker run --rm -it -v "$PWD":/app -w /app deep python some-code.py
```

For information, `-v` and `-w` options are to link a local file in the current path to the container.

However, I can't use `matplotlib.pyplot`. Let's say `test.py` is

```
import matplotlib.pyplot as plt
plt.plot([1,2], [3,4])
plt.show()
```

I got this error.

```
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
  File "/usr/lib/python2.7/dist-packages/matplotlib/pyplot.py", line 3147, in plot
    ax = gca()
  File "/usr/lib/python2.7/dist-packages/matplotlib/pyplot.py", line 928, in gca
    return gcf().gca(**kwargs)
  File "/usr/lib/python2.7/dist-packages/matplotlib/pyplot.py", line 578, in gcf
    return figure()
  File "/usr/lib/python2.7/dist-packages/matplotlib/pyplot.py", line 527, in figure
    **kwargs)
  File "/usr/lib/python2.7/dist-packages/matplotlib/backends/backend_tkagg.py", line
    64, in new_figure_manager
```

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```
self.tk = _tkinter.create(screenName, baseName, className, interactive,
wantobjects, useTk, sync, use)
_tkinter.TclError: no display name and no $DISPLAY environment variable
```

With solution search, **I am having only one solution.** I figured out I can do if

```
$ xauth list
xxxx/unix:0 yyyy 5nsk3hd          # copy this list
$ docker run --rm -it -v "$PWD":/app -w /app \
    --net=host -e DISPLAY \
    -v /tmp/.X11-unix:/tmp/.X11-unix \
    deep bash

inside-container$ xauth add xxxx/unix:0 yyyy 5nsk3hd  # paste the list
inside-container$ python test.py                     # now the plot works!!
```

My question is, instead of all those launching `bash`, setting `xauth`, and running Python **inside** container, **can I do such setting with docker run so that I can just run the code outside of the container?**

I tried

```
docker run --rm -it -v "$PWD":/app -w /app \
    --net=host -e DISPLAY \
    -v /tmp/.X11-unix:/tmp/.X11-unix \
    -e "xauth add xxxx/unix:0 yyyy 5nsk3hd" \
    deep python test.py
```

using `--entry` parameter, but it didn't work. Please help.

[python](#) [docker](#) [matplotlib](#)

edited Sep 3 at 8:53

asked Sep 2 at 20:52



[YW P Kwon](#)

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You could SSH forward the display – [cricket_007](#) Sep 2 at 21:01

`-e` is environment variable, by the way. Your command isn't using `--entrypoint` – [cricket_007](#) Sep 2 at 21:02

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Interestingly, I found quite nice and thorough solutions in ROS community.

<http://wiki.ros.org/docker/Tutorials/GUI>

For my problem, my final choice is the second way in the tutorial:

```
docker run --rm -it \  
  --user=$(id -u) \  
  --env="DISPLAY" \  
  --workdir=/app \  
  --volume="$PWD":/app \  
  --volume="/etc/group:/etc/group:ro" \  
  --volume="/etc/passwd:/etc/passwd:ro" \  
  --volume="/etc/shadow:/etc/shadow:ro" \  
  --volume="/etc/sudoers.d:/etc/sudoers.d:ro" \  
  --volume="/tmp/.X11-unix:/tmp/.X11-unix:rw" \  
  deepaul python test.python
```

answered Sep 2 at 22:18



YW P Kwon

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