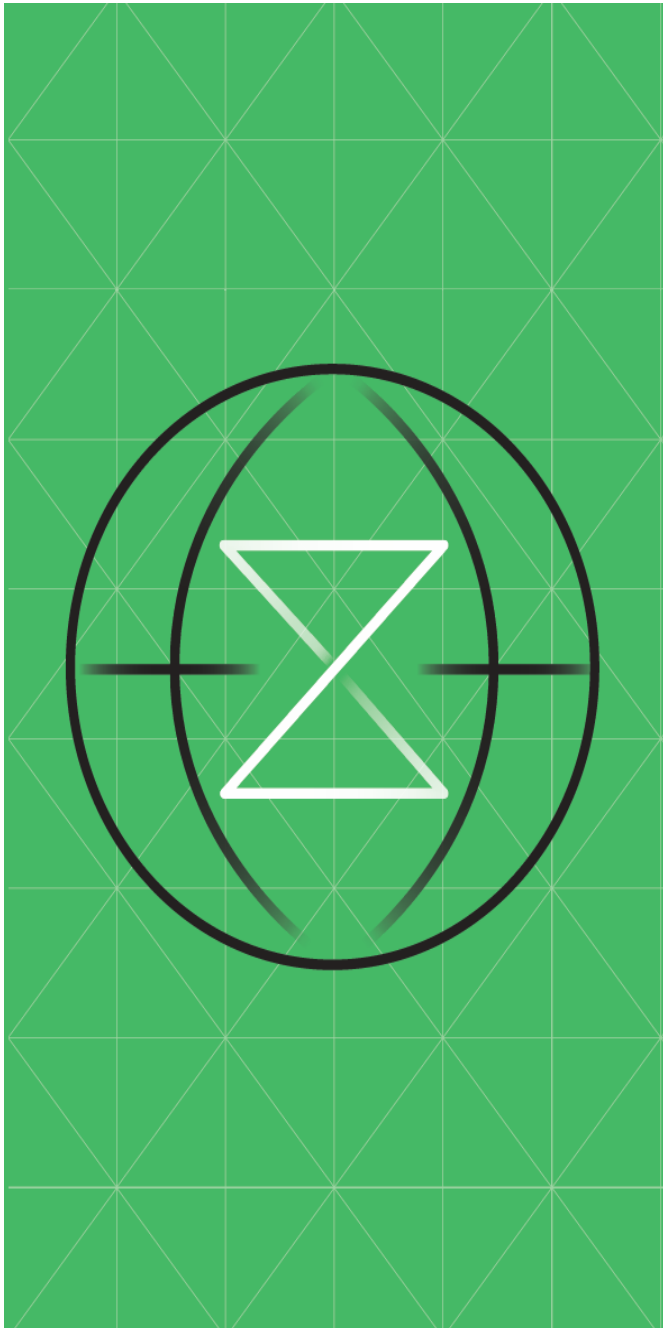


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PYT1

More Python on z/OS

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USING PYTHON ON Z/OS

Using Python work with data in USS and MVS

The Challenge

During this challenge you will be using Python programming to create a simple script and execute this in z/OS. You will be able to do some basic Dataset management as well as setting variables and displaying output.

Before You Begin

Make sure you have a basic understanding of using a TSO interface, Dataset management, USS and SSH

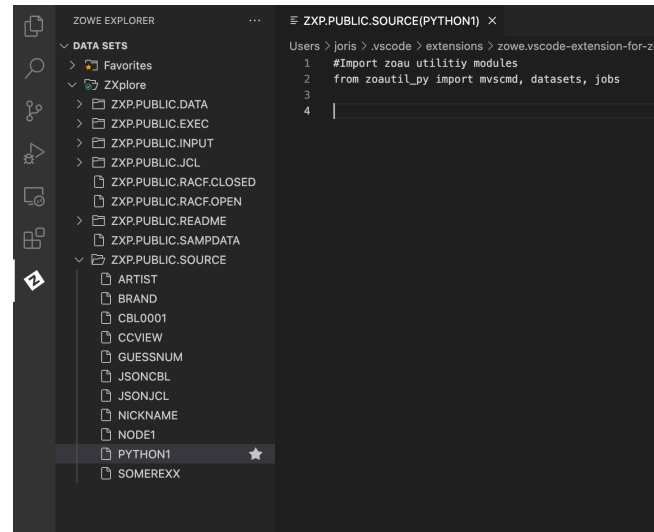
Investment

Steps	Duration
4	45 minutes

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1 GETTING THE CODE

Use VSCode to logon to the ZXPlore platform. set a filter on the datasets using “ZXP.PUBLIC”. Locate the Dataset “ZXP.PUBLIC.SOURCE” and open the Dataset member called “PYTHON1”. Select all the text and copy this with Ctrl+c or cmd+c, depending on your workstation operating system.

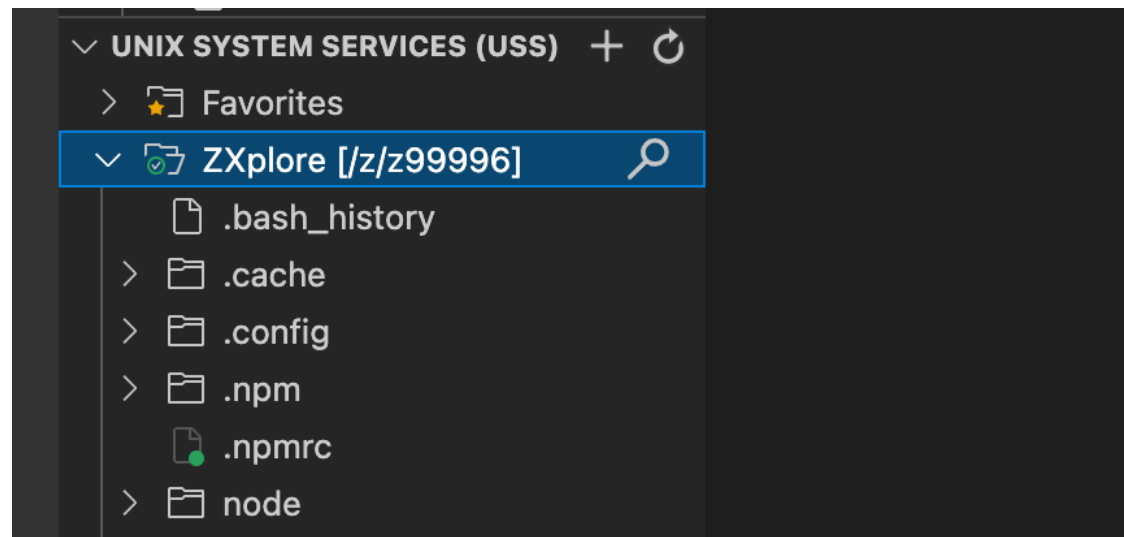


PYTHON1

Now use the USS interface in VSCode and open your own user directory. You can do this by setting a filter “/z/zxxxxxx” where you replace the zxxxxxx with your userid.

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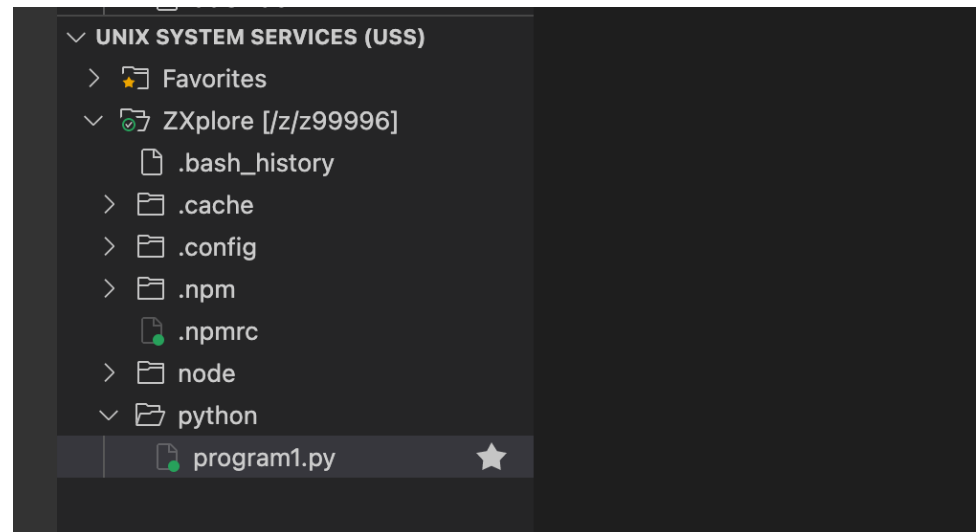
PYTHON1



2 CREATE THE FILE

The next step is to create an empty file which you will use to write the program code. Optionally, you can create a folder first to store your file in to keep your directory structured. Right-click on your home folder and select “Create folder or Create file”. Give the folder and file any name you like as long as the filename ends with .py to give it the Python extension.

You should end up with something similar like this.



PYTHON1

Now paste the codelines we copied from the “ZXP.PUBLIC.SOURCE(PYTHON1)” member into this file.

```
1 #Import zoau utility modules
2 from zoutil_py import mvscmd, datasets, jobs
3 import os
4
5
```

PYTHON1

Great! you just entered your first and very important python codelines.

What this code does is import the Python modules (installed on the ZXPlore system) which allows the code to understand specific code statements.

The module called `zooutil_py` enables you to use code to interact with z/OS, while the `os` module help your code to get information from the operating system itself.

Note: the VSCode python support may show errors indicating it cannot find the `zooutil_py` package – this is to be expected as it is only installed on the server. *Do not try and install `zooutil_py` on your workstation/laptop – it will not work*

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3 WRITING THE CODE

First you will want to set a HLQ (remember High Level Qualifier) to make sure that everything you do with datasets will end up in your own addressspace where you have “write” access.

Enter the code below and make sure you replace the userid with your own userid.

```
#set user ID as the High Level Qualifier. ENTER YOUR OWN USERID HERE.  
HLQ="z99996"
```

```
#Import zoau utility modules  
from zoautil_py import mvscmd, datasets, jobs  
import os  
  
# set user ID as the High Level Qualifier. ENTER YOUR OWN USERID HERE.  
HLQ="z99996"
```

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PYTHON1

Now some code to create a dataset with data inside it.

Copy/ Paste the code below for creating a sequential dataset called “PYTHON.DATA” and here the HLQ will be inserted in front.

```
# create a sequential dataset  
datasets.create("%s.PYTHON.DATA" % HLQ, dataset_type="seq", record_length = 80,  
record_format="FB", primary_space="100k")
```

Use the code below to store data in this dataset. The data is in this case just some text.

```
# write your data in the dataset
datasets.write("%s.PYTHON.DATA" % HLQ, content='THIS IS JUST CONTENT CREATED BY USING PYTHON')
```

```
#Import zoau utility modules
from zoautl.py import mvscmd, datasets, jobs
import os

# set user ID as the High Level Qualifier. ENTER YOUR OWN USERID HERE.
HLQ="z99996"

# create a sequential dataset (type=seq)
datasets.create("%s.PYTHON.DATA" % HLQ, type="seq", record_length = 80, record_format="FB", primary_space="100k")

# write your data in the dataset
datasets.write("%s.PYTHON.DATA" % HLQ, content='THIS IS JUST CONTENT CREATED BY USING PYTHON')
```

PYTHON1

That is it! When you execute this code it will create a dataset and enter the text data. But before you do, that let's add a small extra. In order to see what data is inserted you can enter some code which will show it as the program runs. In addition you can read the user who did enter the data and display that as a return response.

You can insert the code as below to read and display the data entered in the dataset

```
● # check if the data is in the dataset
● print(datasets.read("%s.PYTHON.DATA" % HLQ))
```

In addition, read the userid who is executing the script by setting the user as a variable.

```
● # get your username from the system and store it in user
● user=os.environ.get("USER")
```

Now that the username is known, you can do several things with this. For now, just include this in the return message.


```
● #print user
● print('this program is executed by' +user)
```

Your code should look something like this now

```
1  #Import zoau utility modules
2  from zoautl.py import mvscmd, datasets, jobs
3  import os
4
5  # set user ID as the High Level Qualifier. ENTER YOUR OWN USERID HERE.
6  HLQ="z99996"
7
8  # create a sequential dataset (type=seq)
9  datasets.create("%s.PYTHON.DATA" % HLQ, type="seq", record_length = 80, record_format="FB", primary_space="100k")
10
11 # write your data in the dataset
12 datasets.write("%s.PYTHON.DATA" % HLQ, content='THIS IS JUST CONTENT CREATED BY USING PYTHON')
13
14
15 # check if the data is in the dataset
16 print(datasets.read("%s.PYTHON.DATA" % HLQ))
17
18 # get your username from the system and store it in user
19 user=os.environ.get("USER")
20 #print user
21
22 print('this program is executed by' +user)
```

PYTHON1

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4 KICKING IT OFF!

Let's run this code!

In VSCode open a new terminal by using the menu option “terminal, new terminal”.

You will need to make a SSH connection towards the ZXPlore environment by entering the following on the terminal command line:

`ssh userid@204.90.115.200` - replace the word *userid* with your ZXPlore ID.

It will ask for a confirmation to store the connection fingerprint the first time. Type “yes” to acknowledge. It will now ask you for your password. Enter your ZXPlore password here. (**Note** the cursor will not move or display your password.)



The screenshot shows a VS Code terminal window with the 'TERMINAL' tab selected. The terminal output is as follows:

```
Joriss-MacBook-Pro-2:~ joris$ ssh z99996@204.90.115.200
z99996@204.90.115.200's password:
/z/z99996 > █
```

PYTHON1

Ok you are in; now navigate into the folder where you stored the Python script, or display the directory by using the `ls` command

```
Joriss-MacBook-Pro-2:~ joris$ ssh z99996@204.90.115.200
z99996@204.90.115.200's password:
/z/z99996 > cd python
/z/z99996/python > ls
program1.py
/z/z99996/python > █
```

PYTHON1

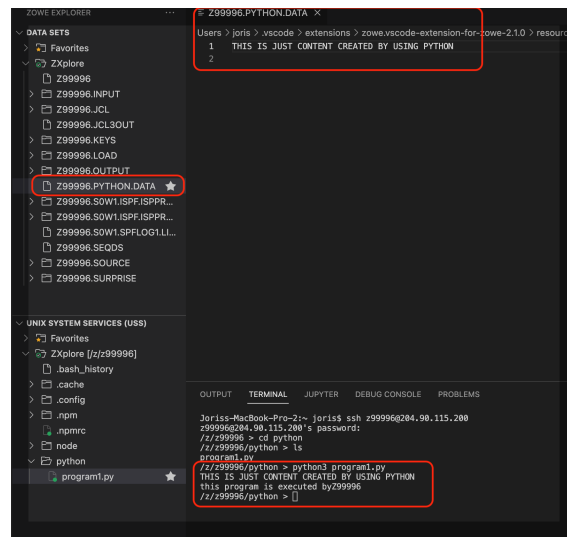
Execute the command with the “python3” command

```
python3 program1.py
```

Observe what happens.

You should expect that a dataset called “ZXXXXX.PYTHON.DATA” will be created in your MVS namespace. You will also see the string of data in your return code as well as your userid.

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PYTHON1

5 SUMMARY

Congratulations!

You just executed a Python script on z/OS which:

- Created a dataset
- entered data in the dataset
- read the data from that dataset and displayed it
- read and displayed your user id.

There are many more functions you can do with Python on z/OS.

Feel free to explore more Python commands.