Fundamentals

VSC1

Installing and Configuring Visual Studio Code

Z Xplore

VSC1 - GET YOURSELF CONNECTED

The Challenge

We'll be connecting through Zowe Explorer plugin for VSCode. To get there, you'll need your very own userid and password, plus a few pieces of supporting software. Fortunately, it's all very simple and shouldn't take much time at all. You can also use these instructions to help you get connected again if you have to switch computers or start all over again for any reason.
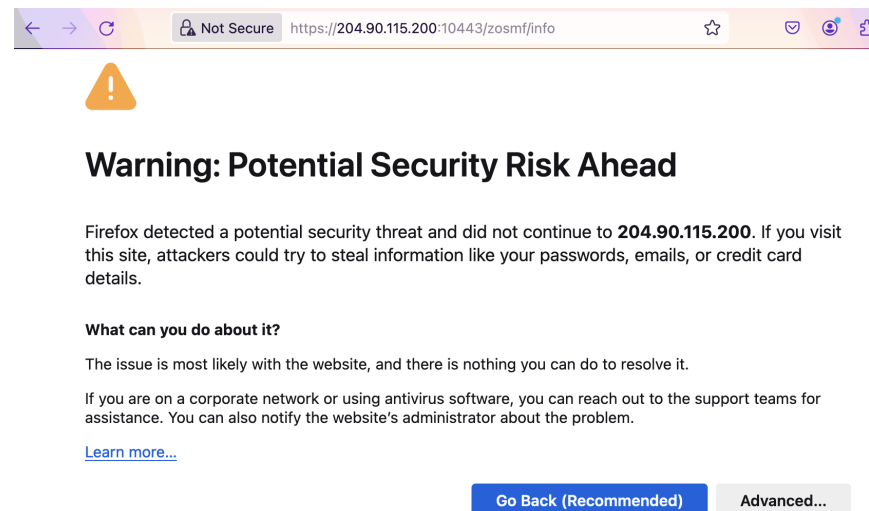
Before You Begin

Since this is the first technical challenge, all you need is about 45 minutes to get everything downloaded, installed, and ready to go.

REQUIRED: Test that you can connect to the z/OS server using your browser:

https://204.90.115.200:10443/zosmf/info

Because of our self-signed certificates, you should see something like:

This is OK. Or perhaps the target page will load directly:

{"zos_version":"04.27.00","zosmf_port":"10443","zosmf_version":"27","zosmf_hostname":"S0W1.DAL-EBIS.
[{"pluginVersion":"HSMA240;PH53843;2023-12-15T02:57:44","pluginDefaultName":"z\/OS Operator Consoles
{"pluginVersion":"HSMA244;PH59021P;2024-03-05T20:33:22","pluginDefaultName":"Software Deployment","p
{"pluginVersion":"HSMA240;ph47651;2022-10-21T08:57:08","pluginDefaultName":"Variables","pluginStatus
{"pluginVersion":"HSMA247;PH57064;2024-02-20T09:55:34","pluginDefaultName":"Workflow","pluginStatus"
{"pluginVersion":"HSMA245;PH52787;2023-04-27T02:14:12","pluginDefaultName":"IncidentLog","pluginStat
{"pluginVersion":"HSMA24A;PH50549;2023-09-25T05:57:10","pluginDefaultName":"Network Configuration
Assistant","pluginStatus":"ACTIVE"},{"pluginVersion":"HSMA240;PH44343;2022-06-29T10:26:47","pluginDe
Management","pluginStatus":"ACTIVE"},

If instead you receive a **ETIMEDOUT** *or* **timed out** *response:*

The connection has timed out

An error occurred during a connection to 204.90.115.200:10443.

- The site could be temporarily unavailable or too busy. Try again in a few moments.
- If you are unable to load any pages, check your computer's network connection.
- If your computer or network is protected by a firewall or proxy, make sure that Firefox is permitted to access the web.

Try Again

Timed Out

you will not be able to connect to the zOS server.

You will need to request network firewall changes from your network provider, or use a different network provider.

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Investment

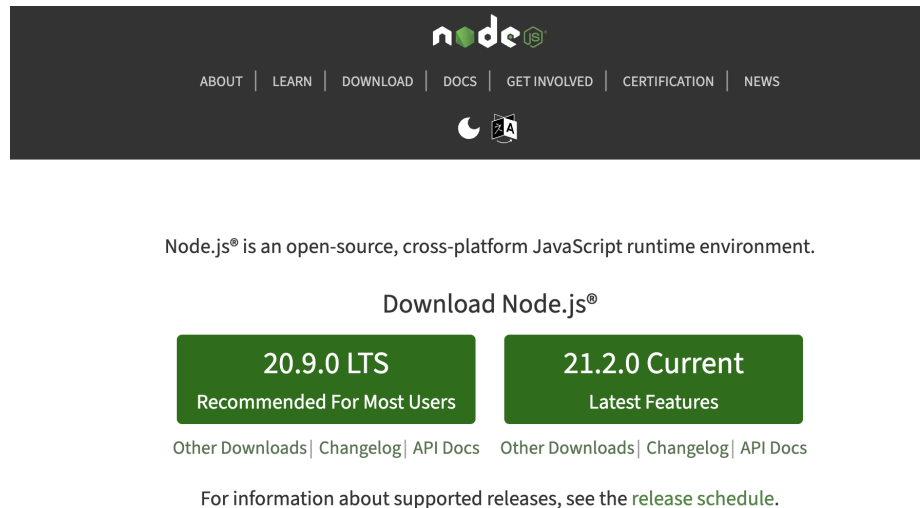| Steps	Duration
12	45 minutes

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1 LOAD UP ON DOWNLOADS

Download VSCode and other required software packages.

For all downloads, you will probably be automatically directed to the correct version that you should get.

NODE
https://nodejs.org/en/
For Node.js, select the LTS (Long Term Support) version, as it is more likely to remain stable and consistent throughout the time you're working on the challenges in IBM Z XPlore.

node js

ABOUT | LEARN | DOWNLOAD | DOCS | GET INVOLVED | CERTIFICATION | NEWS

Node.js® is an open-source, cross-platform JavaScript runtime environment.

Download Node.js®

20.9.0 LTS Recommended For Most Users	21.2.0 Current Latest Features

Other Downloads | Changelog | API Docs   Other Downloads | Changelog | API Docs

For information about supported releases, see the release schedule.

Note that the available versions change over time - pick the most recent LTS version available to you when installing

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JAVA

You will also need to have a `Java` environment available - most operating systems have a version of java installed which you can test by opening a command terminal (`CMD` or `PowerShell` on `Windows`, `Terminal` on `Mac` and `linux`) and entering `java`; if the response is something similar to "command not found", then you will need to install a java "runtime".

IBM provides a free Java runtime at https://developer.ibm.com/languages/java/semeru-runtimes/downloads/ – as with `Node.js`, look for the LTS version.

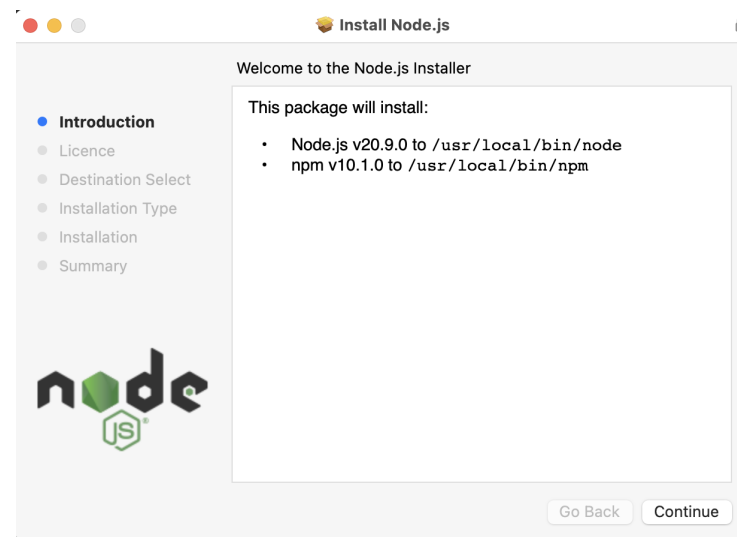Other Java options are available - [Installing the IBM Z Open Editor VS Code extension](#)

VSCODE

https://code.visualstudio.com/download

VSCL1250826-0742

2 INSTALL NODE.JS

Node.js is a flexible code framework for javascript , used on many popular websites and apps. Zowe Explorer uses it to represent Z/OS resources in a series of menus.

Run the Node.js installer you just downloaded. This will install not only Node.js , but **npm** , the Node.js Package Manager , which will be needed for some later steps.

If you get a message about being unable to validate the software, right-click on the installer and select Open .

This will let you proceed once you verify that it's OK.

3 INSTALL AND RUN VSCODE
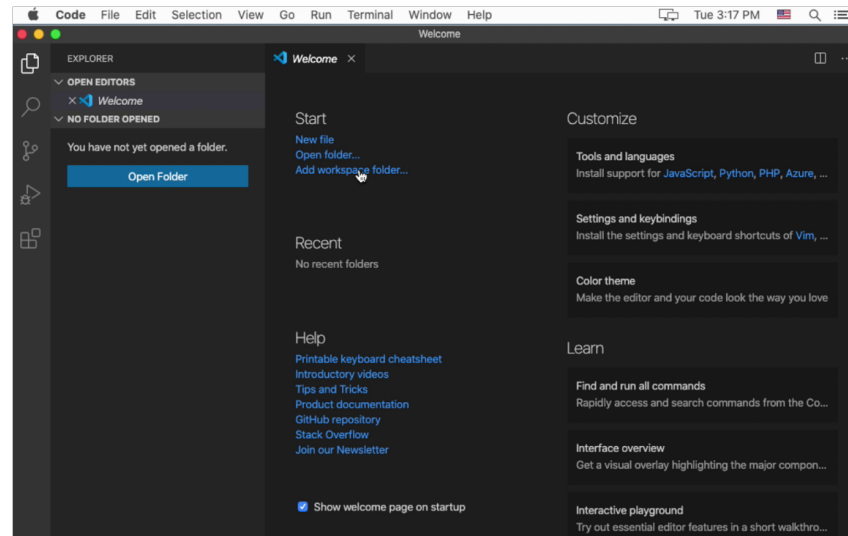
- **Windows**: Run the VSCode installer
- **Mac**: Copy VSCode application into the Applications folder
- **Linux**: Install the rpm/deb file

AND THEN

- **Everybody**: Start VSCode
- **Optional**: Make a shortcut to VSCode in your dock, taskbar, or menu so you don't have to search too far for it next time.

WHY DO I NEED TO SET UP THIS SOFTWARE?

Some people connect to Z systems to write applications. Other people connect to do support and upgrades. Since there are so many different roles in Z, we have many different methods of connecting and storing data. Most recently, Z professionals have started using **VSCode**, an extensible editor, which supports a wide range of plugins, as a way of providing this access.

We will start out just using Zowe, but soon we will begin using the Terminal, then even later on, the DB2 Developer plugin. Being able to focus on just the type of access you need, keeps things fast and lightweight, plus you can use many of the features built right into VSCode without needing to go off and memorize a new set of commands and shortcuts for every different area of the platform.
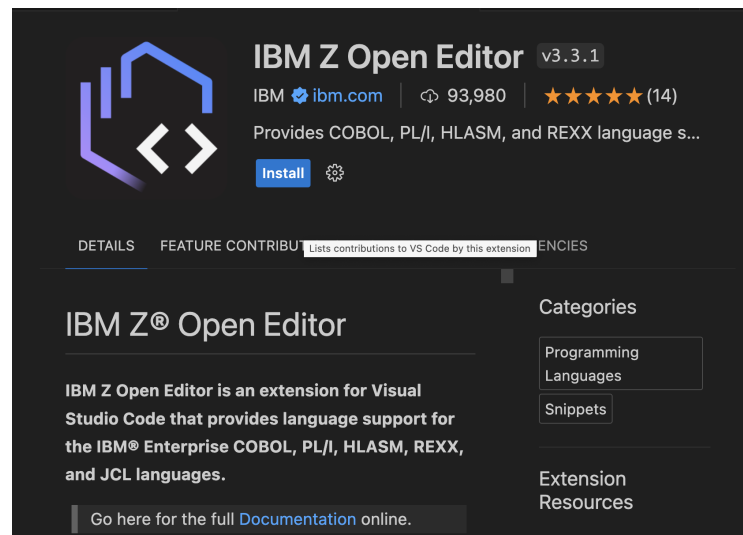
VSC1250826-0742

4 INSTALL Z OPEN EDITOR
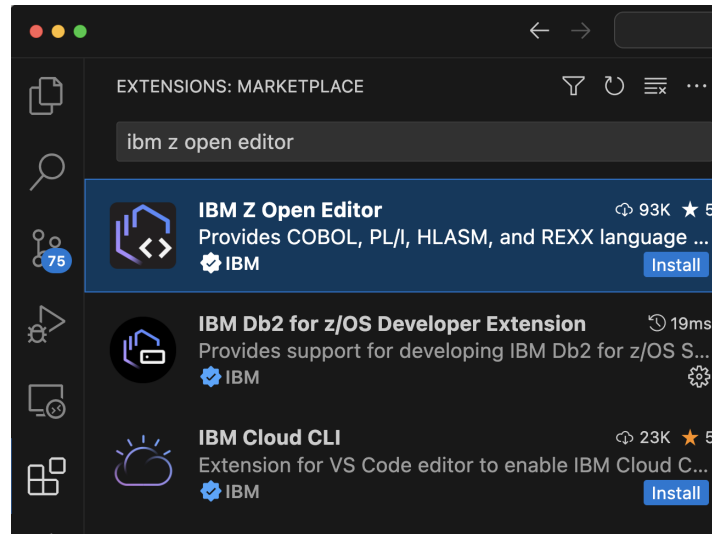
Click on the Extensions launcher in the Activity Bar (this looks like a set of four boxes, highlighted on the left in the screenshot above) and search for IBM Z Open Editor .

If you click on the picture beside IBM Z Open Editor , you will see the details of the package that will be installed:

Next, click on the blue Install button for it to install the editor, and included with it, the ZOWE Extension . The installation is handled entirely within VSCode .

This may take a few minutes depending on the speed of your computer and internet connection.

When the process has completed, the Install button will disappear, leaving the option to Disable or Uninstall .

You'll notice a new icon at the bottom of the side bar on the left in VSCode .
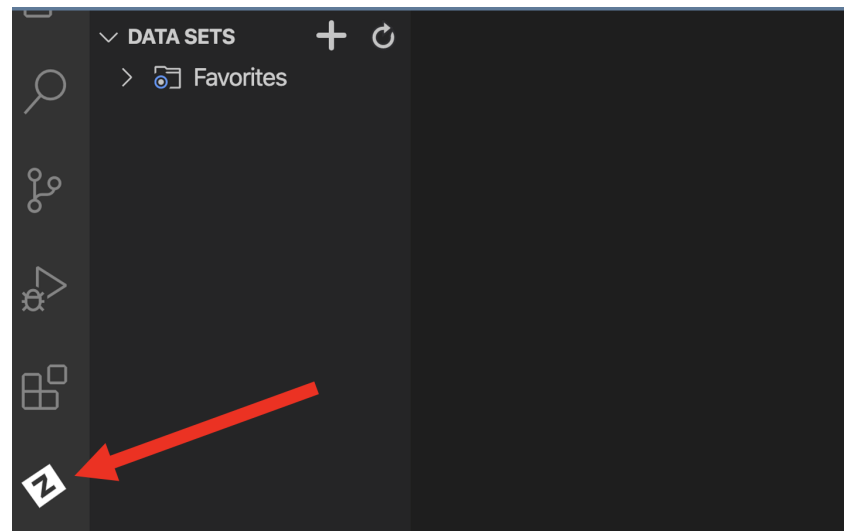
5 CHECK OUT ZOWE

The IBM Z Open Editor is useful for editing files specific to the IBM Z platform, and it uses the Zowe Explorer extension to handle its connections to the IBM Z system.

The new icon you see in your sidebar is how you get to the Zowe Explorer .

Get familiar with that icon, you'll be seeing a lot of it throughout these challenges.

6 CREATE YOUR PROFILE
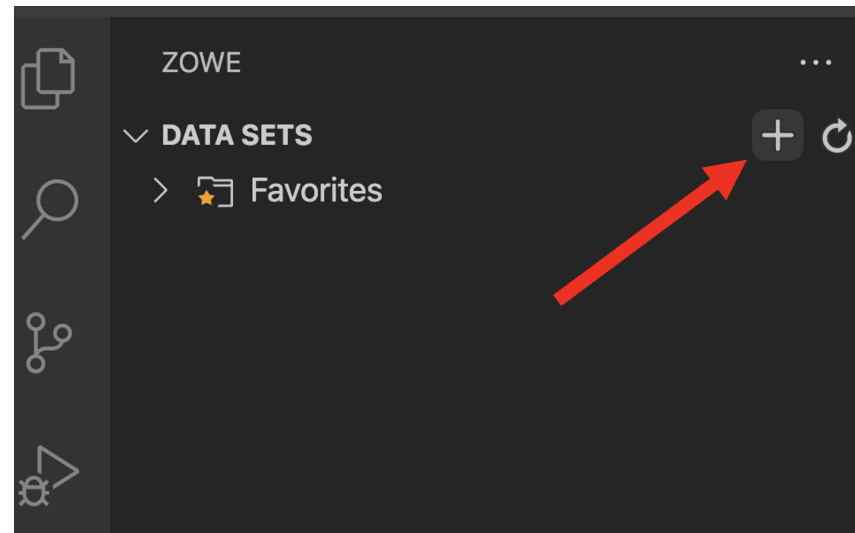
Click on the Zowe icon to launch the Zowe Explorer view.

As you can see, there is an editor area to your right, and three sections on the left. You will explore those more later.

Next, click the (+) Plus sign next to DATA SETS at the top of the ZOWE navigation area.

The info you need for setting up the profile for connection to the mainframe server is detailed in the next step.

NOTE - The VSCode prompt window may disappear if you switch between applications and do not select the option with your mouse or by using the enter key. This may be annoying if you are trying to copy/paste information from one window (a web browser) into it.

You may want to line up your windows side-by-side, rather than switching between them.

7 LOGGING IN!
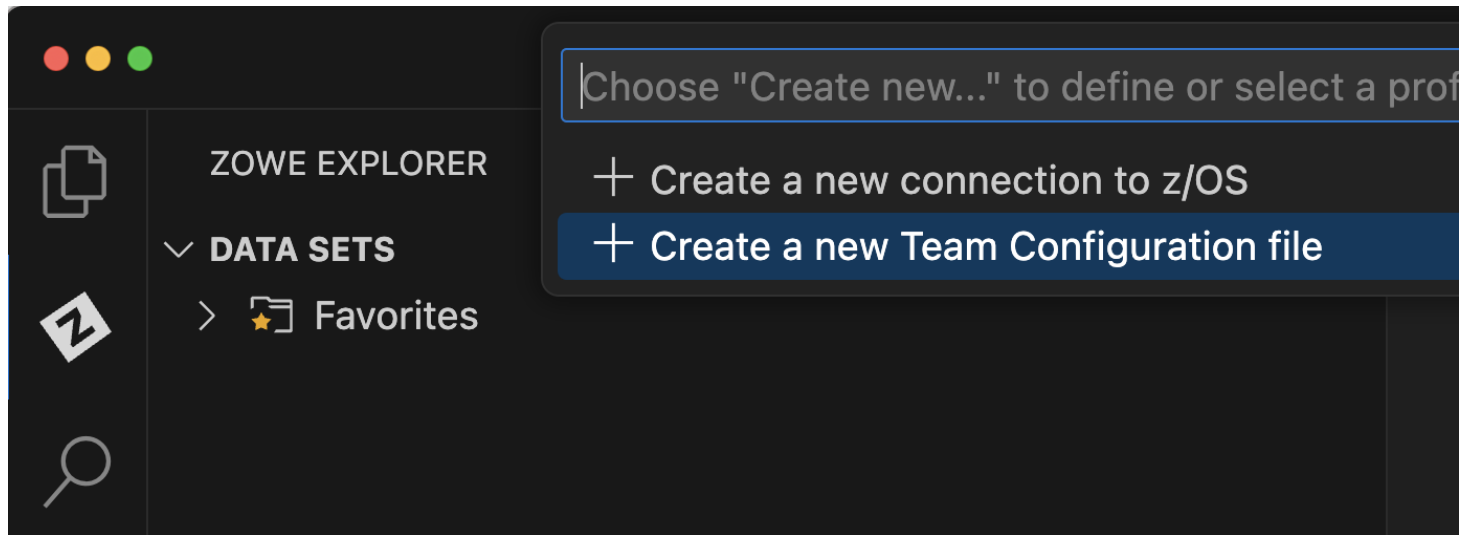
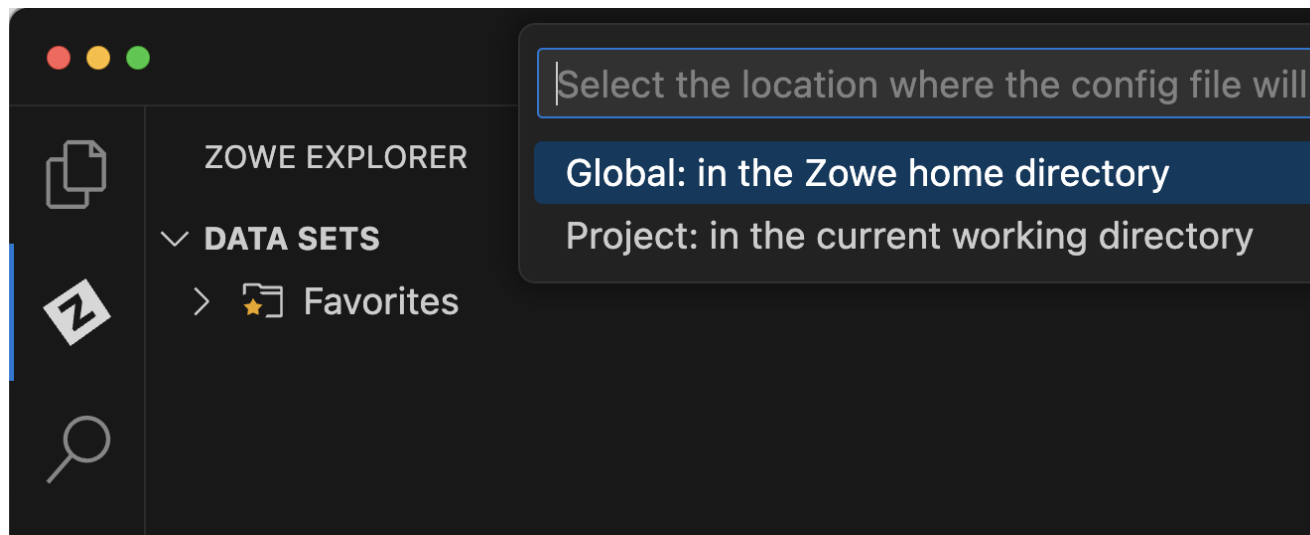Select the **+ Create a Team Configuration file** from the options provided (there may only be one).

NOTE some installations of Z Open Editor actually install a default Team Configuration, with a profile called zosmf – you can use that instead of create a new Team Configuration - just be sure to make the required edits.

You will be prompted to choose either Global or Project for the location of the config file - select Global .

Note: You may not see both options here. As long as you select "Global" you are good to go

7.1 ZOWE.CONFIG.JSON EDITS

You will now see an edit session open on a file called zowe.config.json - you will make a few changes to this file, and then save to activate the Team Configuration .

At the top of the file you will see a section named **zosmf** , and below it, another named **tso** - these need modified to enable connection to the IBM Z Xplore mainframe server.

```
{} zowe.config.json > {} profiles > {} zosmf
1  {
2      "$schema": "./zowe.schema.json",
3      "profiles": {
4          "zosmf": {
5              "type": "zosmf",
6              "properties": {
7                  "port": 443
8              },
9              "secure": []
10         },
11         "tso": {
12             "type": "tso",
13             "properties": {
14                 "account": "",
15                 "codePage": "1047",
16                 "logonProcedure": "IZUFPROC"
17             },
18             "secure": []
19         }
```

1. In the *zosmf* section, set the value of the `port` property to **10443**.

```
{} zowe.config.json > {} profiles > {} zosmf > {} properties > # port
1   {
2       "$schema": "./zowe.schema.json",
3       "profiles": {
4           "zosmf": {
5               "type": "zosmf",
6               "properties": {
7                   "port": 10443
8               },
9               "secure": []
10          },
```

2. In the *tso* section, set the value of the `account` property to **FB3**

```json
        "tso": {
            "type": "tso",
            "properties": {
                "account": "FB3",
                "codePage": "1047",
                "logonProcedure": "IZUFPROC"
            },
            "secure": []
        },
```

Now scroll down to near the bottom of the file - you should see the following base section:

```json
        "base": {
            "type": "base",
            "properties": {
                "host": "",
                "rejectUnauthorized": true
            },
            "secure": [
                "user",
                "password"
            ]
        }
```

There are two changes needed here:

1. The IBM Z Xplore server is available at the host IP address **204.90.115.200**.

2. The server supports secured connection via SSL/TLS certificates, but the certificate is self-signed (issued by the system itself) and will normally be rejected by Zowe ; set the rejectUnauthorized flag to **false** to allow the secure connection to be established.

```
"base": {
    "type": "base",
    "properties": {
        "host": "204.90.115.200",
        "rejectUnauthorized": false
    },
    "secure": [
        "user",
        "password"
    ]
}
```

Once the edits are complete, make sure to **Save** the file. - Go to the VS Code menu, select *File* , and then *Save* .

Mac Users

the `secure` sub-section indicates that `user` (your mainframe Z-userid) and `password` will stored securely. On a `MacOS` system, the first time `VSCode` saves userids or passwords, you *might* see a popup like this:
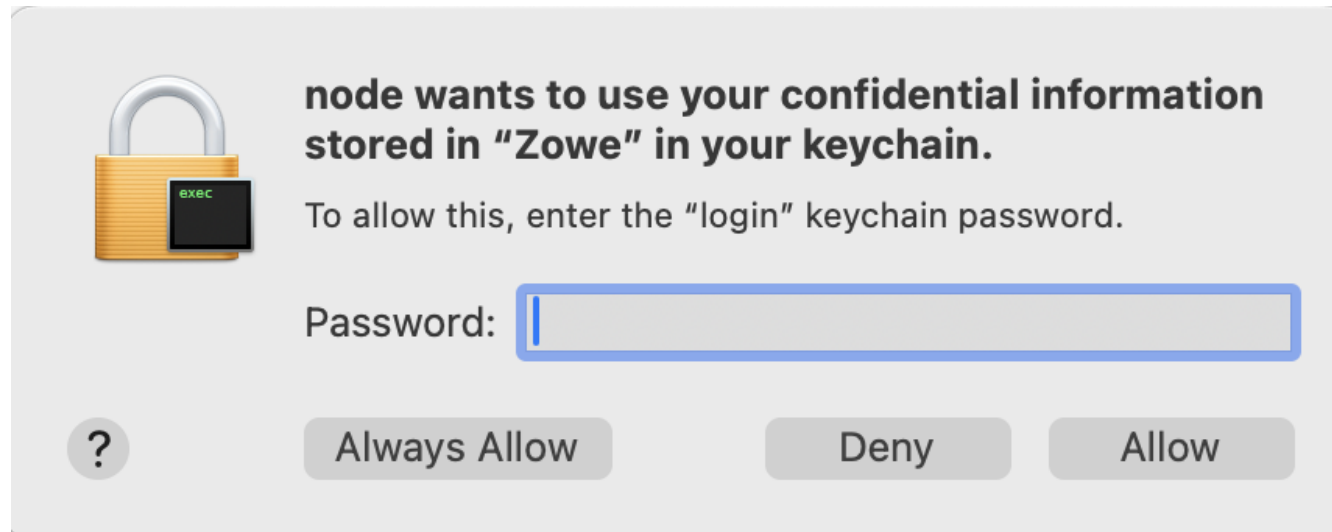
The password requested is your MacOS user password, *not* the mainframe password.

Be sure to click the `Always Allow` button, rather than the `Allow` button.

(You may need to repeat this more than once)

8 ADD YOUR Z ID AND PASSWORD

Now that you have set up your profile, you will need to add your Z ID and Z PW that was given to you at the beggining of this challenge (you find this in the VSC1 challenge in IBM Z Xplore, not in this PDF directly).
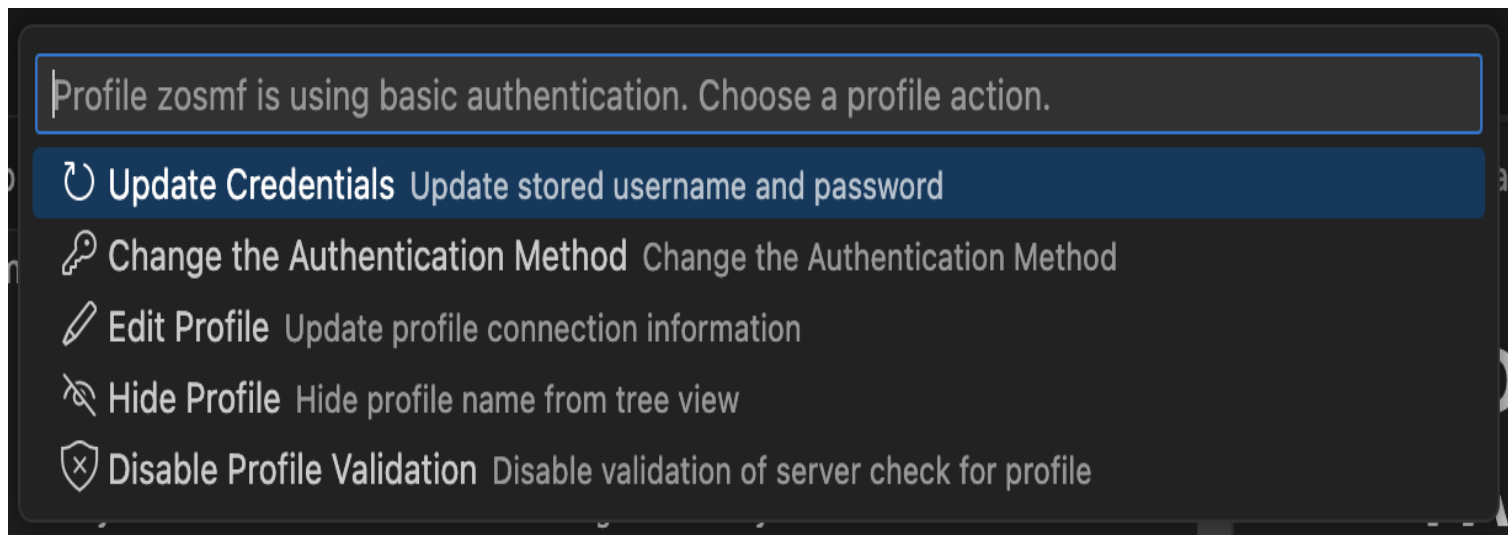
Right-click on new connection you just created under DATA SETS .

Click on Manage Profile .
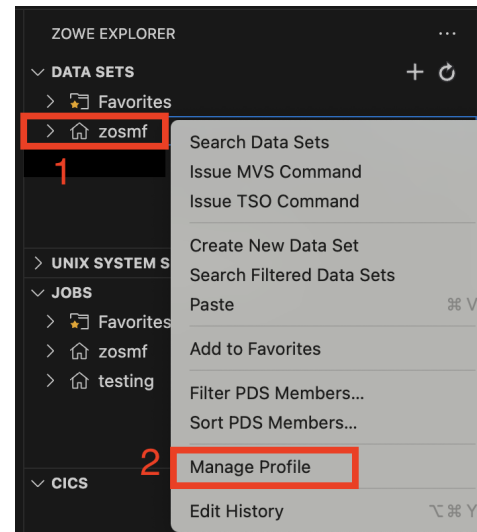
A screen will pop up near the top of VS Code.

Click on Update Credentials .
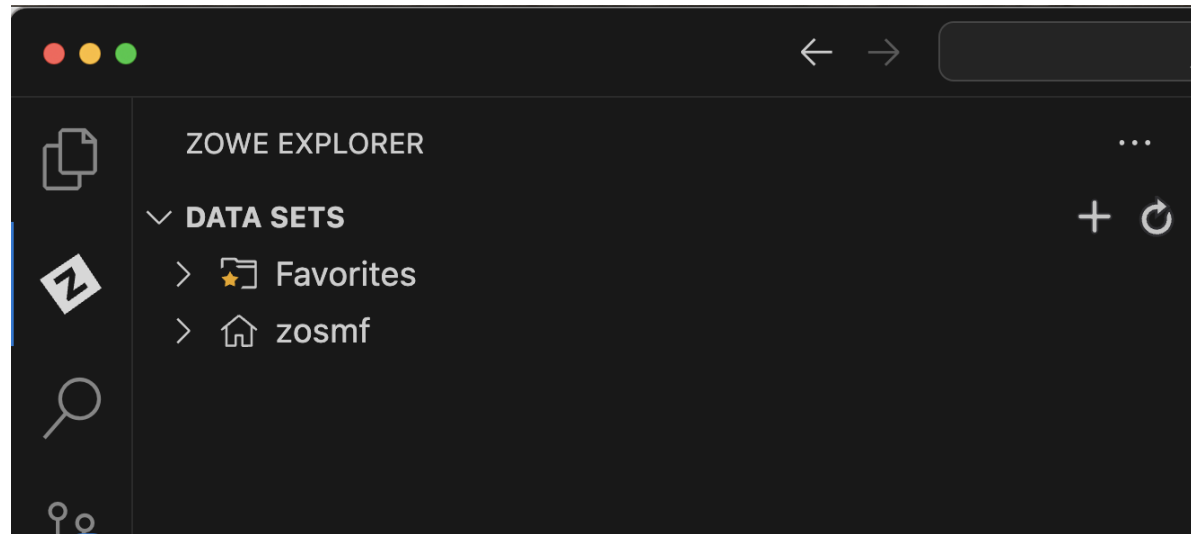
Add in your Z ID. Press enter.

Add in your Z Password. Press enter.

NOTE: *In the future, when your Z Password expires (every 60 days), you will use these same steps to update your credentials to reflect your new password.*
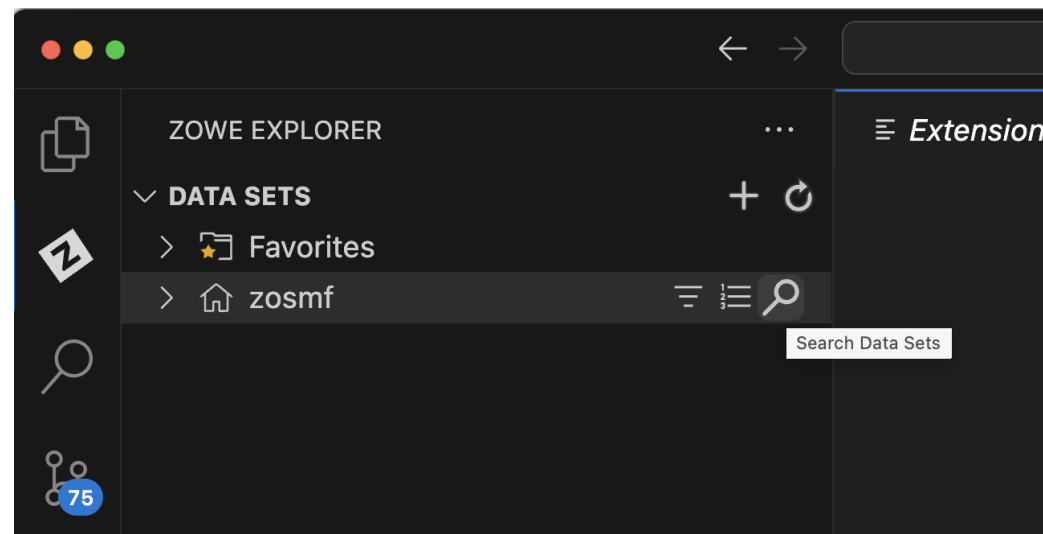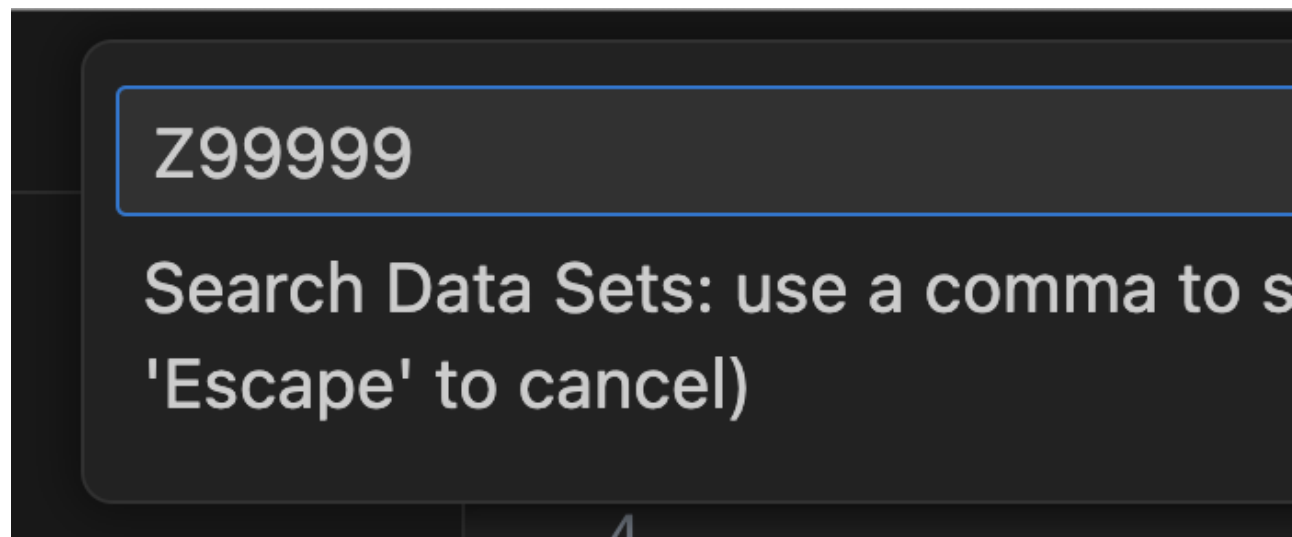
In the next step, you will access your account.

9 SETTING YOUR FILTER
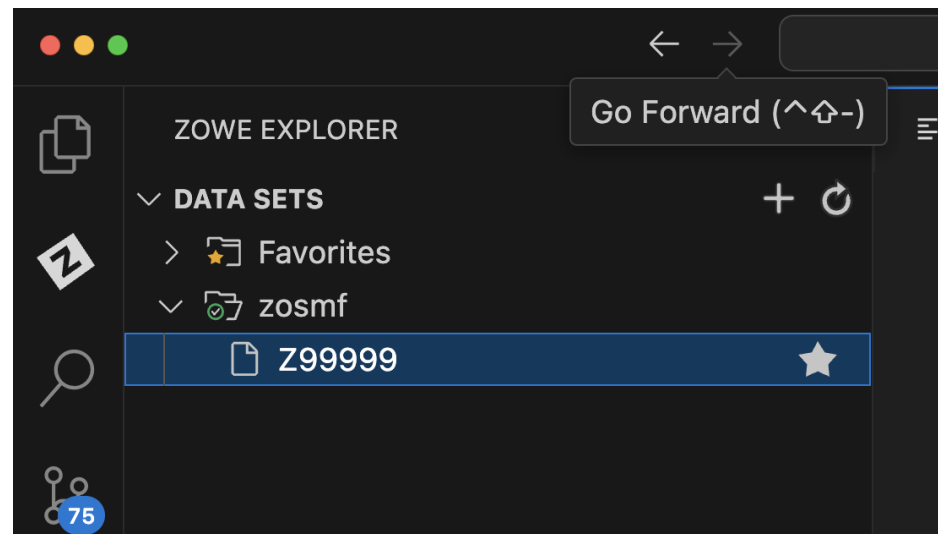

Mouse-over the new connection you just created under DATA SETS and click the magnifying glass next to it.

In the window that pops up, type in your Z-userid - a "Z" followed by 5 numbers.

This will set the filter to your user datasets, which is a good way to check connectivity and access. Press the Enter key.

This search may take a couple of seconds before returning a result.

Remember: Your Z-userid is not "z99999" or "Zxxxxx"; these are just examples used for screenshots. Get used to typing your own Z-userid - you'll be using it a lot throughout these challenges.

z/OSMF REST API Error: Rest API failure with HTTP(S) status 500 category: 6 rc: 8 reason: 513 message: fopen() failed details: – EDC5041I An error was detected at the system level when opening a file. (errno2=0xC00A0022) – __amrc: __last_op=401 __code=0x00080098 Error: z/OSMF REST API Error: Rest API failure with HTTP(S) status 500 category: 6 rc: 8 reason: 513 message: fopen() failed details: – EDC5041I An error was detected at the system level when opening a file. (errno2=0xC00A0022) – __amrc: __last_op=401 __code=0x00080098
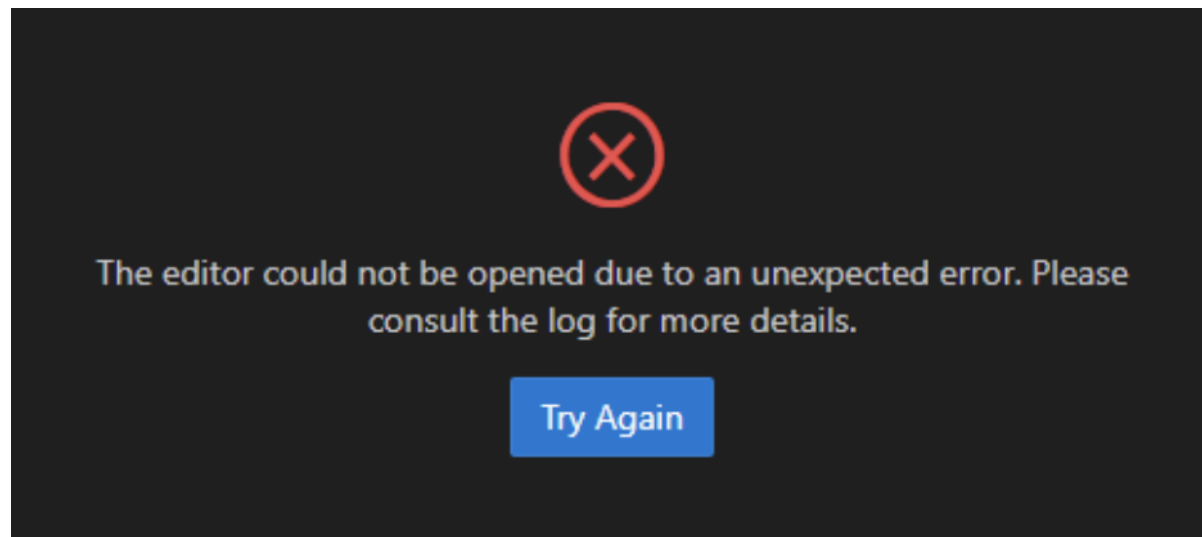
Source: Zowe Explorer (Extension)

NOTE: the first time you use this filter, you may only see one entry in your DATA SETS view - a dataset with the same name as your Z-userid; *this is NOT a dataset* you can view/edit – if you try to open it, you will receive a 500 error message, like the one above.

Or you may see an error like the one below:


The editor could not be opened due to an unexpected error: zowe-ds:/zosmf/Z99999

Try Again
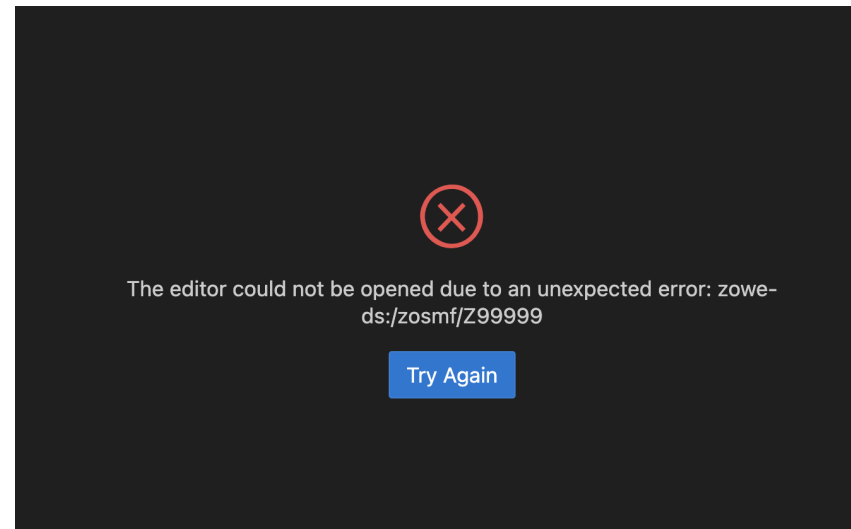
or

If either happens, just close the error notification, and carry on with the challenge.

You will probably have a README dataset - you can open this with the editor.

Note: The README dataset will be automatically deleted after you have completed the JCL1 challenge, or between one and two months after creation, whichever is sooner; do not be surprised by it later disappearing from your DATA SETS view.

10 FIXING CONNECTION ISSUES
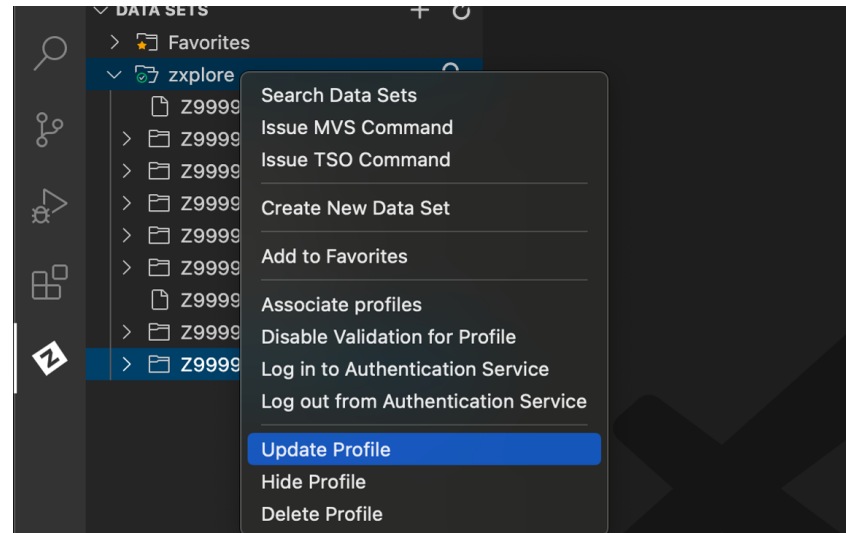
If you get an error about invalid credentials, REST API Error, or see a red circle next to your profile name, it is possible that you typed in your username or password wrong.

Simply right-click on the profile you created (**zxplore**, for example) and select Update Profile (or Manage profile and then Update credentials). This will let you re-enter all of your connection information, step by step.

If you want to start all over again, simply right-click on it and select Delete Profile.

Because of the asynchronous nature of the plugin, sometimes it's good to quit VSCode before updating, or after deleting a profile, as you may see an error message that is not accurate.

When in doubt, restart VSCode. This clears up a lot of problems.

Note: if at any time your team configuration becomes corrupted ("messed up"), you can restore a basic working copy from the sample team configuration

11 STYLING AND PROFILING

Click the (+) next to Unix System Services (USS) and select the connection profile you created in Step 7.

- Set your USS search filter to your home directory:
  `/z/z#####` (note the *lowercase* version of your Z-userid)

You will work with USS files and commands in the USS1 challenge.

Repeat the step for JOBS down at the bottom section.

- Set your JOBS search filter to match the pattern:
  `Owner: Z##### |Prefix: * |Status: *` (Z##### should be your Z-userid)

You will work with jobs and job control language (JCL) in the JCL1 challenge.

When done, you should have connection profiles for all three main areas of the Zowe Explorer plugin.

Now that you're in, feel free to explore a little and see what you just unlocked.

12 NAVIGATE TO VSCJCL
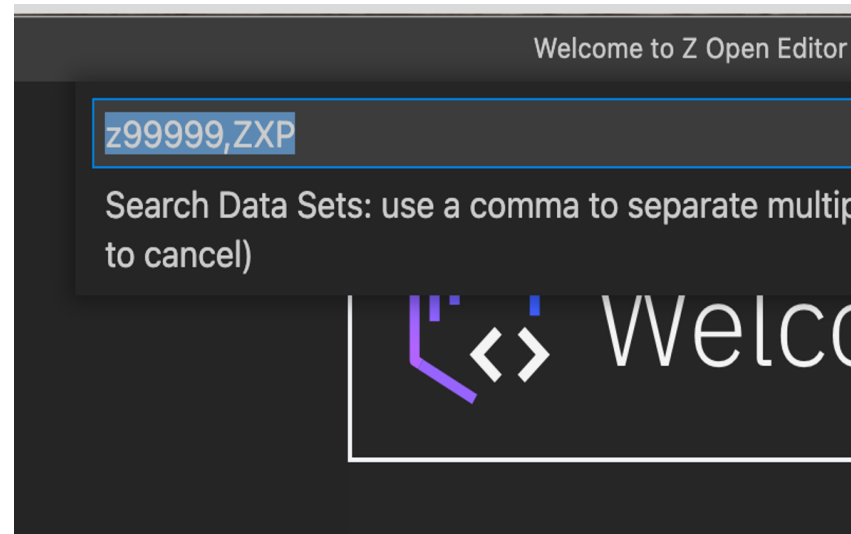
The DATA SETS section lists all of the data sets and members which are available under your filter. Edit the filter to include ,ZXP.PUBLIC.* .

Remember, you will not use "Z99999", you will see your own Z-userid which you specified in Step 9.

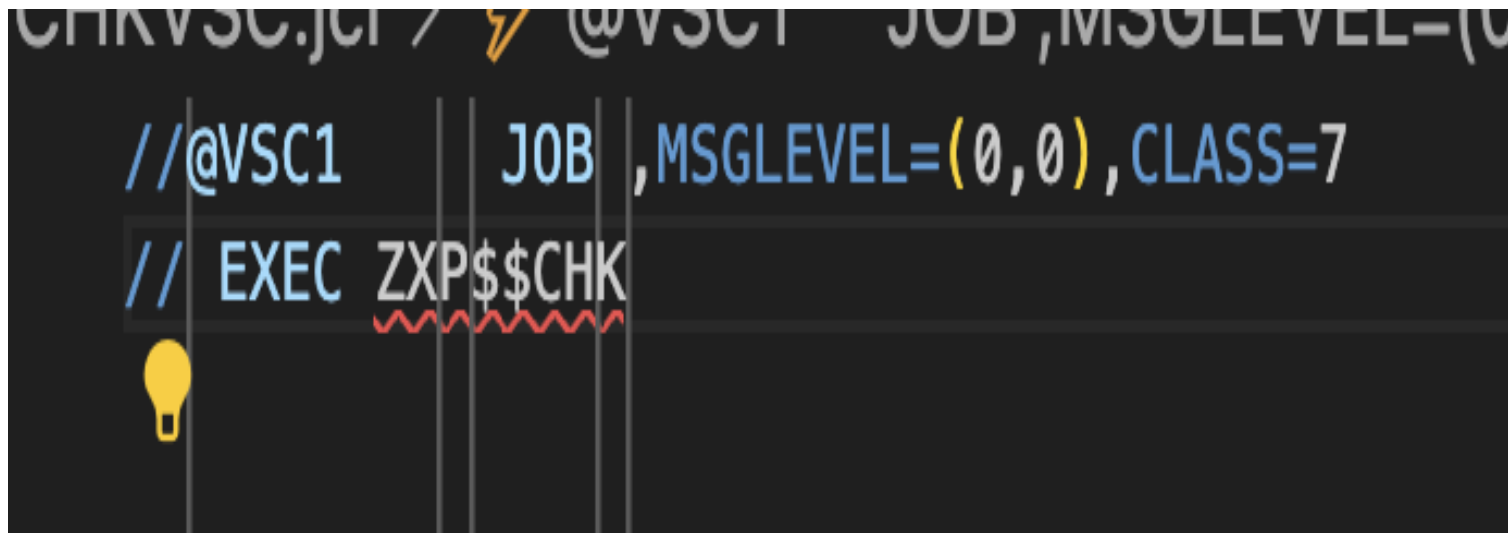Find the data set labeled ZXP.PUBLIC.JCL and open up the twistie (triangle) next to it.

Within there, look for a member called CHKVSC
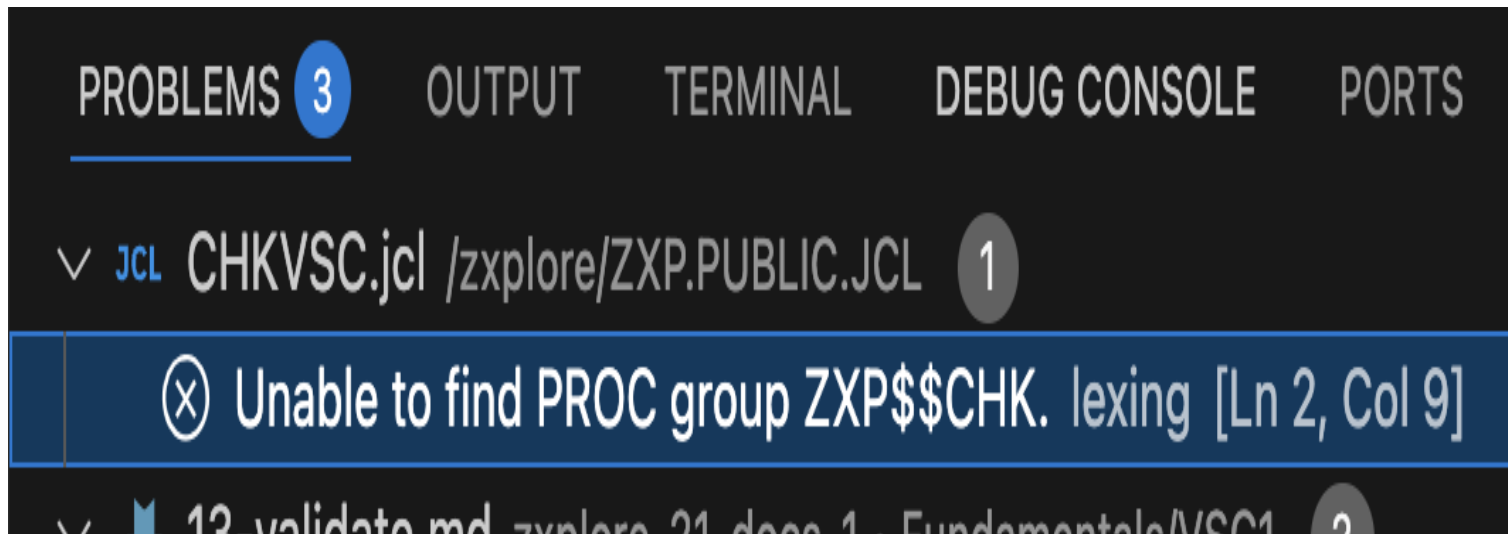
13 SUBMIT VALIDATION JOB
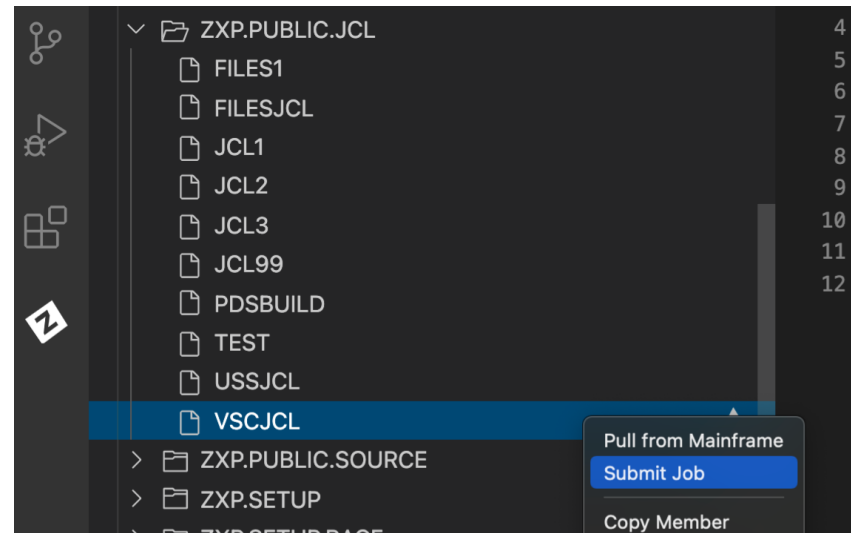
Once you find **CHKVSC**, right-click on it, and select Submit Job .

If you open the CHKVSC JCL member, you will see the job control language used to run the validation process.

If you see this view, with the wavy red line, you may also see entries in the Problems section of VSCode like this:

DON'T PANIC ! -

```
this is a configuration option for the editor --
you can safely ignore this, and submit the job.
```

After a few moments, when you go back to https://ibmzxplore.influitive.com , you should see that the VSC1 challenge has been marked COMPLETE!

If not, make sure to click the button at the end of the instructions:

Challenge Complete, check my JCL submission

Congratulations on making this big first step.

It's time to celebrate, and by celebrate, we mean move on to the next challenge.

Nice job - let's recap	Next up ...
You got connected to a real live Z system with your very own userid and password, then set your Zowe data set filter, navigated through the data sets to find a specific member, and then submitted some JCL. As you might imagine, there's a bigger story about what's actually going on here. For now, just feel proud of a job well done.	It's one thing to follow steps, it's another to understand. In the next two challenges, we'll get to the bottom of exactly what these data sets and members are, plus dive a bit deeper into JCL. You're making great progress, let's keep it all going.

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