

z/TPF Learning Platform

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Application Development Subcommittee

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Disclaimer

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Problem Statements

There are limited classes to learn basic z/TPF skills.



Learning and developing skills through hands-on experiences is very effective, but it is difficult for some customers to gain access to environments that contain new z/TPF features and tools.

Users



Zach
application developer



Andrew
new hire application developer



Sophie
system programmer

Pain Points / Needs

- IBM-provided tutorials put the onus for necessary environment setup on the user.
 - Matching up tool versions, test systems, build procedures can be difficult and time-consuming
- IBM-provided webinars about z/TPF at fixed times do not allow users to work on learning activities at a self-paced, convenient time.
- When working on learning activities, need to have a place to ask questions when you run into problems.

Value Statement

A z/TPF Developer can learn the function, value, and components of the z/TPF System at their own pace through interactive challenges.



As-Is User Story

How do you learn today?

- Read IBM docs
- Ask a colleague
- Create your own sandbox
- Osmosis



To-Be User Story



- A z/TPF user starts their learning journey on **IBM Training website** for education and quizzes to test their knowledge.
- For hands-on, interactive activities wherein user-written code is run on a real z/TPF test system provided by IBM, the user signs up to access z/TPF Challenges through the **IBM Z Xplore Learning Platform** (IBM Z Xplore)
 - A learning platform that enhances Master the Mainframe, providing hands-on experience for the development of valuable skills without requiring prior knowledge.
 - User can track their progress and utilize discussion forums.

IBM Training

IBM will offer free learning modules for z/TPF on [IBM Training](#), which you can access by logging on with your IBM ID.

The screenshot shows the IBM Training website interface. At the top, the IBM logo is on the left, and search and user icons are on the right. Below the logo is a navigation bar with links: IBM Training, Start Training (with a dropdown arrow), Search, Paths & Collections, Credentials, Events, PartnerWorld Members, My Learning, Subscriptions, and Contact Us (with a dropdown arrow). The main content area has a dark background with the text 'Free Digital Learning' and 'Get started with learning selected by IBM experts'. To the right of the text is a series of white line-art icons connected by lines, representing various digital concepts like a cloud, a globe, a server rack, a shield, and a circular arrow. Below this is a sidebar with a vertical list of categories: Introduction (highlighted with a blue bar), Featured training, Automation, Business Operations, and another Business Operations entry. The main text area contains the heading 'Take the first step' followed by two paragraphs of text.

IBM Training /

Free Digital Learning

Get started with learning selected by IBM experts

- Introduction
- Featured training
- Automation
- Business Operations
- Business Operations

Take the first step

This sampler includes free courses for you to start your learning journey. Whether you need to gain new skills, earn credentials, or change careers, building skills is an investment in your future.

We want you to start for free.

IBM Training

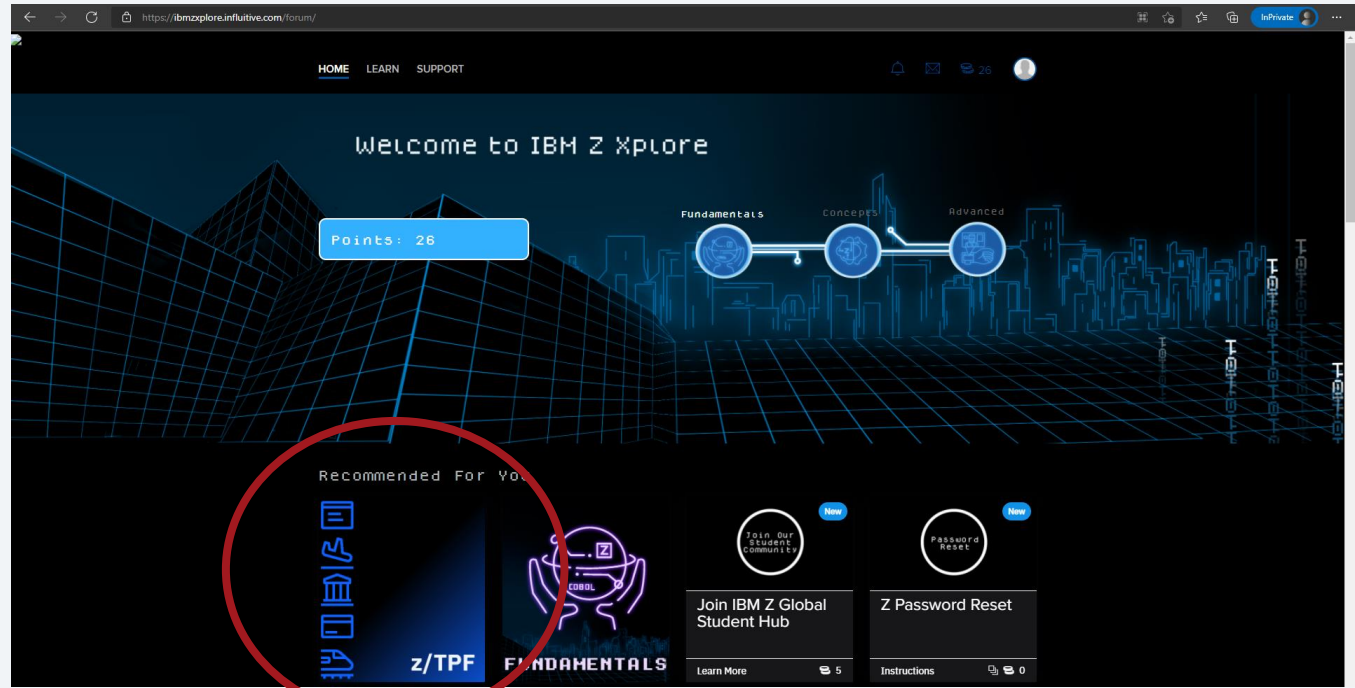
The screenshot shows the IBM Training interface for the 'z/TPF Automated Test Framework' course. At the top left is the IBM logo. Below it, the text 'IBM Training >' is followed by a stack of books icon and the course title 'z/TPF Automated Test Framework'. The main content area features a blue background with a fingerprint-like pattern on the left. Text on the right explains that while testing is essential, it's often tedious and error-prone, and that the z/TPF Automated Test Framework helps create repeatable test cases to reduce manual load. It also states that as the system grows, fine-tuning DevOps practices and the framework becomes essential for better management and scaling. A progress bar at the bottom of this section shows 'Required activities 0% complete'. Below this is a 'Course objectives:' section with three bullet points: understanding basic concepts and use cases, becoming familiar with commands and macros, and learning to read and parse framework output files. A list of course modules follows, with 'Introduction to the z/TPF Automated Test Framework' and 'Using the z/TPF Automated Test Framework' visible. On the right side, there is a 'My courses' sidebar listing other IBM training modules like 'IBM Cloud Pak for Automation - Self-Faced Technical Exploration Workshop (IBM and BP)', 'Introduction to IBM z/OS', 'Introduction to z/OS Commands and Panels on IBM Z', 'IMS Database Fundamentals', 'IMS Diagnostics', 'IMS Fundamentals', and 'IBM Global High-Resolution Atmospheric Forecasting (IBM GRAF)'.

IBM Training will provide modules that give background, detailed education, and checks for understanding on z/TPF functions and features, along with a link to hands-on content in Z Xplore.

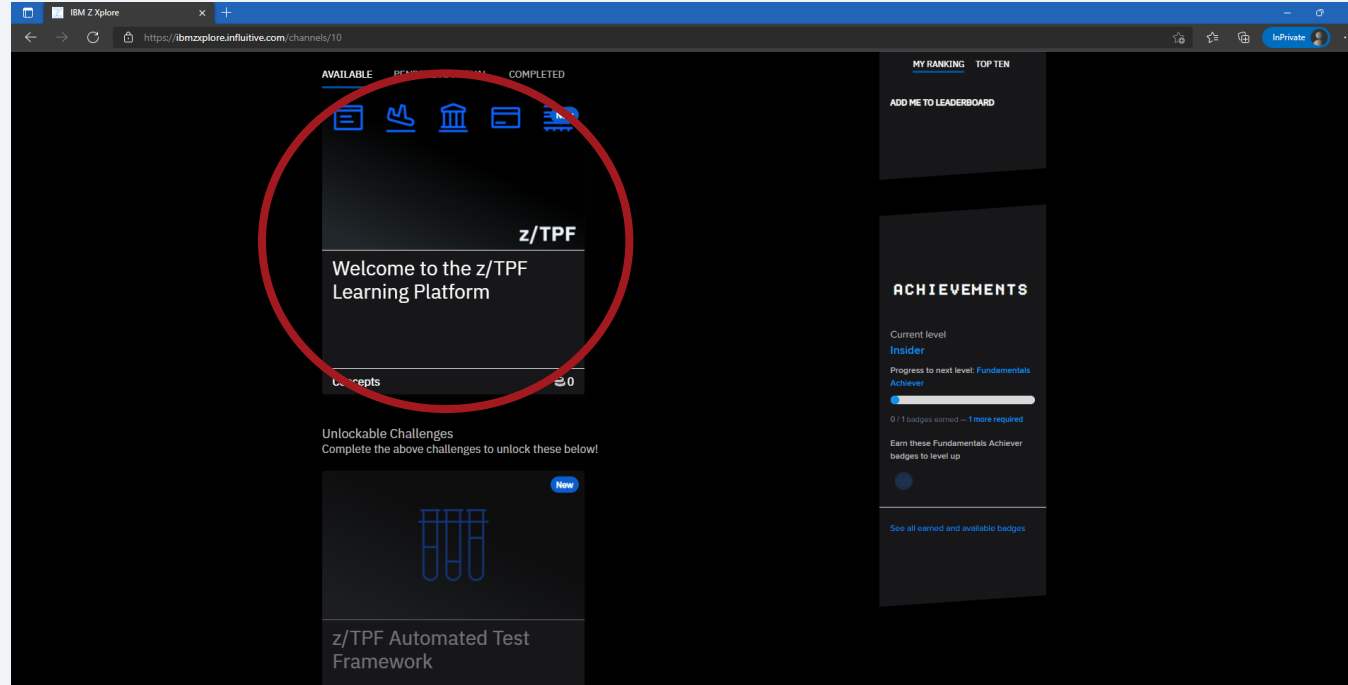
z/TPF Channel in Z Xplore

IBM will provide the URL to sign up for Z Xplore, which will give you access to the z/TPF Channel.

There is no cost to signing up for Z Xplore.



One-Time Setup



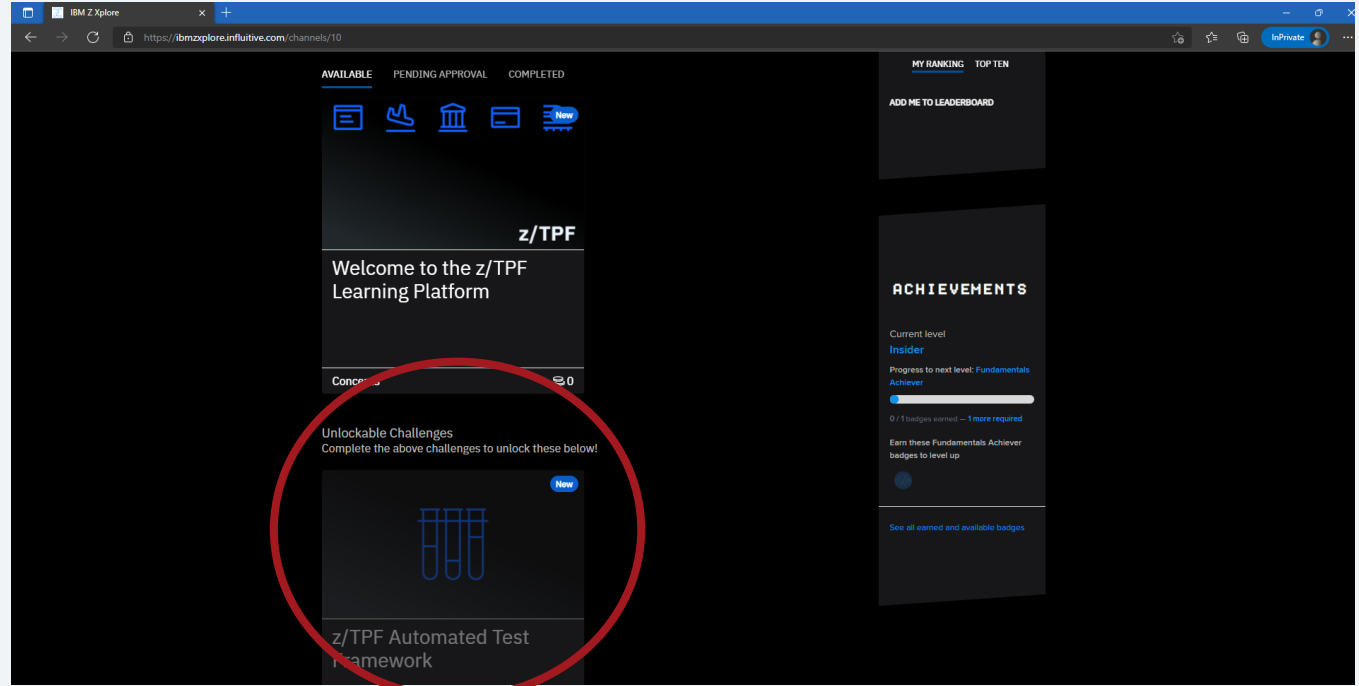
Perform first challenge – setting up your environment by downloading Visual Studio Code (VSCode) and the z/TPF extension to the platform, just like you would if participating in the z/OS challenges on Z Xplore.

Unlocking Challenges

By completing the setup, a user unlocks the other z/TPF challenges.

Successful setup :

- VSCode installed
- z/TPF extension added to VSCode
- Extension connects to the z/TPF build environment



Automated Test Framework Challenge Example



Step 1 : See Q&A, Challenges, and...

z/TPF FUNDAMENTALS

Join Our Student Community

Join IBM Z Global Student Hub

Learn More 5

Password Reset

Z Password Reset

Instructions 0

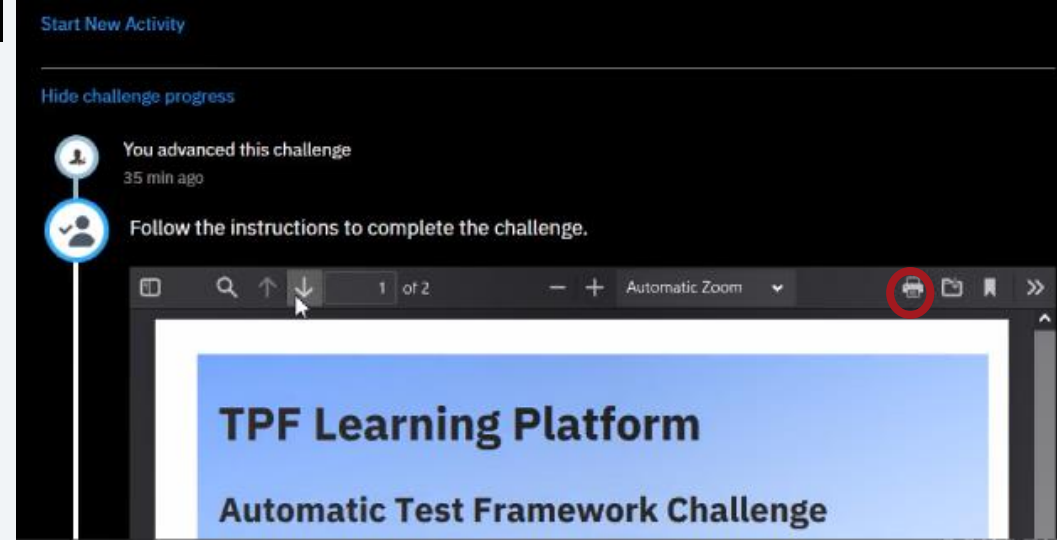
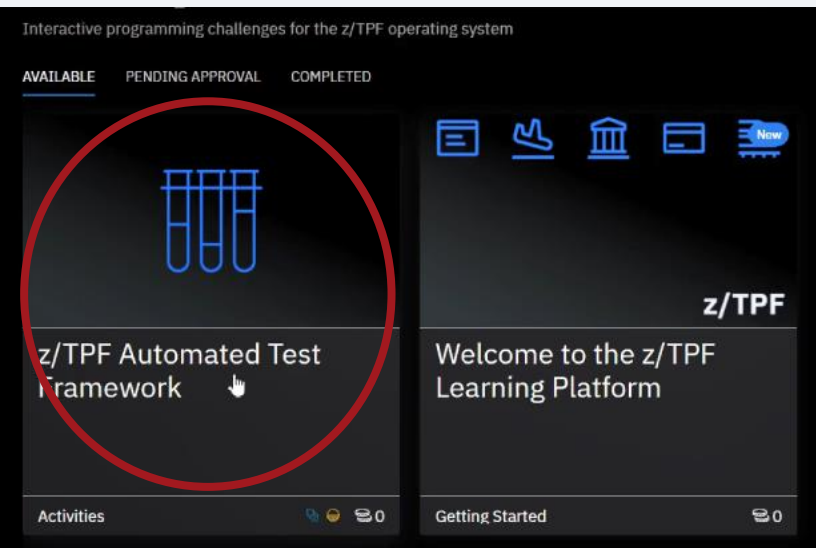
all categories ▾ Latest Top Categories 🔍

Topic	Replies	Views	Latest Reply
FAQ - Frequently asked questions by Ross - Aug '21 - Learning Platform Discussion	18	1.7k	15d by Ross
How do I get help? How do I reset my mainframe password? - g... read more			

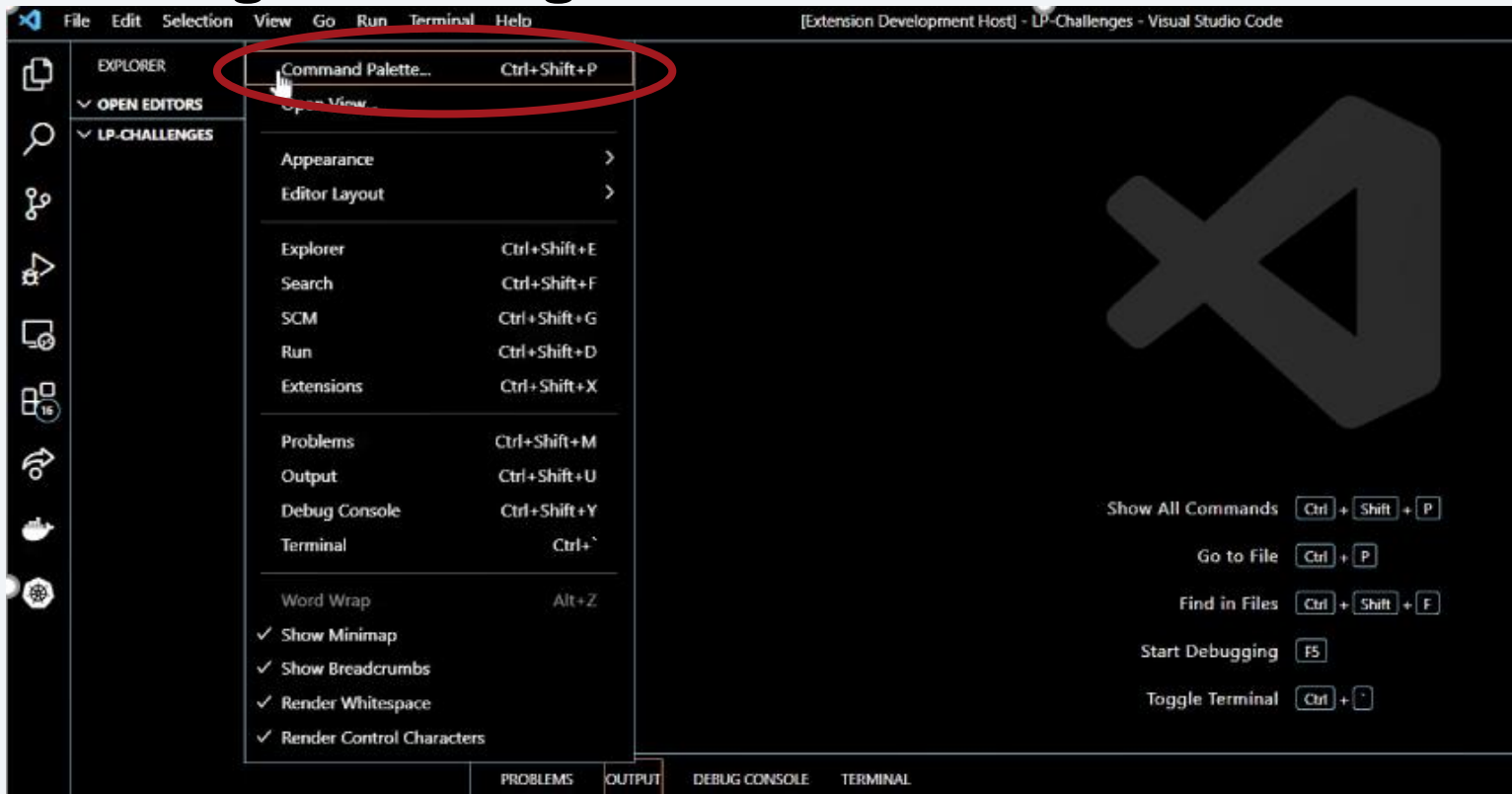
LEADERBOARD

[MY RANKING](#) [TOP TEN](#)

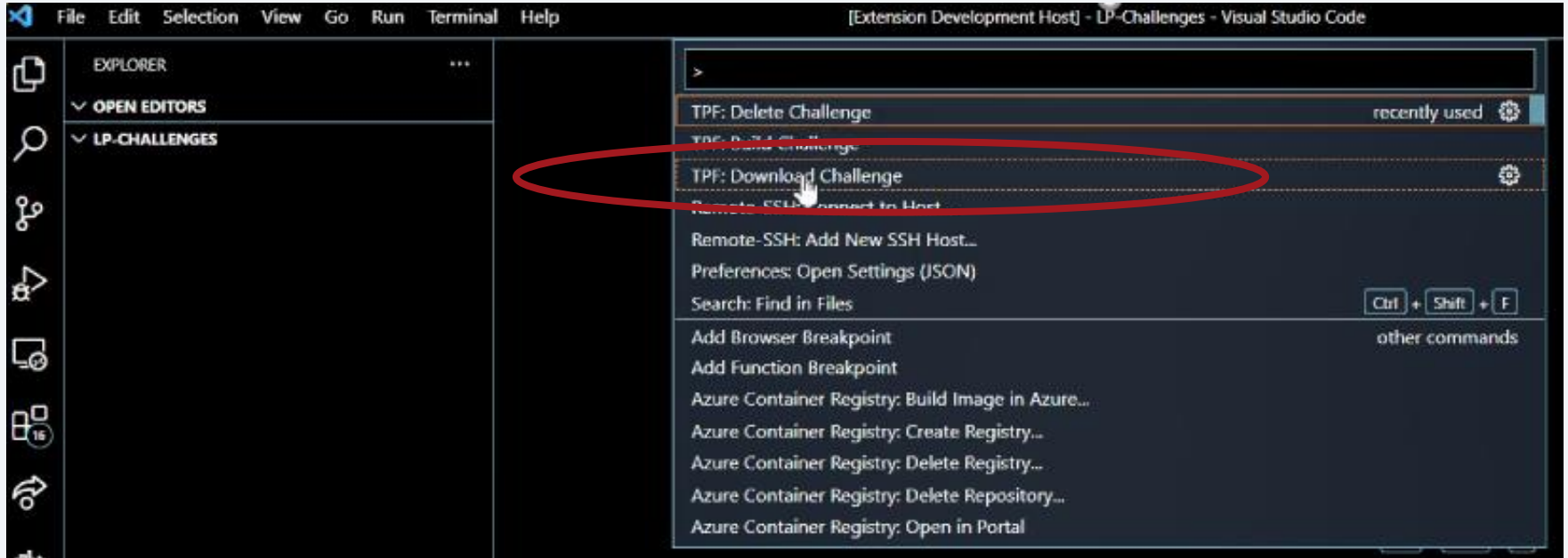
Step 1: See instructions on Z Xplore.



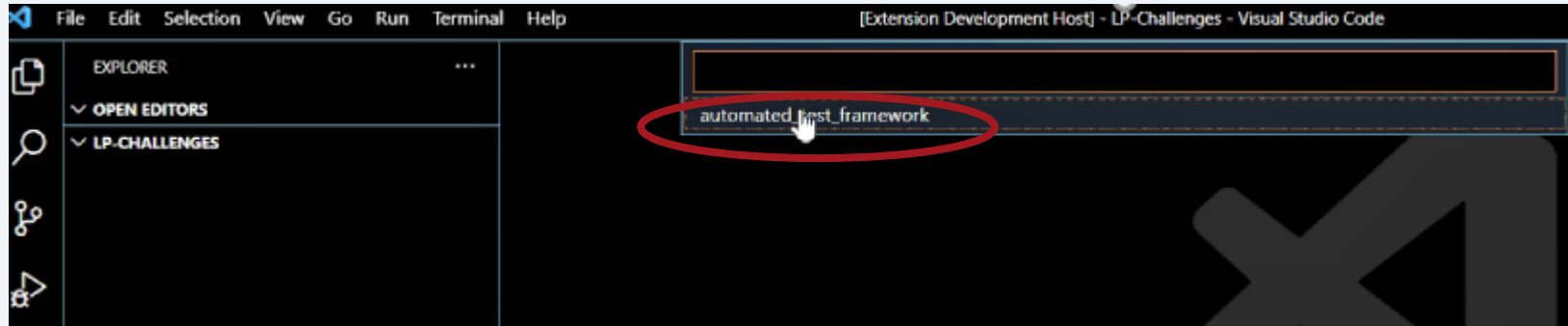
Step 2 : In your VSCode environment, open a folder and issue command to get challenge source.



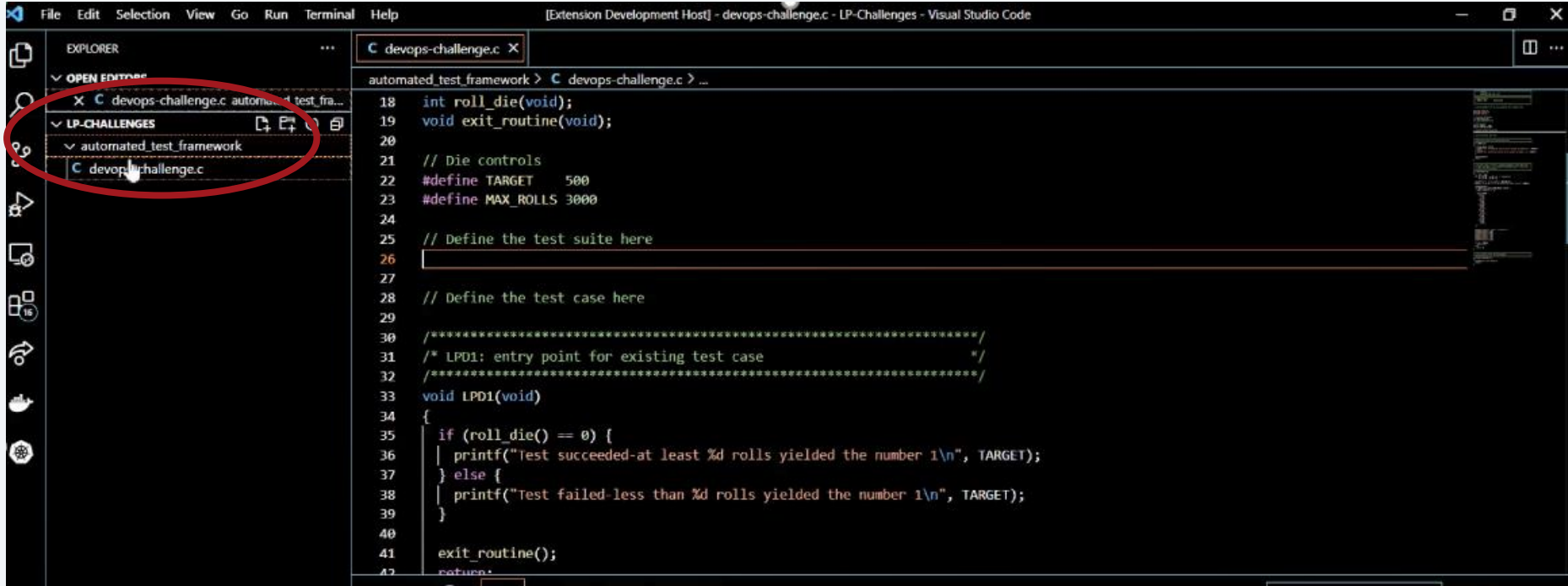
Step 2 : In your VSCode environment, open a folder and issue command to get challenge source.



Step 2 : In your VSCode environment, open a folder and issue command to get challenge source.



Step 2 : In your VSCode environment, open a folder and issue command to get challenge source.



Step 3 : Make your updates according to the instructions.

automated-test-framework.pdf

1 of 2

the challenge source files. A notification dialog will appear to inform you if the download was successful or not.

3. In the Explorer view, expand the `automated_test_framework` folder
4. Open the file `devops-challenge.c` in the editor
5. Modify the file to accomplish the following:
 - o Include the header file needed to use the automated test framework macros
 - o Define a test suite with the name `tpfug.devops.challenge` and a 4 character code coverage mask
 - o Define a test case with the name `tpfug6` and a description of `TPFUG Challenge`
 - o Copy the contents of the entry point function into the test case
 - o Modify all the `printf` statements in your test cases to use both the `TPF_TC_INFO` and `TPF_TC_ERROR` macro.
Remember that the automated test framework macros do not require the use of new line characters

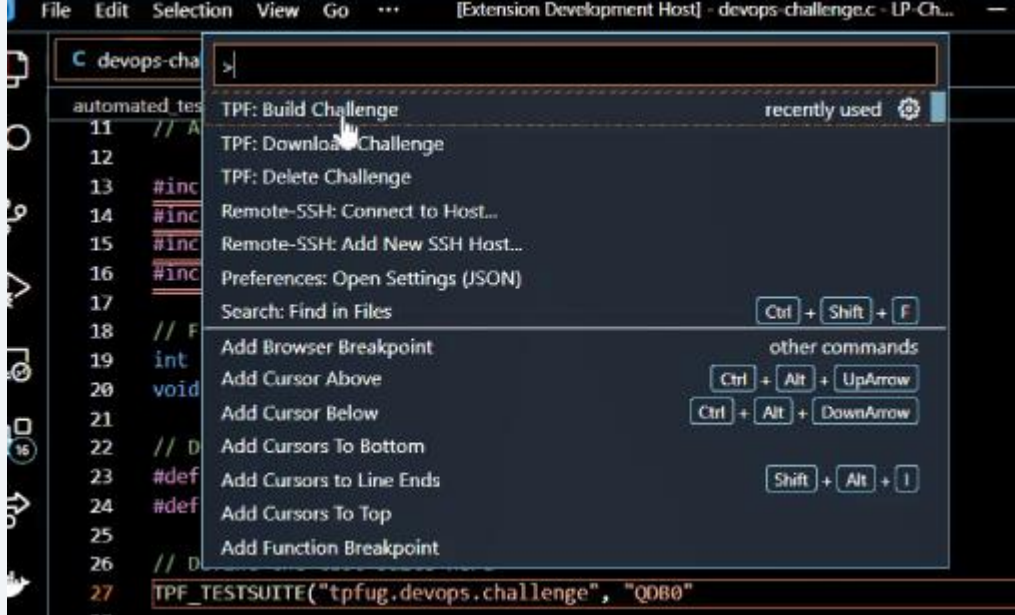
C devops-challenge.c 5

```
automated_test_framework > C devops-challenge.c >
11 // Add the header file for the automated test framework here
12
13 #include <stdio.h>
14 #include <stdlib.h>
15 #include <time.h>
16 #include <tpf/c_devops.h>
17
18 // Function prototypes
19 int roll_die(void);
20 void exit_routine(void);
21
22 // Die controls
23 #define TARGET 500
24 #define MAX_ROLLS 3000
25
26 // Define the test suite here
27 TPF_TESTSUITE("tpfug.devops.challenge", "Q088")
28
29 // Define the test case here
30
31 /******
32 /* LPD1: entry point for existing test case */
33 /******
34 void LPD1(void)
35 {
36     if (roll_die() == 6) {
```

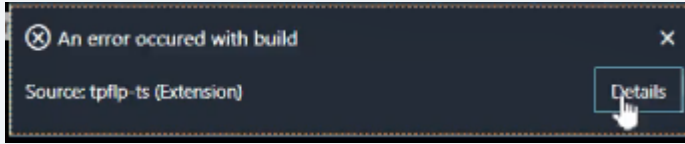
PROBLEMS 5 OUTPUT DEBUG CONSOLE TERMINAL TPF Output

```
rm -f /lpwork/largo/automated_test_framework/1st/LPD1.unresolved_references
maketpf_check_unresolved_link /lpwork/largo/build_automated_test_framework/MTPFTemp/tpfbuil
MTPF2007I No unresolved references found for LPD1.so.
MTPF2225I: Control file processing complete. RC=0
OK
```

Step 4 : Issue the build command in the command palette.

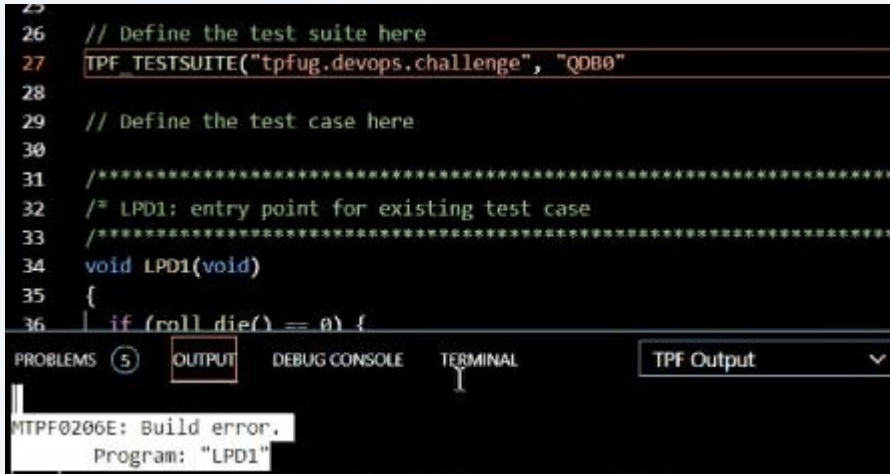


Step 5 : Update and rebuild until no errors found.

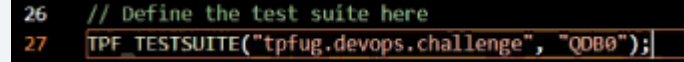


A. See details of build failure

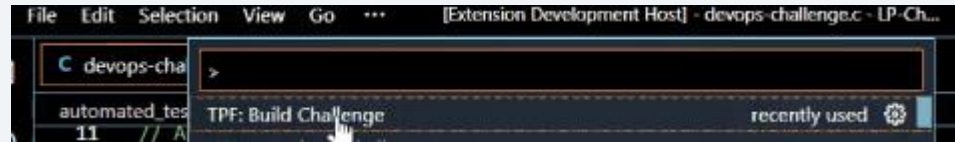
B. Use build error to find error on line 27



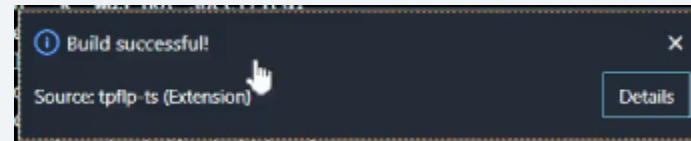
C. Fix line 27, adding parenthesis and colon



D. Select build in command palette



E. Build success



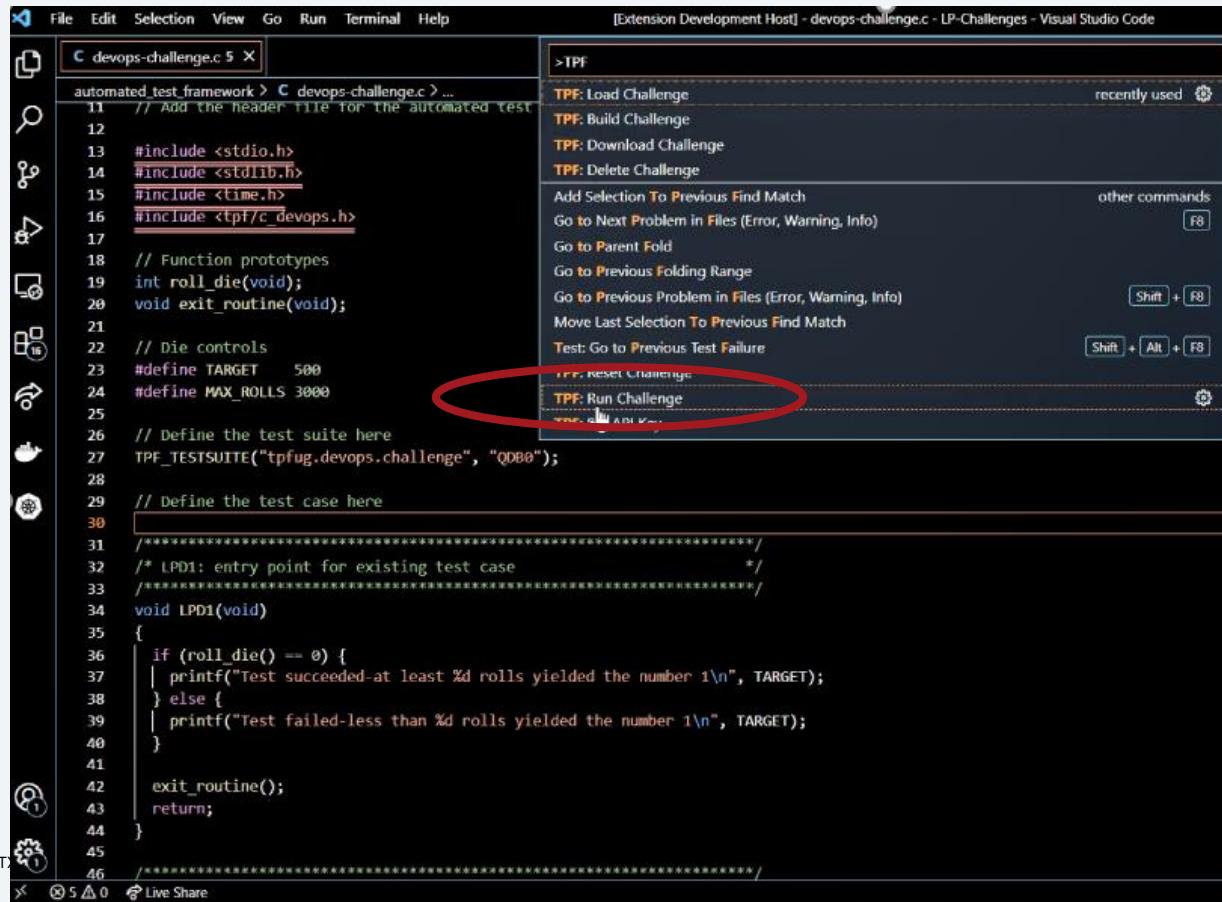
Step 6 : Issue the load command to real z/TPF system.

```
C devops-challenge.c 5 X
automated_test_framework > C devops-challenge.c > ...
11 // Add the header file for the automated test
12
13 #include <stdio.h>
14 #include <stdlib.h>
15 #include <time.h>
16 #include <tpf/c_devops.h>
17
18 // Function prototypes
19 int roll_die(void);
20 void exit_routine(void);
21
22 // Die controls
23 #define TARGET 500
24 #define MAX_ROLLS 3000
25
26 // Define the test suite here
27 TPF_TESTSUITE("tpfug.devops.challenge", "Q0B0");
28
29 // Define the test case here
30
31 /*****
32 /* LPD1: entry point for existing test case */
33 /*****
```

The context menu is titled '>TPF|' and contains the following items:

- TPF: Build Challenge (recently used)
- TPF: Download Challenge
- TPF: Delete Challenge
- Add Selection To Previous Find Match (other commands)
- Go to Next Problem in Files (Error, Warning, Info) (F8)
- Go to Parent Fold
- Go to Previous Folding Range
- Go to Previous Problem in Files (Error, Warning, Info) (Shift + F8)
- Move Last Selection To Previous Find Match
- Test: Go to Previous Test Failure (Shift + Alt + F8)
- TPF: Load Challenge** (highlighted with a red circle)
- TPF: Reload Challenge
- TPF: Run Challenge
- TPF: Set API Key

Step 7 : Issue the run command, which will run the code on a real z/TPF system.



Plan Forward

Target availability is 2H 2022 with 8 challenges.

Intent is to add challenges to the platform periodically.

Once the z/TPF Learning Platform goes live, we will provide the link via [blog post](#).



Plan Forward

Initial challenges will cover:

- Automated test framework
- z/TPF Programming Models
- Business Events
- REST
- MongoDB
- z/TPFDF
- DFDL
- Java



Conclusion

- Interactive challenges
- Periodic new content
- No z/TPF environment setup
- Q&A discussion forum
- Means to track your progress
- Self-paced, on-demand accessibility
- Code loaded to real z/TPF system with all the necessary environment requirements available for challenges.



We want sponsor users!

Our development cycle is driven by your feedback.

We are looking for sponsor users to assist in design and implementation, targeting the following personas:

- Application Developer
- System Programmer
- New Hire Application Developer

We expect to begin engaging with the sponsor users in June 2022.

If you are interested in participating as a sponsor user, please contact:

Colette Manoni cmast@us.ibm.com

Kathleen Chalas kchalas@us.ibm.com

Thank you

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