

Python Debugging Activity

AI + Coding Starter Kit | Student Activity | Students

Purpose: You will debug short Python examples. Your goal is not to make AI fix everything for you. Your goal is to use AI to understand the error, decide what to check, make the fix yourself, and verify that your code works.

Standards summary: This resource may support Tennessee Computer Science Foundations standards when used as part of AI literacy, computer science, programming, digital ethics, or cybersecurity instruction. Detailed standards connection appears at the end of this document.

Item	Details
Estimated Time	30-45 minutes
Purpose	Practice using AI as a debugging coach while maintaining student ownership of the code.
Student Product	Completed bug log, revised code, test result, and reflection.

Student Directions

You will debug short Python examples. Your goal is not to make AI fix everything for you. Your goal is to use AI to understand the error, decide what to check, make the fix yourself, and verify that your code works.

Debugging Rules

Read the code before asking AI for help.

Predict what the program is supposed to do.

- Ask AI for an explanation or hint, not a finished solution.
- Make the code change yourself.
- Run or trace the code to verify the result.

Document the bug, the fix, and what you learned.

Bug 1: Input Type Problem

Goal: The program should tell whether a test score is passing.

```
score = input("Enter your score: ")

if score >= 70:
    print("Passing")
else:
    print("Not passing")
```

Coaching prompt to try:

I am getting an error in this Python code. Please explain what the error means and point me to the part I should check first. Do not rewrite the whole program for me.

Bug 2: Loop Syntax Problem

Goal: The program should print the numbers 1 through 5.

```
for number in range(1, 6)
print(number)
```

Coaching prompt to try:

- Explain the syntax error in this beginner Python loop. Give me a hint about what is missing, but let me fix the code myself.

Bug 3: Logic Problem

Goal: The program should count how many quiz scores are 80 or higher.

```
scores = [95, 72, 88, 64, 91]
count = 0

for score in scores:
if score > 80:
count = count + 1

print("Scores 80 or higher:", count)
```

Coaching prompt to try:

This Python code runs, but I need to check whether the logic matches the goal. Ask me what condition I should inspect before suggesting a fix.

Bug Log

Example	What should happen?	What went wrong?	What did I change?	How did I verify?
Bug 1				
Bug 2				
Bug 3				

Reflection

Which bug was easiest to understand?

Which AI prompt helped you learn the most?

Did AI explain the problem or replace your thinking?

Could you fix a similar bug without AI next time?

What should a teacher know about how you used AI?

Detailed Tennessee Standards Connection

This activity supports standards when students debug Python code, use a structured troubleshooting process, test a fix, and document what they learned.

Standards source: Tennessee Department of Education, Computer Science Foundations (C10H11), May 2023. Confirm final alignment against local district pacing, approved course placement, and teacher directions.

This resource may support the following Tennessee standards when used as part of AI literacy, computer science, programming, digital ethics, or cybersecurity instruction:

- CSF 9.2 - Troubleshooting Process: Students use a structured process to identify a problem, gather information, isolate causes, test a solution, verify the result, and document what they learned.
- CSF 16.1 - Programming Language: Students explore programming languages such as Python and explain how programmers use them to solve a variety of IT problems.
- CSF 16.2 - Software Development Life Cycle: Students connect planning, coding, testing, refinement, deployment, and maintenance to an iterative software-development process.
- CSF 13.1 - Social, Legal, and Ethical Issues: Students identify responsibilities related to ethical technology use, academic integrity, copyright, appropriate AI use, and responsible programming support.

Cautious guidance: Alignment depends on local district pacing, approved course placement, teacher directions, and how the resource is used as part of instruction.