How to Read a Log File to Diagnose a Broken Script

What a Log File Actually Is

A log file is a text file where a script writes what it's doing as it runs. When something breaks, the log is usually the first place you look. Most scripts write logs automatically. Most people never check them.

Where Logs Live

Depends on the system, but common locations:

```
# Linux system logs
```

> /var/log/syslog /var/log/auth.log

```
# App-specific logs (wherever the script puts them)
```

> /home/user/myapp/logs/app.log

```
# Docker container logs
docker logs container-name
# Cron job output (if redirected)
```

> /var/log/cron.log

How to Read One

The fastest way to see the last 50 lines of a log:

> tail -n 50 /path/to/your.log

To watch it update in real time (extremely useful when testing):

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```
tail -f /path/to/your.log
```

Press Ctrl+C to stop watching.

What to Look For

Scan for these words; they almost always appear near the problem:

Word to Find	What It Usually Means
ERROR	Something failed; this is your first stop
WARN / WARNING	Something looked wrong but didn't crash yet
Traceback	Python crashed; the next few lines show exactly where
Connection refused	Script tried to connect to something that wasn't running
Permission denied	File or directory access blocked; wrong user or permissions
No such file or directory	Path is wrong; file doesn't exist where the script expects it
KeyError / AttributeError	Data structure problem; the key or field doesn't exist

Searching Inside a Log

To find every line containing the word ERROR:

```
grep -i error /path/to/your.log
```

To see 5 lines before and after each match (for context):

```
grep -i -C 5 error /path/to/your.log
```

Using AI to help with this. You don't have to fully understand this to use it. Here are prompts that work: "I have a log file from a broken Python script. Here are the last 50 lines: [paste]. What went wrong and how do I fix it?" "This error keeps appearing in my log: [paste error]. What does it mean and what should I check first?"

"My cron job is failing silently. Here is the log output: [paste]. What is missing?"

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