Differences Between stdout and stderr

In Unix-like systems, stdout (standard output) and stderr (standard error) are two separate streams used to display output from a program or command. They serve different purposes and are handled independently.

1. Purpose

stdout (Standard Output):

- Used for regular output of a program.
- Outputs data that is the result of the program's execution.
- Typically, it displays information meant for the user.

stderr (Standard Error):

- Used for error messages and diagnostics.
- Outputs information about issues or problems encountered during execution.
- It is separate so that errors can be processed differently from regular output.

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2. Default File Descriptors

stdout:

File descriptor: 1

Example: When you run echo "Hello", the message "Hello" is sent to stdout.

stderr:

File descriptor: 2

Example: When a command fails, such as ls nonexistentfile, the error message is sent to stderr.

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3. Redirection

stdout can be redirected to a file using >:

echo "Hello" > output.txt

This writes "Hello" to output.txt.

stderr can be redirected to a file using 2>:

ls nonexistentfile 2> error.txt

This writes the error message to error.txt.

Redirect both stdout and stderr to the same file:

command > output.txt 2>&1