sed: The Stream Editor in Linux

sed stands for "stream editor" and is a powerful tool in Linux for manipulating text files. It processes text data line by line, allowing you to perform various operations like searching, replacing, inserting, and deleting content based on patterns. Here's a breakdown of sed usage and some commonly used flags:

Basic Structure:

```
sed 'command' [options] file
```

- command: This specifies the action to be performed on the lines (e.g., s for substitution, d for deletion).
- options: These are flags that modify the behavior of the command (explained below).
- file: The text file you want to edit (can be omitted for piped input).

Common Flags:

- -i [extension]: Edits the file in-place (with caution! Use a backup). You can optionally specify a filename extension to create before modifying the original file (e.g., .bak).
- -n (silent/non-printing): Suppresses default output, only printing lines resulting from the command.
- -p (print): Prints modified lines (useful with -n to see the effect).
- g (global): Replaces all occurrences of the pattern in a line (default replaces only the first).

Key Commands:

- s/pattern/replacement/: Substitute the first occurrence of pattern with replacement in each line. Add g flag to replace all occurrences.
- d: Delete lines matching the pattern.
- a\text: Append text to the end of the line.
- i\text: Insert text before the line.

Example:

```
sed 's/error/success/g'myfile.txt  # Replaces all 'error' with
'success' in myfile.txt
sed -i.bak 'd/^$/' config.txt      # Deletes empty lines from
config.txt with backup
```

Regular Expressions:

sed leverages regular expressions for powerful pattern matching. While a full explanation is beyond the scope of this answer, there are resources available online to learn more about regular expressions https://www.regexone.com/.

Safety and Practice:

Be cautious when using sed with the -i flag, as it modifies the original file. It's recommended to practice with a copy of the file or use -n to preview changes before applying them.

For detailed information and more advanced usage, refer to the sed man page by typing man sed in your terminal.