File Editor Tool(Tted)

Command-Line Text File Manipulation

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Contents

1 Introduction

The File Editor Tool is a command-line utility written in C for viewing and manipulating text files. It provides two distinct operating modes: **Terminal Mode** (preview only) and **In-Place Edit Mode** (file modification).

1.1 Key Features

- View specific lines or line ranges
- Delete lines from files
- Append text after specific lines
- Replace text throughout files
- Safe preview mode (default)
- In-place editing with `-i` flag

2 Operating Modes

2.1 Terminal Mode (Default)

Terminal mode is the **safe default** operating mode. It displays the result of operations without modifying the original file. This allows you to preview changes before committing them.

Safety Feature

All modification commands (`--delete`, `--append`, `--replace`) run in preview mode by default. The file is never modified unless the `-i` flag is explicitly provided.

2.2 In-Place Edit Mode

To actually modify files, prefix your command with the `-i` flag. This mode creates a temporary file, performs the operation, and replaces the original file.

3 Command Reference

3.1 Reading Operations

These operations always work in terminal mode (read-only).

3.1.1 View Single Line

Syntax

```
./program --line [line_number] [file]
```

Description: Displays a specific line from the file.
Example:

```
./program --line 5 myfile.txt
```

3.1.2 View Line Range

Syntax

```
./program --lines [start,end] [file]
```

Description: Displays a range of lines with line numbers.
Example:

```
./program --lines 10,20 myfile.txt
```

Output format:

```
 10:This is line 10
 11:This is line 11
 12:This is line 12
 ...
```

3.2 Modification Operations

3.2.1 Delete Lines

Terminal Mode (Preview)

```
./program --delete [start,end] [file]
```

In-Place Mode (Modifies File)

```
./program -i --delete [start,end] [file]
```

Description: Removes the specified line range from the file.
Examples:

```
# Preview deletion
./program --delete 5,10 document.txt

# Actually delete lines 5-10
./program -i --delete 5,10 document.txt
```

3.2.2 Append Text

Terminal Mode (Preview)

```
./program --append [line_number] [file] "text"
```

In-Place Mode (Modifies File)

```
./program -i --append [line_number] [file] "text"
```

Description: Inserts text as a new line after the specified line number.

Examples:

```
# Preview append
./program --append 3 notes.txt "This is a new line"

# Actually append
./program -i --append 3 notes.txt "This is a new line"
```

3.2.3 Replace Text

Terminal Mode (Preview)

```
./program --replace "old_text/new_text" [file]
```

In-Place Mode (Modifies File)

```
./program -i --replace "old_text/new_text" [file]
```

Description: Replaces the first occurrence of `old_text` with `new_text` on each line.
Examples:

```
# Preview replacement
./program --replace "hello/goodbye" letter.txt

# Actually replace
./program -i --replace "hello/goodbye" letter.txt
```

4 Usage Examples

4.1 Workflow Example

A typical workflow involves previewing changes before applying them:

```
# 1. View the current state
./program --lines 1,50 config.txt

# 2. Preview a deletion
./program --delete 10,15 config.txt

# 3. If satisfied, apply the change
./program -i --delete 10,15 config.txt

# 4. Verify the result
./program --lines 1,50 config.txt
```

4.2 Batch Operations

```
# Preview multiple changes
./program --delete 5,10 data.txt
./program --append 20 data.txt "New section header"
./program --replace "old_version/new_version" data.txt
```

```
# Apply all changes
./program -i --delete 5,10 data.txt
./program -i --append 20 data.txt "New section header"
./program -i --replace "old_version/new_version" data.txt
```

5 Error Handling

5.1 Common Errors

Invalid line number The specified line number exceeds the total lines in the file.

Invalid line range The start line is greater than the end line, or either exceeds the file length.

Cannot open file The specified file does not exist or lacks read permissions.

Cannot create temporary file Insufficient permissions or disk space for in-place editing.

5.2 Error Messages

```
invalid line number
invalid line range
Invalid range: Operation is not permitted
Error: Cannot open file
Error: Cannot create temporary file
Error: Text to append is required
Error: Replace format should be "OldText/NewText"
```

6 Technical Details

6.1 Line Numbering

- Line numbers start at 1 (not 0)
- Line ranges are inclusive: `5,10` includes both lines 5 and 10
- Maximum line number supported: 999,999,999 (limited by `unsigned int`)

6.2 Buffer Limitations

- Maximum line length: 512 characters (including newline)
- Lines exceeding this limit will be processed in chunks
- Maximum line number length in commands: 8 digits

6.3 File Operations

In-Place Mode Process:

1. Read from original file
2. Write modified content to `temp_file.tmp`
3. Close both files
4. Remove original file
5. Rename temporary file to original filename

7 Best Practices

7.1 Safety Guidelines

- Always preview changes with terminal mode first
- Keep backups of important files before using `-i` mode
- Test operations on sample files before production use
- Use version control systems for critical files

7.2 Performance Tips

- For large files, specify exact line ranges rather than reading entire files
- Batch multiple preview operations before applying changes
- Consider file size when performing replace operations

8 Compilation

To compile the program:

```
gcc -o filedit read.c -Wall -Wextra
```

Recommended compilation flags:

- `-Wall`: Enable all warnings
- `-Wextra`: Enable extra warnings
- `-O2`: Optimization level 2 (optional)
- `-std=c99`: Use C99 standard (optional)

9 Quick Reference

Command	Mode	Effect
`--line N file`	Terminal	View line N
`--lines N,M file`	Terminal	View lines N-M
`--delete N,M file`	Terminal	Preview deletion
`-i --delete N,M file`	In-place	Delete lines
`--append N file "text"`	Terminal	Preview append
`-i --append N file "text"`	In-place	Append text
`--replace "a/b" file`	Terminal	Preview replace
`-i --replace "a/b" file`	In-place	Replace text

Table 1: Command Quick Reference