Report

The program is able to perform directory listings, both single and recursive; delete files; display files in hexadecimal, with each line beginning with the hexadecimal byte offset; encrypt files; and decrypt files. For the purposes of testing and demonstration, a text file, titled "Display," is used (see Appendix A).

Screenshots

The following are screenshots of the program running through each of the options, 7-2, in descending order. After that are the same options in ascending order 1-7. Finally, option 0 is used to demonstrate ending the program.

No Directory Set

Option 7 – No Directory

```
Select option: 7




No directory has been set!
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 6 – No Directory

```
Select option: 6




No directory has been set!
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 5 – No Directory

```
Select option: 5




No directory has been set!
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 4 – No Directory

```
Select option: 4




No directory has been set!
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 3 – No Directory

```
Select option: 3




No directory has been set!
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 2 – No Directory

```
Select option: 2




No directory has been set!
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 1 – Non-Existent

```
Select option: 1




Please provide the path for the directory: NonExistent
'NonExistent' does not exist.
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 1 – Not a Directory

```
Select option: 1



Please provide the path for the directory: Display
'Display' is not a directory.
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 1 – Directory

```
Select option: 1



Please provide the path for the directory: .

Set directory to /home/sam/git/umgc/cmsc412/homework/scalf-hw6

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 2 – List Directory (First Level)

```
Select option: 2




Showing contents
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/screenshots"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/Display"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/Homework6.pdf"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/src"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/scalf-hw6"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/test"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/Makefile"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/build"

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 3 – List Directory (Recursive)

```
Select option: 3




Showing contents
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/Display"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/Homework6.pdf"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/src"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/src/filemanager.cpp"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/src/scalf-hw6.cpp"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/src/filemanager.h"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/scalf-hw6"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/test"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/test/fs.cpp"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/test/fs"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/test/takeabyte.cpp"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/test/test2.cpp"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/test/readme"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/Makefile"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/build"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/build/src"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/build/src/scalf-hw6.o"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/build/src/filemanager.o"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/build/src/filemanager.d"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/build/src/scalf-hw6.d"

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option: 
```

Option 4 – Non-Existant

```
Select option: 4




Please provide the filename (no path): NonExistant
Could not find a file with the name 'NonExistant'
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 4 – Directory

```
Select option: 4




Please provide the filename (no path): test
'test' is a directory.
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 4 – Remove File

```
Select option: 4




Please provide the filename (no path): Homework6.pdf
Are you sure you want to delete "Homework6.pdf" (y/n)? y

Removed /home/sam/git/umgc/cmsc412/homework/scalf-hw6/Homework6.pdf

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option: 2




Showing contents
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/Display"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/src"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/scalf-hw6"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/test"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/Makefile"
"/home/sam/git/umgc/cmsc412/homework/scalf-hw6/build"

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 5 – Non-Existant (Same method called for Options 6 and 7)

```
Select option: 5




Please provide the filename (no path): NonExistant
Could not find a file with the name 'NonExistant'
Please try again.

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 5 – Display file (Hexadecimal)

```
Select option: 5




Please provide the filename (no path): Display

00000000: 46 72 6F 6D 20 68 74 74 70 73 3A 2F 2F 77 77 77
00000010: 2E 64 63 73 6C 73 6F 66 74 77 61 72 65 2E 63 6F
00000020: 6D 2F 32 30 2D 6F 6E 65 2D 6C 69 6E 65 72 73 2D
00000030: 6F 6E 6C 79 2D 73 6F 66 74 77 61 72 65 2D 64 65
00000040: 76 65 6C 6F 70 65 72 73 2D 75 6E 64 65 72 73 74
00000050: 61 6E 64 2F 0A 0A 2F 2F 62 65 20 6E 69 63 65 20
00000060: 74 6F 20 74 68 65 20 43 50 55 0A 54 68 72 65 61
00000070: 64 5F 73 6C 65 65 70 28 31 29 3B 0A 0A 21 66 61
00000080: 6C 73 65 20 28 49 74 27 73 20 66 75 6E 6E 79 20
00000090: 62 65 63 61 75 73 65 20 69 74 27 73 20 74 72 75
000000A0: 65 2E 29 0A 0A 54 68 65 20 62 65 73 74 20 74 68
000000B0: 69 6E 67 20 61 62 6F 75 74 20 61 20 42 6F 6F 6C
000000C0: 65 61 6E 20 69 73 20 74 68 61 74 20 65 76 65 6E
000000D0: 20 69 66 20 79 6F 75 20 61 72 65 20 77 72 6F 6E
000000E0: 67 2C 20 79 6F 75 20 61 72 65 20 6F 6E 6C 79 20
000000F0: 6F 66 66 20 62 79 20 61 20 62 69 74 2E 0A 0A 41
00000100: 20 70 72 6F 67 72 61 6D 6D 65 72 20 68 61 64 20
00000110: 61 20 70 72 6F 62 6C 65 6D 2E 0A 48 65 20 74 68
00000120: 6F 75 67 68 74 20 74 6F 20 68 69 6D 73 65 6C 66
00000130: 2C 20 22 49 20 6B 6E 6F 77 2C 20 49 27 6C 6C 20
00000140: 73 6F 6C 76 65 20 69 74 20 77 69 74 68 20 74 68
00000150: 72 65 61 64 73 21 22 0A 68 61 73 20 4E 6F 77 20
00000160: 70 72 6F 62 6C 65 6D 73 2E 20 74 77 6F 20 68 65
00000170: 0A

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option:
```

Option 6 – Encrypt File

```
Select option: 6




Please provide the filename (no path): Display
Please provide the name for the encrypt file (no path): Encryption
Please enter the password: Qwertyuiop[123$4$567]

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option: 5




Please provide the filename (no path): Encryption

00000000: 17 05 0A 1F 54 11 01 1D 1F 03 61 1E 1D 44 53 43
00000010: 0A 51 55 44 31 22 18 03 06 03 18 07 0C 41 13 34
00000020: 5C 1D 01 14 19 4B 5B 53 1A 31 38 19 00 00 07 54
00000030: 1A 07 03 09 76 42 5D 55 50 43 45 47 53 1A 39 34
00000040: 01 00 1E 1B 09 10 1B 1C 5D 2E 5F 56 56 56 47 50
00000050: 54 58 53 72 5B 7D 4A 5D 16 1C 55 07 06 13 3E 11
00000060: 46 5C 04 40 4C 50 16 74 0D 04 7D 31 1A 06 1C 14
00000070: 0D 30 03 37 54 57 43 0C 05 0D 0E 3C 3D 7C 37 16
00000080: 09 01 11 59 5D 20 1B 57 28 11 54 46 4A 5A 5D 15
00000090: 54 52 3E 30 02 16 17 54 10 01 4E 1C 50 2F 43 47
000000A0: 56 0A 1D 2E 3F 62 5F 38 71 15 00 01 00 59 01 01
000000B0: 06 1E 3C 11 53 51 4B 41 50 15 57 17 1F 3E 18 09
000000C0: 17 15 17 55 00 1C 50 2F 59 53 47 04 51 52 50 58
000000D0: 17 34 37 57 1C 1D 01 59 14 1B 0A 50 2C 43 5D 5D
000000E0: 43 18 04 4C 59 42 7D 30 05 00 52 1B 17 19 10 4F
000000F0: 1F 3D 57 12 51 5D 14 45 15 54 5E 29 7F 7D 6F 33
00000100: 54 09 07 06 08 02 3A 5C 5F 56 56 14 4C 54 52 17
00000110: 3C 71 07 17 1D 16 15 10 04 41 7A 13 54 12 47 4C
00000120: 5B 51 52 5E 43 7D 25 18 45 1A 1D 14 06 0C 03 16
00000130: 77 11 10 7A 04 5F 4A 5A 41 1B 7D 18 50 09 1E 54
00000140: 0A 1A 05 19 15 7B 58 46 13 53 5D 50 5D 16 43 35
00000150: 23 12 04 16 07 58 57 63 07 11 28 11 7C 5C 53 14
00000160: 54 47 59 55 31 34 1A 16 5C 54 0D 02 06 4F 18 3E
00000170: 3B

FILE MANAGER (BETA)
```

Option 7 – Decrypt File

```
Select option: 7




Please provide the filename (no path): Encryption
Please provide the name for the decrypt file (no path): Decryption
Please enter the password: Qwertyuiop[123$4$567]

FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option: 5




Please provide the filename (no path): Decryption

00000000: 46 72 6F 6D 20 68 74 74 70 73 3A 2F 2F 77 77 77
00000010: 2E 64 63 73 6C 73 6F 66 74 77 61 72 65 2E 63 6F
00000020: 6D 2F 32 30 2D 6F 6E 65 2D 6C 69 6E 65 72 73 2D
00000030: 6F 6E 6C 79 2D 73 6F 66 74 77 61 72 65 2D 64 65
00000040: 76 65 6C 6F 70 65 72 73 2D 75 6E 64 65 72 73 74
00000050: 61 6E 64 2F 0A 0A 2F 2F 62 65 20 6E 69 63 65 20
00000060: 74 6F 20 74 68 65 20 43 50 55 0A 54 68 72 65 61
00000070: 64 5F 73 6C 65 65 70 28 31 29 3B 0A 0A 21 66 61
00000080: 6C 73 65 20 28 49 74 27 73 20 66 75 6E 6E 79 20
00000090: 62 65 63 61 75 73 65 20 69 74 27 73 20 74 72 75
000000A0: 65 2E 29 0A 0A 54 68 65 20 62 65 73 74 20 74 68
000000B0: 69 6E 67 20 61 62 6F 75 74 20 61 20 42 6F 6F 6C
000000C0: 65 61 6E 20 69 73 20 74 68 61 74 20 65 76 65 6E
000000D0: 20 69 66 20 79 6F 75 20 61 72 65 20 77 72 6F 6E
000000E0: 67 2C 20 79 6F 75 20 61 72 65 20 6F 6E 6C 79 20
000000F0: 6F 66 66 20 62 79 20 61 20 62 69 74 2E 0A 0A 41
00000100: 20 70 72 6F 67 72 61 6D 6D 65 72 20 68 61 64 20
00000110: 61 20 70 72 6F 62 6C 65 6D 2E 0A 48 65 20 74 68
00000120: 6F 75 67 68 74 20 74 6F 20 68 69 6D 73 65 6C 66
00000130: 2C 20 22 49 20 6B 6E 6F 77 2C 20 49 27 6C 6C 20
00000140: 73 6F 6C 76 65 20 69 74 20 77 69 74 68 20 74 68
00000150: 72 65 61 64 73 21 22 0A 68 61 73 20 4E 6F 77 20
00000160: 70 72 6F 62 6C 65 6D 73 2E 20 74 77 6F 20 68 65
00000170: 0A
```

Option 0 – Exit

```
FILE MANAGER (BETA)

0 - Exit
1 - Select directory
2 - List directory content (first level)
3 - List directory content (all levels)
4 - Delete file
5 - Display file (hexadecimal view)
6 - Encrypt file (XOR with password)
7 - Decrypt file (XOR with password)

Select option: 0




[sam@sampc scalf-hw6]$ █
```

Bonus – Encryption Contents

```
[sam@sampc scalf-hw6]$ cat Encryption

TaDSC
QUD1"
07TWCA4\K[S◌18T◌         vB]UPCEGS◌94     >F\@LPt
<=|7    Y] (TFJZ]TR>0TNP/CGV
.?b_8qY<SQKAPW> UP/YSGQRPX47WY
LYB}0R=WQ]ET^)}o3T       :\_VVLTR<qAzTGL[QR^C}%E◌
                                        wz_JZAP  T
O>;[sam@sampc scalf-hw6]$ T
```

Appendix A – Contents of "Display" file

From https://www.dcslsoftware.com/20-one-liners-only-software-developers-unders>

```
//be nice to the CPU
Thread_sleep(1);
```

!false (It's funny because it's true.)

The best thing about a Boolean is that even if you are wrong, you are only off >

A programmer had a problem.
He thought to himself, "I know, I'll solve it with threads!"
has Now problems. two he