

1.

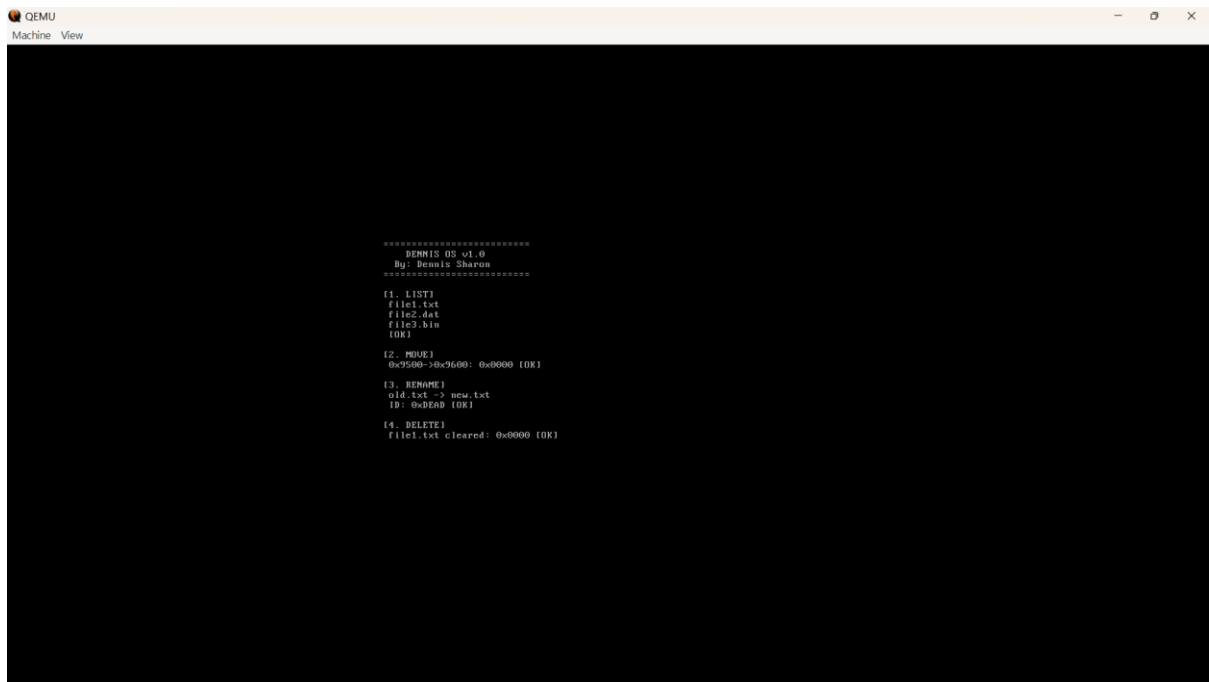


Figure 1: OS Main Module (dennis\_os.bin) – File System Operations

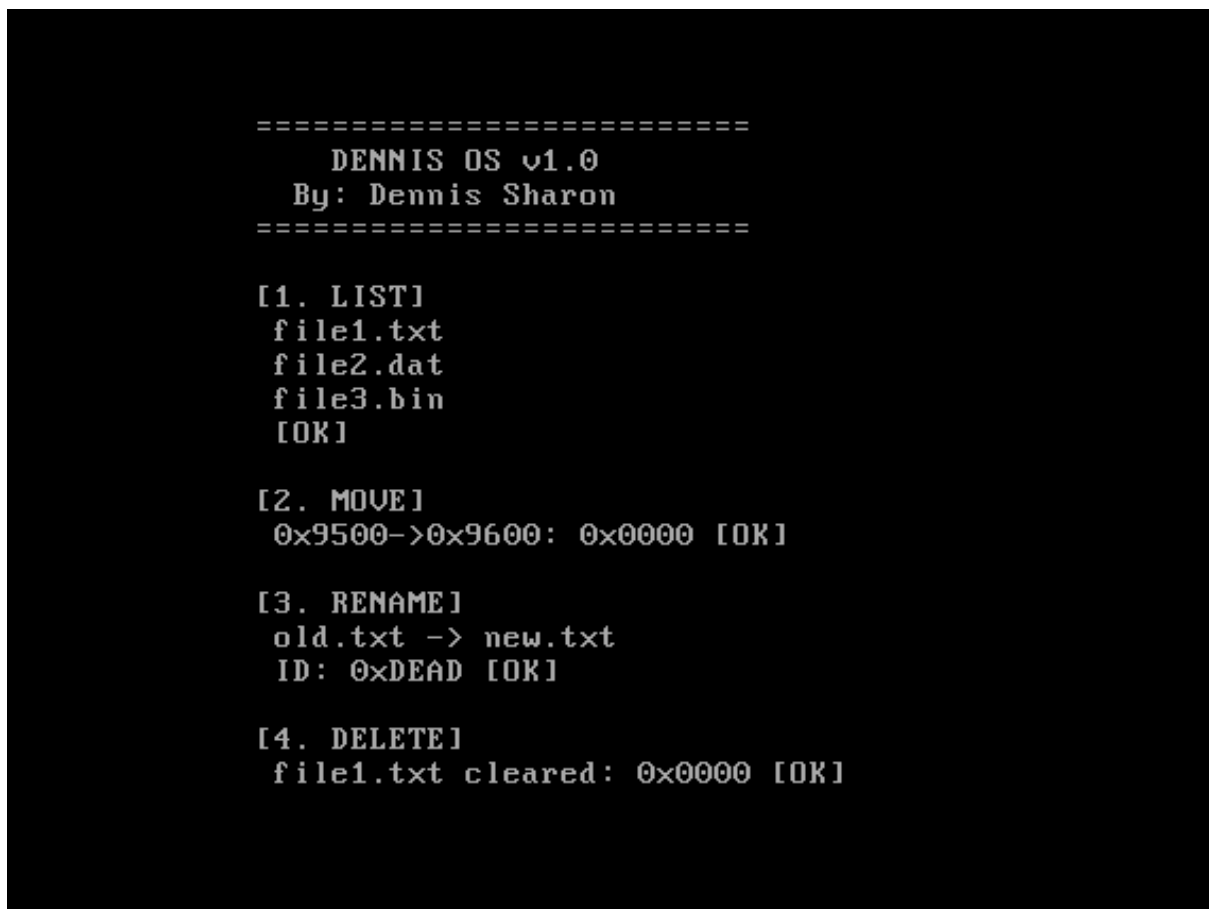



Figure 1.1 (Zoomed-In)

2.



```
QEMU
Machine View

=== MEMORY MANAGER ===
By: Dennis Sharon

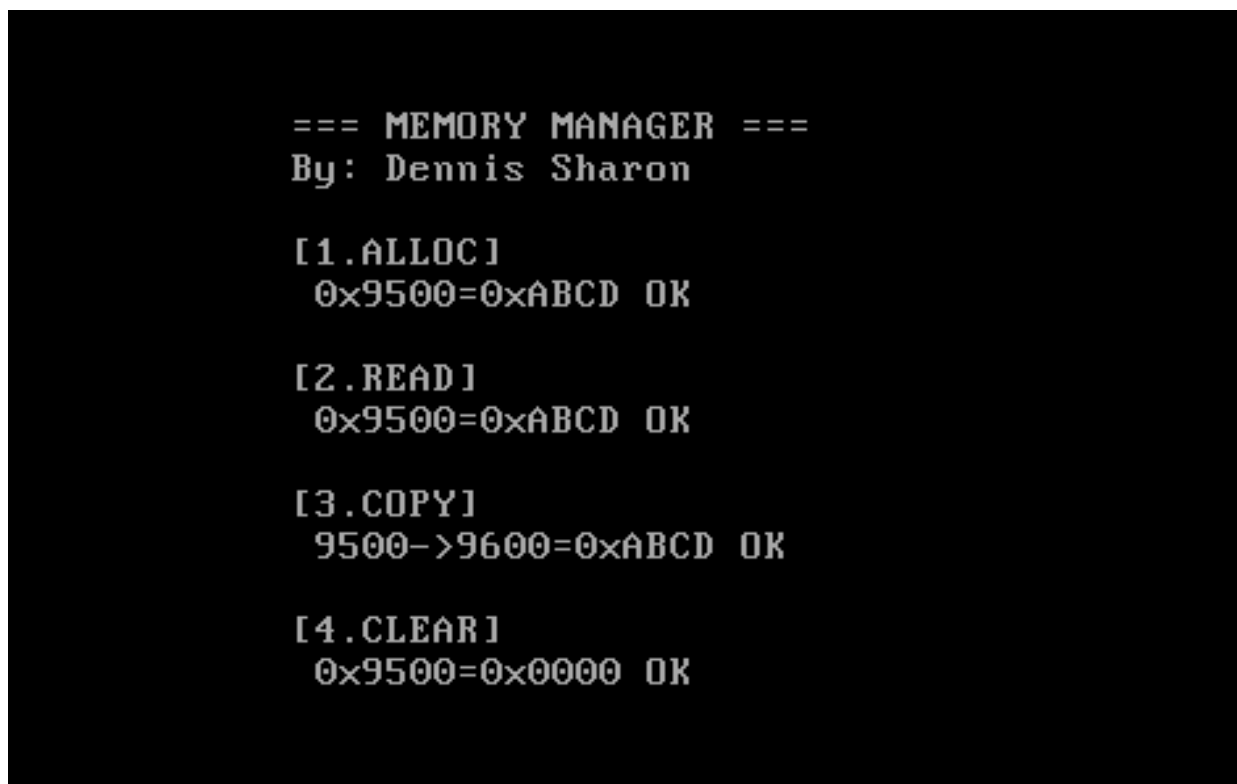
[1.ALLOC]
0x9500=0xABCD OK

[2.READ]
0x9500=0xABCD OK

[3.COPY]
9500->9600=0xABCD OK

[4.CLEAR]
0x9500=0x0000 OK
```

Figure 2: OS Memory Manager (dennis\_os\_memory.bin) – Memory Operations Execution



```
=== MEMORY MANAGER ===
By: Dennis Sharon

[1.ALLOC]
0x9500=0xABCD OK

[2.READ]
0x9500=0xABCD OK

[3.COPY]
9500->9600=0xABCD OK

[4.CLEAR]
0x9500=0x0000 OK
```

Figure 2.1 (Zoomed-In)

3.



Figure 3: OS Compute Engine (dennis\_os\_compute.bin) – Arithmetic Functions Output

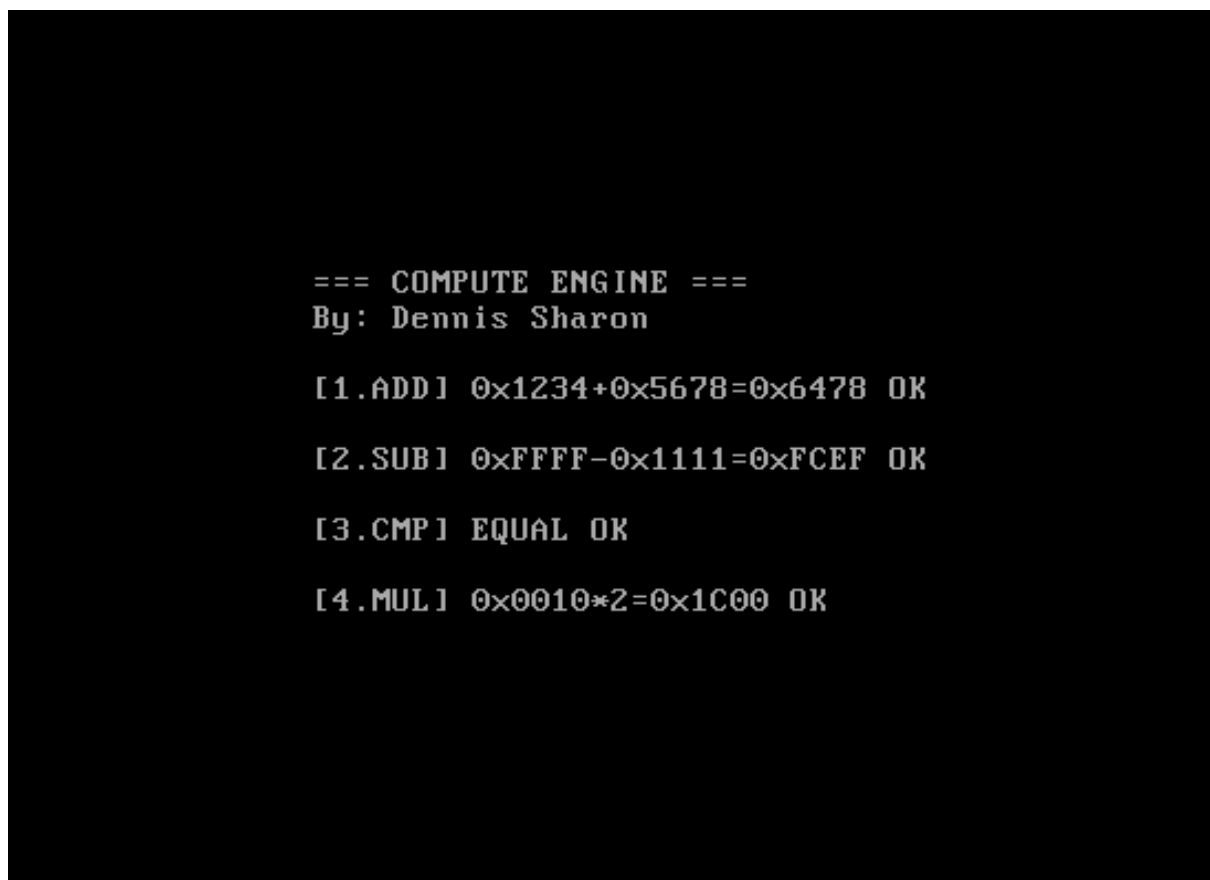
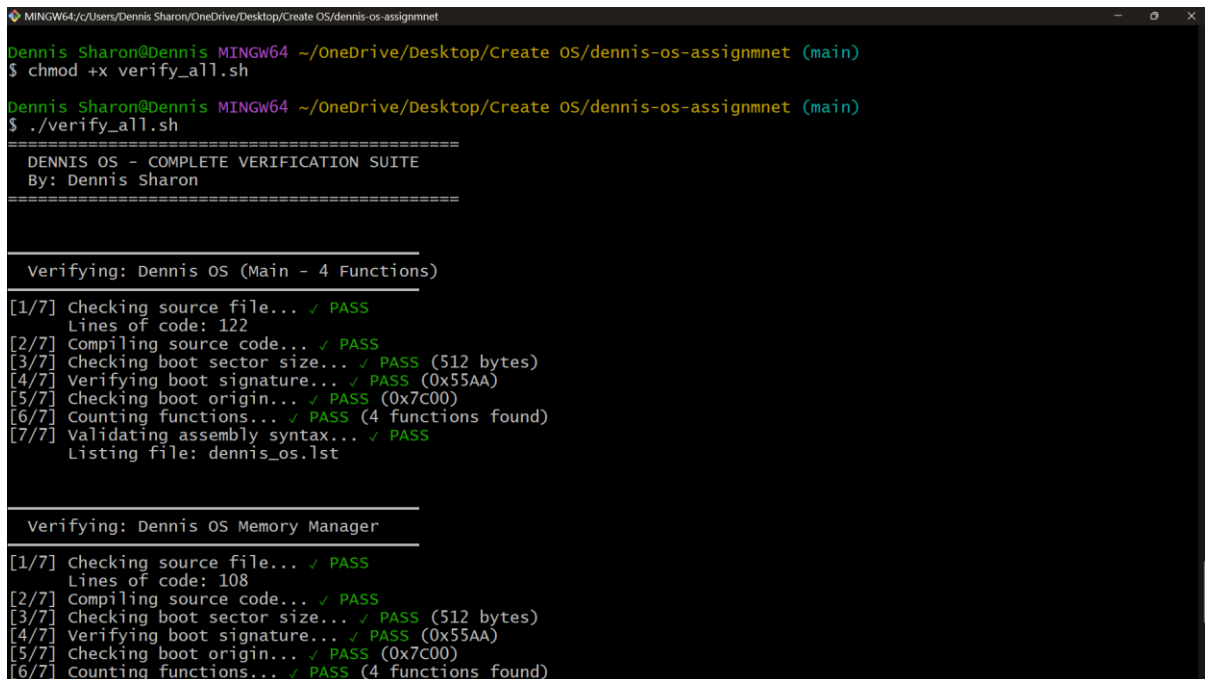


Figure 3.1 (Zoomed-In)

4.



```
MINGW64/c/Users/Dennis Sharon/OneDrive/Desktop/Create OS/dennis-os-assignmnet
Dennis Sharon@Dennis MINGW64 ~/OneDrive/Desktop/Create OS/dennis-os-assignmnet (main)
$ chmod +x verify_all.sh
Dennis Sharon@Dennis MINGW64 ~/OneDrive/Desktop/Create OS/dennis-os-assignmnet (main)
$ ./verify_all.sh
=====
DENNIS OS - COMPLETE VERIFICATION SUITE
By: Dennis Sharon
=====

Verifying: Dennis OS (Main - 4 Functions)

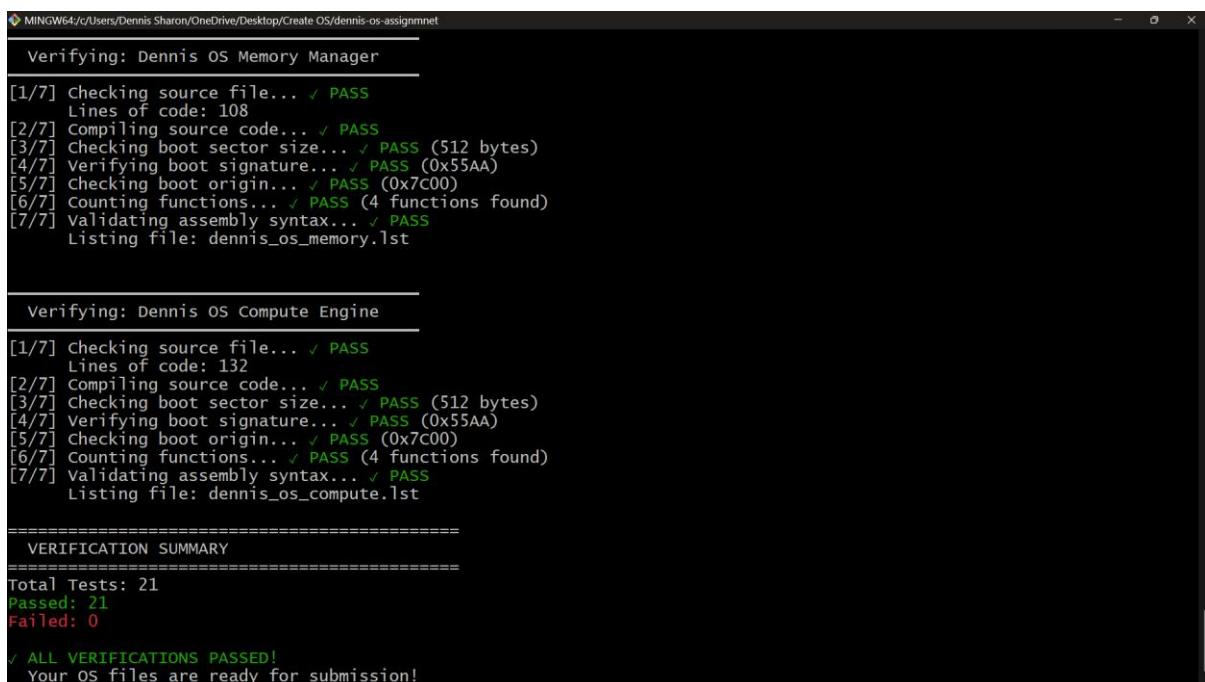
[1/7] Checking source file... ✓ PASS
      Lines of code: 122
[2/7] Compiling source code... ✓ PASS
[3/7] Checking boot sector size... ✓ PASS (512 bytes)
[4/7] Verifying boot signature... ✓ PASS (0x55AA)
[5/7] Checking boot origin... ✓ PASS (0x7C00)
[6/7] Counting functions... ✓ PASS (4 functions found)
[7/7] Validating assembly syntax... ✓ PASS
      Listing file: dennis_os.lst

Verifying: Dennis OS Memory Manager

[1/7] Checking source file... ✓ PASS
      Lines of code: 108
[2/7] Compiling source code... ✓ PASS
[3/7] Checking boot sector size... ✓ PASS (512 bytes)
[4/7] Verifying boot signature... ✓ PASS (0x55AA)
[5/7] Checking boot origin... ✓ PASS (0x7C00)
[6/7] Counting functions... ✓ PASS (4 functions found)
```

verify\_all.sh Execution Results – Complete Module Verification (21 Tests Passed, 0 Failed)

(Figure 4.1)



```
Verifying: Dennis OS Memory Manager

[1/7] Checking source file... ✓ PASS
      Lines of code: 108
[2/7] Compiling source code... ✓ PASS
[3/7] Checking boot sector size... ✓ PASS (512 bytes)
[4/7] Verifying boot signature... ✓ PASS (0x55AA)
[5/7] Checking boot origin... ✓ PASS (0x7C00)
[6/7] Counting functions... ✓ PASS (4 functions found)
[7/7] Validating assembly syntax... ✓ PASS
      Listing file: dennis_os_memory.lst

Verifying: Dennis OS Compute Engine

[1/7] Checking source file... ✓ PASS
      Lines of code: 132
[2/7] Compiling source code... ✓ PASS
[3/7] Checking boot sector size... ✓ PASS (512 bytes)
[4/7] Verifying boot signature... ✓ PASS (0x55AA)
[5/7] Checking boot origin... ✓ PASS (0x7C00)
[6/7] Counting functions... ✓ PASS (4 functions found)
[7/7] Validating assembly syntax... ✓ PASS
      Listing file: dennis_os_compute.lst

=====
VERIFICATION SUMMARY
=====
Total Tests: 21
Passed: 21
Failed: 0

✓ ALL VERIFICATIONS PASSED!
Your OS files are ready for submission!
```

(Figure 4.2)

The comprehensive verification validates dennis\_os.bin (file system operations), dennis\_os\_memory.bin (memory management), and dennis\_os\_compute.bin (arithmetic engine) through automated testing of NASM compilation, 512-byte binary size, boot signature (0x55AA), boot origin (0x7C00), and function count requirements.