John F. Lake, Jr. Problem4.pdf

1 Solution

In the function rot13, cyphertext uses malloc to allocate memory, but the memory is never freed. To solve this, create a pointer, char * ret, or something similar, and set it equal to cyphertext (char *ret = cyphertext). Then, free cyphertext and return ret. This solves the memory errors.

2 Debugging Output

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While using valgrind, before I changed the code, I got the following output:
==9465== HEAP SUMMARY:
==9465==     in use at exit: 162,816 bytes in 159 blocks
==9465==   total heap usage: 160 allocs, 1 frees, 163,384 bytes allocated
==9465==
==9465== LEAK SUMMARY:
==9465==    definitely lost: 162,816 bytes in 159 blocks

After changing the code, I got the following:
==9540== HEAP SUMMARY:
==9540==     in use at exit: 0 bytes in 0 blocks
==9540==   total heap usage: 160 allocs, 160 frees, 163,384 bytes allocated
==9540==
==9540== All heap blocks were freed -- no leaks are possible
```

3 Methodology

The hint gave me a heads up to use valgrind on the program to check for memory leaks. Because it detected definite memory leaks, I looked at the source code. After changing the code so that free was used to clear up memory in the heap, the program didn't have any memory errors.