

Unix Assignment1

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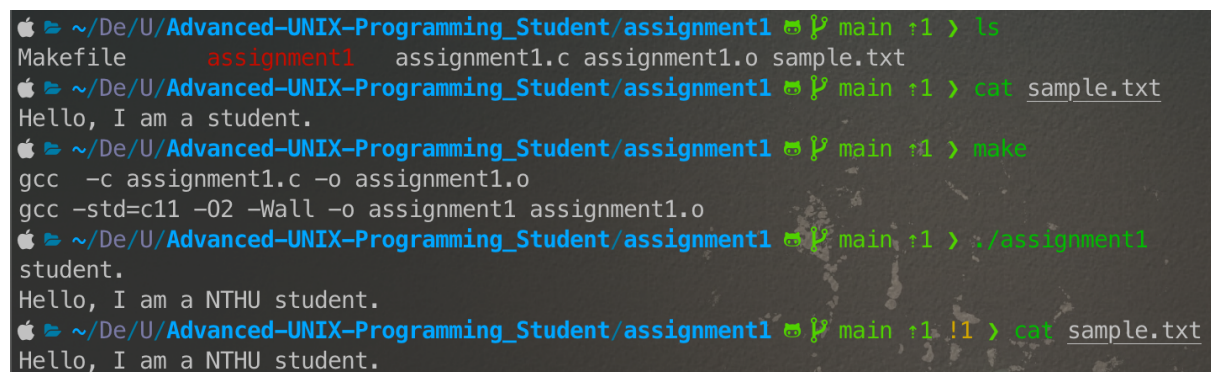
Question

Write a program to verify if you can open a file with the append flag to:

- (1) Read from the specific place in the file using `lseek`.
- (2) Write data at the specific place in the file using `lseek`.

Initially, we used `O_APPEND` but it could only write data to the end of the file in `sample.txt` and couldn't overwrite the existing content. (replace 'student.' with 'NTHU student.'). Obviously, the append flag doesn't support to do so.

Result



```
Apple ~ /De/U/Advanced-UNIX-Programming_Student/assignment1 108072244 main 11 > ls
Makefile      assignment1    assignment1.c assignment1.o sample.txt
Apple ~ /De/U/Advanced-UNIX-Programming_Student/assignment1 108072244 main 11 > cat sample.txt
Hello, I am a student.
Apple ~ /De/U/Advanced-UNIX-Programming_Student/assignment1 108072244 main 11 > make
gcc -c assignment1.c -o assignment1.o
gcc -std=c11 -O2 -Wall -o assignment1 assignment1.o
Apple ~ /De/U/Advanced-UNIX-Programming_Student/assignment1 108072244 main 11 > ./assignment1
student.
Hello, I am a NTHU student.
Apple ~ /De/U/Advanced-UNIX-Programming_Student/assignment1 108072244 main 11 !1 > cat sample.txt
Hello, I am a NTHU student.
```

Our answer is in the implementation part. Please check the content below :)

Implementation

- (1) Use `lseek` and read to print "student." in the command line.
- (2) Use `lseek` and write to replace "student." with "NTHU student." and print the whole sentence in the file in the command line.

At line 18, we open `sample.txt` in `O_RDWR` mode for reading and writing. At lines 25 and 26, we successfully read from a specific location in the file using `lseek`. Similarly, at lines 31 and 32, we successfully write data to a specific location in the file using `lseek`.

```

17 // Open the file using O_RDWR flag
18 int file_id = open("sample.txt", O_RDWR);
19 if(file_id == -1) {
20     printf("Failed to open the file.");
21     return 1;
22 }
23
24 // Use lseek and read to print "student." in the command line
25 lseek(file_id, start_offset, SEEK_SET);
26 read(file_id, buffer, len_old_str * sizeof(char));
27 buffer[len_old_str] = '\0';
28 printf("%s\n", buffer);
29
30 // Use lseek and write to replace "student." with "NTHU student."
31 lseek(file_id, start_offset, SEEK_SET);
32 write(file_id, new_str, len_new_str);
33 write(file_id, "\n", 1); // add a "\n" in the end.
34
35 // Print the whole sentence in the file in the command line
36 lseek(file_id, 0, SEEK_SET);
37 ssize_t bytes_read = read(file_id, buffer, sizeof(buffer));
38 if(bytes_read == -1) {
39     printf("Failed to read the file.");
40     return 1;
41 }
42 buffer[bytes_read] = '\0';
43 printf("%s", buffer);

```

(3) If the append flag cannot support you to do so, please replace it with the right one and explain your implementation in your report.

Initially, we used `O_APPEND` but it could only write data to the end of the file in `sample.txt` and couldn't write to replace 'student.' with 'NTHU student.' Obviously, the append flag cannot support you to do so. Later, we switched to `O_RDWR`, which allowed us to use `lseek` to perform both read and write operations at any position.