

Task 8: File Operations in C

1. Objective

The objective of this task is to demonstrate basic file handling operations in C programming. The program performs file opening, writing, reading, and closing using standard C file handling functions.

2. Problem Statement

Write a C program to:

- Open an existing file named "data.txt". If it does not exist, create it.
- Write the string "Hello, File Handling in C!" to the file.
- Move the file pointer to the beginning of the file.
- Read the contents of the file.
- Display the contents on the console.
- Close the file.

3. C Program Code

```
#include <stdio.h>

int main() {
    FILE *file;
    char buffer[100];

    // Open file in write+read mode. Creates file if it does not exist
    file = fopen("data.txt", "w+");

    if (file == NULL) {
        printf("Error opening file.\n");
        return 1;
    }

    // Write data to file
    fprintf(file, "Hello, File Handling in C!");

    // Move file pointer to beginning
    fseek(file, 0, SEEK_SET);

    // Read data from file
    fgets(buffer, sizeof(buffer), file);
```

```

// Print data to console
printf("Data read from file: %s\n", buffer);

// Close file
fclose(file);

return 0;
}

```

4. Explanation of the Code

- FILE *file: Declares a file pointer.
- fopen(): Opens the file in "w+" mode (write and read). If the file does not exist, it is created.
- fprintf(): Writes text to the file.
- fseek(): Moves the file pointer back to the beginning of the file.
- fgets(): Reads data from the file.
- printf(): Displays the file content on the console.
- fclose(): Closes the file and releases resources.

5. Output

```

student@student-virtual-machine:~/25SUB4508_LSP/25SUB4508_56133/Assignments/day24$ gcc file_operations.c -o file_operations
student@student-virtual-machine:~/25SUB4508_LSP/25SUB4508_56133/Assignments/day24$ ./file_operations
Data read from file: Hello, File Handling in C!
student@student-virtual-machine:~/25SUB4508_LSP/25SUB4508_56133/Assignments/day24$ ll
total 52
drwxrwxr-x  2 student student  4096 Jan 16 00:22 .
drwxrwxr-x 26 student student  4096 Jan 15 23:49 ../
-rw-rw-r--  1 student student   26 Jan 16 00:22 data.txt
-rwxrwxr-x  1 student student 16232 Jan 16 00:16 directory_operations*
-rw-rw-r--  1 student student   920 Jan 15 23:49 directory_operations.c
-rwxrwxr-x  1 student student 16280 Jan 16 00:22 file_operations*
-rw-rw-r--  1 student student   615 Jan 15 23:49 file_operations.c

```

```
GNU nano 6.2
Hello, File Handling in C!

File Name to Write: data.txt
```

6. Conclusion

This task demonstrates basic file handling in C. Such operations are widely used for data storage, logging, and configuration handling in real-world applications.