Course Title:	Programming Fundamentals Lab (CL1002)
Assignment Title:	Lab 10 tasks
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Question 1

```c
#include <stdio.h>
#include <string.h>

int main()
{
    char product_name[100];
    float price;
    int quantity;

    FILE *file_ptr;
    printf("enter product name: ");
    scanf("%s", product_name);
    printf("enter price: ");
    scanf("%f", &price);
    printf("enter quantity: ");
    scanf("%d", &quantity);
    file_ptr = fopen("store_products.txt","a");
    if(file_ptr == NULL){
        printf("could not open file\n");
    }
    else{
        fprintf(file_ptr, "name: %s  price: %.2f  quantity: %d\n", product_name, price, quantity);
        fclose(file_ptr);
        printf("product saved successfully\n");
    }
    return 0;
}
```

```
enter product name: Sugar
enter price: 90
enter quantity: 4
product saved successfully
```

```
enter product name: water
enter price: 50
enter quantity: 8
product saved successfully
```

[*] manual10q1.c [*] store_products.txt

```
1   name: Sugar  price: 90.00  quantity: 4
2   name: water  price: 50.00  quantity: 8
```

Question 2

```c
#include <stdio.h>
int main()
{
    char name[50];
    int count = 0;
    FILE *file;
    file = fopen("attendance.txt", "r");
    if(file == NULL)
    {
        printf("Error opening file.\n");
        return 1;
    }
    while(fscanf(file, " %[^\n]", name) != EOF)
    {
        printf("%s\n", name);
        count = count + 1;
    }
    fclose(file);
    printf("Total students: %d\n", count);
    return 0;
}
```

```
Sandesh Kumar
Usman Khan
Umar Khan
Hafsa
Innaya Khan
Abdullah Saad
Ahmed Kafeel
Afaq Khan
Hadi Khan
Shuqran Alam
Total students: 10

--------------------------------
Process exited after 0.06987 seconds
Press any key to continue . . .
```

```
1   Sandesh Kumar
2   Usman Khan
3   Umar Khan
4   Hafsa
5   Innaya Khan
6   Abdullah Saad
7   Ahmed Kafeel
8   Afaq Khan
9   Hadi Khan
10  Shuqran Alam
```

Question 3

```c
#include <stdio.h>
#include <string.h>

int main() {
    char city_names[5][20], hottest_city[20];
    float temps[5], max_temp = -1000.0;
    int i;
    FILE *file_ptr;
    file_ptr = fopen("temperature.txt", "w");
    for (i = 0; i < 5; i++) {
        printf("Enter city name: ");
        scanf("%s", city_names[i]);
        printf("Enter temperature for %s: ", city_names[i]);
        scanf("%f", &temps[i]);

        fprintf(file_ptr, "%s %.2f\n", city_names[i], temps[i]);
    }
    fclose(file_ptr);
    file_ptr = fopen("temperature.txt", "r");
    for (i = 0; i < 5; i++) {
        fscanf(file_ptr, "%s %f", city_names[i], &temps[i]);
        if (temps[i] > max_temp) {
            max_temp = temps[i];
            strcpy(hottest_city, city_names[i]);
        }
    }
    printf("City with the highest temperature: %s (%.2f°C)\n", hottest_city, max_temp);
    fclose(file_ptr);

    return 0;
}
```

```
Enter city name: karachi
Enter temperature for karachi: 45
Enter city name: lahore
Enter temperature for lahore: 30
Enter city name: islamabad
Enter temperature for islamabad: 26
Enter city name: bhawalpur
Enter temperature for bhawalpur: 28
Enter city name: hyderabad
Enter temperature for hyderabad: 41
City with the highest temperature: karachi (45.00
```

```
1   karachi 45.00
2   lahore 30.00
3   islamabad 26.00
4   bhawalpur 28.00
5   hyderabad 41.00
```

Question 4

```c
#include <stdio.h>
#include <string.h>

int main() {
    char guest_names[20][50];
    int room_numbers[20];
    int i, total_guests = 0;
    FILE *file_ptr;
    file_ptr = fopen("hotel.txt", "w");
    if (file_ptr == NULL) {
        printf("Error opening file.\n");
        return 0;
    }
    for (i = 0; i < 20; i++) {
        printf("Enter guest name for room %d (or type 'exit' to stop): ", i + 1);
        fgets(guest_names[i], sizeof(guest_names[i]), stdin);
        guest_names[i][strcspn(guest_names[i], "\n")] = 0;
        if (strcmp(guest_names[i], "exit") == 0) {
            break;
        }
        room_numbers[i] = i + 1;
        fprintf(file_ptr, "Room %d: %s\n", room_numbers[i], guest_names[i]);
        total_guests++;
    }
    fclose(file_ptr);
    char search_name[50];
    int found;
    char line[100];
    while (1) {
        int choice;
        printf("Do you want to search for a guest? (1 for yes, 0 for no): ");
        fgets(line, sizeof(line), stdin);
        sscanf(line, "%d", &choice);
        if (choice != 1) break;
        printf("Enter guest name to search: ");
        fgets(search_name, sizeof(search_name), stdin);
        fgets(search_name, sizeof(search_name), stdin);
        search_name[strcspn(search_name, "\n")] = 0;

        file_ptr = fopen("hotel.txt", "r");
        if (file_ptr == NULL) {
            printf("Error opening file.\n");
            break;
        }
        found = 0;
        while (fgets(line, sizeof(line), file_ptr) != NULL) {
            int room;
            char name[50];
            sscanf(line, "Room %d: %[^\n]", &room, name);
            if (strcmp(search_name, name) == 0) {
                printf("%s is in room %d\n", name, room);
                found = 1;
                break;
            }
        }
        if (!found) {
            printf("Guest not found.\n");
        }
        fclose(file_ptr);
    }
    printf("Thank you!\n");
    return 0;
}
```

```
Enter guest name for room 1 (or type 'exit' to stop): Usman Khan
Enter guest name for room 2 (or type 'exit' to stop): Umar Khan
Enter guest name for room 3 (or type 'exit' to stop): Ahmed Kafeel
Enter guest name for room 4 (or type 'exit' to stop): Abdullah
Enter guest name for room 5 (or type 'exit' to stop): exit
Do you want to search for a guest? (1 for yes, 0 for no): 1
Enter guest name to search: Usman Khan
Usman Khan is in room 1
Do you want to search for a guest? (1 for yes, 0 for no): _
```

Question 5

```c
#include <stdio.h>
#include <string.h>

int main() {
    char password[100];
    int length;
    int has_upper = 0, has_lower = 0, has_digit = 0, has_special = 0;
    char special_chars[] = "!@#$%^&*()-_+=<>?/";
    printf("Enter your password: ");
    fgets(password, sizeof(password), stdin);
    password[strcspn(password, "\n")] = 0;
    length = strlen(password);

    for (int i = 0; i < length; i++) {
        if (password[i] >= 'A' && password[i] <= 'Z')
            has_upper = 1;
        else if (password[i] >= 'a' && password[i] <= 'z')
            has_lower = 1;
        else if (password[i] >= '0' && password[i] <= '9')
            has_digit = 1;
        else if (strchr(special_chars, password[i]))
            has_special = 1;
    }

    if (length < 6 || (has_upper + has_lower + has_digit + has_special) < 2)
        printf("Password strength: Weak\n");
    else if (length >= 6 && length <= 10 && (has_upper + has_lower + has_digit + has_special) >= 2)
        printf("Password strength: Medium\n");
    else if (length > 10 && has_upper && has_lower && has_digit && has_special)
        printf("Password strength: Strong\n");
    else
        printf("Password strength: Medium\n");

    return 0;
}
```

```
Enter your password: Enter your password: abc123
Password strength: Medium

--------------------------------
Process exited after 22.25 seconds with return value 0
Press any key to continue . . .
```

Question 6

```c
#include <stdio.h>
#include <string.h>
int main() {
    char books[10][100];
    char search_title[100];
    int i, found;
    for (i = 0; i < 10; i++) {
        printf("Enter title of book %d: ", i + 1);
        fgets(books[i], sizeof(books[i]), stdin);
        books[i][strcspn(books[i], "\n")] = 0;
    }
    printf("Enter book title to search: ");
    fgets(search_title, sizeof(search_title), stdin);
    search_title[strcspn(search_title, "\n")] = 0;

    found = 0;
    for (i = 0; i < 10; i++) {
        if (strcmp(search_title, books[i]) == 0) {
            found = 1;
            break;
        }
    }
    if (found)
        printf("Book Found\n");
    else
        printf("Book Not Found\n");

    return 0;
}
```

```
Enter title of book 1: Harry potter
Enter title of book 2: 40 laws of power
Enter title of book 3: pride and prejudice
Enter title of book 4: lord of the rings
Enter title of book 5: 1984
Enter title of book 6: the great gatsby
Enter title of book 7: the strongest link
Enter title of book 8: one hundred
Enter title of book 9: rich dad
Enter title of book 10: the alchemist
Enter book title to search: Harry potter
Book Found

--------------------------------
Process exited after 101.1 seconds with return value 0
Press any key to continue . . .
```

Question 7

```c
#include <stdio.h>
#include <string.h>
int main() {
    char category[50];
    float amount;
    FILE *file_ptr;
    char line[100];
    int i, n;
    printf("How many expenses do you want to enter? ");
    scanf("%d", &n);
    getchar();
    file_ptr = fopen("expenses.txt", "a");
    if (file_ptr == NULL) {
        printf("Error opening file.\n");
        return 0;
    }
    for (i = 0; i < n; i++) {
        printf("Enter expense category: ");
        fgets(category, sizeof(category), stdin);
        category[strcspn(category, "\n")] = 0;
        printf("Enter amount: ");
        scanf("%f", &amount);
        getchar();
        fprintf(file_ptr, "%s %.2f\n", category, amount);
    }
    fclose(file_ptr);
    printf("\nAll recorded expenses:\n");
    file_ptr = fopen("expenses.txt", "r");
    if (file_ptr == NULL) {
        printf("Error opening file.\n");
        return 0;
    }
    while (fgets(line, sizeof(line), file_ptr) != NULL) {
        printf("%s", line);
    }
    fclose(file_ptr);
    return 0;
}
```

```
How many expenses do you want to enter? 3
Enter expense category: commute
Enter amount: 500
Enter expense category: food
Enter amount: 1000
Enter expense category: clothes
Enter amount: 2000

All recorded expenses:
commute 500.00
food 1000.00
clothes 2000.00

--------------------------------
Process exited after 21.84 seconds with return value 0
Press any key to continue . . .
```