DBMS ASSIGNMENT – 1

SEQUENTIAL FILE PROCESSING

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Code:

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

// BASIC STRUCTURE OF PATIENT

struct date
{
    int dd;
    int mm;
    int yy;
};

struct patient
{
    int pno;
    char first_name[25];
    char last_name[25];
    int age;
    char gender;
    char area[25];
    struct date admission;
    struct date discharge;
};

// Global Counter for Number of Records in Database
int record_count = 0;

// To Intialise Count of Records
void init();

// 1 - Add Record in File
void add();

// 2 - Deletion of Record in File
void del();

// 3 - Modify a Record in File
void modify();
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// 4 - Generate Summary Report
void summary();

// 5 - Sort the Data

// 5.1 - Sort by First Name
void sort_first_name(int ch);
// 5.2 - Sort by Last Name
void sort_last_name(int ch);
// 5.3 - Sort by Age
void sort_age(int ch);
// To Compare Two Dates
int cmp(struct date d1, struct date d2);
// 5.4 - Sort by Dates
void sort_date(int ch);

// Main Function that instructs to sort based on which parameter
void sort();

// 6 - List all Records of File for Specific Range
void List_Range();

// 7 - Seperate Record Based on Gender
void Split_by_Gender();

// 8 - To Display all The Records in File
void display();

int main()
{
    // To Intialize the Record Count
    init();
    printf("~~ COVID PATIENT DATA [SURAT] ~~\n");
    while (1)
    {
        int ch;
        printf("\n1 -> Add a Record of Patient\n");
        printf("2 -> Delete a Record of Patient\n");
        printf("3 -> Modify a Record of Patient\n");
        printf("4 -> Generate Summary Report\n");
        printf("5 -> Sort the Record(s)\n");
        printf("6 -> List all Records of File for Specific Range\n");
        printf("7 -> Seperate Record Based on Gender\n");
        printf("8 -> Display a Record of All Patients\n");
        printf("9 -> Exit\n");
        scanf("%d", &ch);
        switch (ch)
        {
        case 1:
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            add();
            break;
        case 2:
            del();
            break;
        case 3:
            modify();
            break;
        case 4:
            summary();
            break;
        case 5:
            sort();
            break;
        case 6:
            List_Range();
            break;
        case 7:
            Split_by_Gender();
            break;
        case 8:
            display();
            break;
        case 9:
            exit(0);
            break;
        default:
            printf("Enter a Valid Choice!\n");
            break;
        }
    }

    return 0;
}

// To Intialise Count of Records
void init()
{
    FILE *fp;
    fp = fopen("data.txt", "r+");
    if (fp == NULL)
    {
        fclose(fp);
        return;
    }
    else
    {
        struct patient p;
        while (fread(&p, sizeof(struct patient), 1, fp))
        {
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            record_count++;
        }
        fclose(fp);
        return;
    }
}

// ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ADD~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
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// 1 - Add Record in File
void add()
{
    FILE *fp;
    fp = fopen("data.txt", "a+");

    struct patient p1;
    printf("Patient's Number : \n");
    scanf("%d", &p1.pno);
    printf("Patient's First Name : \n");
    fflush(stdin);
    gets(p1.first_name);
    printf("Patient's Last Name : \n");
    fflush(stdin);
    gets(p1.last_name);
    printf("Patient's Age : \n");
    scanf("%d", &p1.age);
    printf("Patient's Gender [M(m)/F(f)] : \n");
    fflush(stdin);
    scanf("%c", &p1.gender);
    printf("Enter Area of the patient : \n");
    fflush(stdin);
    gets(p1.area);
    printf("Patients Admission Date [DD/MM/YYYY] : \n");
    scanf("%d %d %d", &p1.admission.dd, &p1.admission.mm, &p1.admission.yy);
    printf("Patients Discharge Date [DD/MM/YYYY] :  \n");
    scanf("%d %d %d", &p1.discharge.dd, &p1.discharge.mm, &p1.discharge.yy);

    // Write the Data in File
    fwrite(&p1, sizeof(struct patient), 1, fp);

    // Increment the Record Count
    record_count++;

    fclose(fp);
}

// ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~DELETE~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
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```

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// 2 - Deletion of Record in File
void del()
{
    FILE *fp;
    FILE *fp1;

    fp = fopen("data.txt", "r+");

    if (fp == NULL)
    {
        printf("Unable to Open File!\n");
        fclose(fp);
        return;
    }
    else
    {
        fp1 = fopen("copy.txt", "a+");

        int id, found;
        printf("\nEnter the Patient Number to be deleted : ");
        scanf("%d", &id);

        struct patient p1;
        // Write all records to the tempfile, except the one(s) you want to delete.
        while (fread(&p1, sizeof(struct patient), 1, fp))
        {
            if (p1.pno != id)
            {
                fwrite(&p1, sizeof(struct patient), 1, fp1);
            }
            else
            {
                found = 1;
            }
        }

        fclose(fp);
        fclose(fp1);
        // Remove the old file.
        remove("data.txt");
        // Rename New File With Old File Name
        rename("copy.txt", "data.txt");

        if (found == 1)
        {
            printf("\nRecord Deleted Succesfully!\n");
            record_count -= 1; // 1 Record Deleted
        }
        else
        {
```

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            printf("\nRecord Not Found in DataBase![Already Deleted/Not Added]!\n");
        }
    }
}

// ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~MODIFY~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

// 3 - Modify a Record in File
void modify()
{
    FILE *fp;
    FILE *fp1;
    fp = fopen("data.txt", "r+");
    if (fp == NULL)
    {
        printf("Unable to Open File!\n");
        fclose(fp);
        return;
    }
    else
    {
        struct patient p1, p2;
        int found = 0, id;

        fp1 = fopen("copy.txt", "a+");

        // New Record
        printf("\nEnter the Patient Number to be updated : ");
        scanf("%d", &id);
        p1.pno = id;
        printf("Enter First Name of patient : ");
        fflush(stdin);
        gets(p1.first_name);
        printf("Enter Last Name of patient : ");
        fflush(stdin);
        gets(p1.last_name);
        printf("Enter age of patient : ");
        scanf("%d", &p1.age);
        printf("Enter gender of patient (M/F) : ");
        fflush(stdin);
        scanf("%c", &p1.gender);
        printf("Enter Area of the patient : ");
        fflush(stdin);
        gets(p1.area);
        printf("Enter Admission date (format : dd mm yyyy ) : ");
        scanf("%d %d %d", &p1.admission.dd, &p1.admission.mm, &p1.admission.yy);
        printf("Enter Discharge date (format : dd mm yyyy ) : ");
        scanf("%d %d %d", &p1.discharge.dd, &p1.discharge.mm, &p1.discharge.yy);
```

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        while (fread(&p2, sizeof(struct patient), 1, fp))
        {
            if (p2.pno != id)
            {
                fwrite(&p2, sizeof(struct patient), 1, fp1);
            }
            else
            {
                // Write the New Data inplace of Old One
                fwrite(&p1, sizeof(struct patient), 1, fp1);
                found = 1;
            }
        }

        fclose(fp);
        fclose(fp1);

        // Remove the old file.
        remove("data.txt");
        // Rename New File With Old File Name
        rename("copy.txt", "data.txt");
        if (found == 1)
        {
            printf("\nRecord Modified Succesfully!\n");
        }
        else
        {
            printf("\nRecord Not Found in the DataBase!\n");
        }
    }
}

// ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~SUMMARY~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
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// 4 - Generate Summary Report
void summary()
{
    FILE *fp;
    fp = fopen("data.txt", "r+");

    if (fp == NULL)
    {
        printf("Unable to Open File!\n");
        fclose(fp);
        return;
    }

    struct patient p1, p2;
    // Array to Store Age's Frequency [Max Human Age = 150]
```

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    int age[150] = {0};
    int male = 0;
    int female = 0;

    while (fread(&p1, sizeof(struct patient), 1, fp))
    {
        age[p1.age]++;
        char ch = p1.gender;
        if (ch == 'm' || ch == 'M')
        {
            male += 1;
        }
        else
        {
            female += 1;
        }
    }

    fclose(fp);

    printf("\n~~ SUMMARY ~~\n\n");
    printf("----------------------------\n");
    printf("Number of Patient's Record in DataBase = %d\n", record_count);
    printf("----------------------------\n");
    printf("Number of Male Patient's Record in DataBase   = %d\n", male);
    printf("Number of Female Patient's Record in DataBase = %d\n", female);
    printf("----------------------------\n");
    printf("Age   |   Number of Patients\n");
    printf("----------------------------\n");
    for (int i = 1; i < 150; i++)
    {
        if (age[i] != 0)
            printf("%d              %d\n", i, age[i]);
    }
    printf("----------------------------\n");
    printf("Area     |      Number of Patients\n");
    printf("-----------------------------------\n");

    // v = Iterator of Visited Array
    int freq, flag = 0, v = 0;
    fp = fopen("data.txt", "r+");

    char word[25], visited[record_count][25];

    while (fread(&p1, sizeof(struct patient), 1, fp))
    {
        flag = 0;
        strcpy(word, p1.area);

        for (int i = 0; i < v; i++)
```

```c
        {
            if (strcmp(word, visited[i]) == 0)
                flag = 1;
        }

        // Not A Unique Area
        if (flag == 1)
        {
            // Frequency already counted
            continue;
        }
        else
        {
            // Insert Unique Area
            strcpy(visited[v], word);
            v++;
        }

        FILE *fp1;
        freq = 0;
        fp1 = fopen("data.txt", "r+");
        while (fread(&p2, sizeof(struct patient), 1, fp1))
        {
            if (strcmp(word, p2.area) == 0)
                freq++;
        }
        printf("%s     :     %d \n", word, freq);
        fclose(fp1);
    }
    fclose(fp);
    printf("-----------------------------------\n");
}

// ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~SORTING~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

// 5.1 - Sort by First Name
void sort_first_name(int ch)
{
    struct patient p[record_count], p1, temp;
    int i = 0, j;

    FILE *fp;
    fp = fopen("data.txt", "r+");
    while (fread(&p1, sizeof(struct patient), 1, fp))
    {
        p[i] = p1;
        i++;
    }
```

```c
    // Classical Bubble Sort to Sort the Array
    // Ascending
    if (ch == 1)
    {
        for (i = 1; i < record_count; i++)
        {
            for (j = 0; j < record_count - i; j++)
            {
                if (strcmp(p[j + 1].first_name, p[j].first_name) < 0)
                {
                    temp = p[j];
                    p[j] = p[j + 1];
                    p[j + 1] = temp;
                }
            }
        }
    }
    else
    { // Descending
        for (i = 1; i < record_count; i++)
        {
            for (j = 0; j < record_count - i; j++)
            {
                if (strcmp(p[j + 1].first_name, p[j].first_name) > 0)
                {
                    temp = p[j];
                    p[j] = p[j + 1];
                    p[j + 1] = temp;
                }
            }
        }
    }

    FILE *fp1;
    fp1 = fopen("sorted.txt", "a+");
    for (i = 0; i < record_count; i++)
    {
        fwrite(&p[i], sizeof(struct patient), 1, fp1);
    }

    fclose(fp);
    fclose(fp1);

    remove("data.txt");
    rename("sorted.txt", "data.txt");

    printf("\n\nSorted Record(s) are : \n");
    display();
}
```

```c
// 5.2 - Sort by Last Name
void sort_last_name(int ch)
{
    struct patient p[record_count], p1, temp;
    int i = 0, j;

    FILE *fp;
    fp = fopen("data.txt", "r+");

    while (fread(&p1, sizeof(struct patient), 1, fp))
    {
        p[i] = p1;
        i++;
    }

    // Ascending
    if (ch == 1)
    {
        for (i = 1; i < record_count; i++)
        {
            for (j = 0; j < record_count - i; j++)
            {
                if (strcmp(p[j + 1].last_name, p[j].last_name) < 0)
                {
                    temp = p[j];
                    p[j] = p[j + 1];
                    p[j + 1] = temp;
                }
            }
        }
    }
    else
    { // Descending
        for (i = 1; i < record_count; i++)
        {
            for (j = 0; j < record_count - i; j++)
            {
                if (strcmp(p[j + 1].last_name, p[j].last_name) > 0)
                {
                    temp = p[j];
                    p[j] = p[j + 1];
                    p[j + 1] = temp;
                }
            }
        }
    }

    FILE *fp1;
    fp1 = fopen("sorted.txt", "a+");
```

```c
    for (i = 0; i < record_count; i++)
    {
        fwrite(&p[i], sizeof(struct patient), 1, fp1);
    }

    fclose(fp);
    fclose(fp1);

    remove("data.txt");
    rename("sorted.txt", "data.txt");

    printf("\n\nSorted Record(s) are : \n");
    display();
}

// 5.3 - Sort by Age
void sort_age(int ch)
{
    struct patient p[record_count], p1, temp;
    int i = 0, j;

    FILE *fp;
    fp = fopen("data.txt", "r+");

    while (fread(&p1, sizeof(struct patient), 1, fp))
    {
        p[i] = p1;
        i++;
    }

    // Ascending
    if (ch == 1)
    {
        for (i = 1; i < record_count; i++)
        {
            for (j = 0; j < record_count - i; j++)
            {
                if (p[j + 1].age < p[j].age)
                {
                    temp = p[j];
                    p[j] = p[j + 1];
                    p[j + 1] = temp;
                }
            }
        }
    }
    else
    { // Descending
        for (i = 1; i < record_count; i++)
            for (j = 0; j < record_count - i; j++)
```

```
            {
                if (p[j + 1].age > p[j].age)
                {
                    temp = p[j];
                    p[j] = p[j + 1];
                    p[j + 1] = temp;
                }
            }
    }

    FILE *fp1;
    fp1 = fopen("sorted.txt", "a+");
    for (i = 0; i < record_count; i++)
    {
        fwrite(&p[i], sizeof(struct patient), 1, fp1);
    }

    fclose(fp);
    fclose(fp1);

    remove("data.txt");
    rename("sorted.txt", "data.txt");

    printf("\n\nSorted Record is : \n");
    display();
}

// To Compare Two Dates
int cmp(struct date d1, struct date d2)
{
    // Year's
    if (d1.yy > d2.yy)
        return 1;
    else if (d1.yy < d2.yy)
        return -1;
    else
    {
        // Month's
        if (d1.mm > d2.mm)
            return 1;
        else if (d1.mm < d2.mm)
            return -1;
        else
        {
            // Date
            if (d1.dd > d2.dd)
                return 1;
            else if (d1.dd < d2.dd)
                return -1;
            else
```

```
            {
                // Both are same Date
                return 0;
            }
        }
    }
}

// 5.4 - Sort by Dates
void sort_date(int ch)
{
    struct patient p[record_count], p1, temp;
    int i = 0, j;

    FILE *fp;
    fp = fopen("data.txt", "r+");
    while (fread(&p1, sizeof(struct patient), 1, fp))
    {
        p[i] = p1;
        i++;
    }

    // Ascending
    if (ch == 1)
    {
        for (i = 1; i < record_count; i++)
        {
            for (j = 0; j < record_count - i; j++)
            {
                if (cmp(p[j + 1].admission, p[j].admission) < 0)
                {
                    temp = p[j];
                    p[j] = p[j + 1];
                    p[j + 1] = temp;
                }
            }
        }
    }
    else
    { // Desecending
        for (i = 1; i < record_count; i++)
            for (j = 0; j < record_count - i; j++)
            {
                if (cmp(p[j + 1].discharge, p[j].discharge) > 0)
                {
                    temp = p[j];
                    p[j] = p[j + 1];
                    p[j + 1] = temp;
                }
            }
```

```c
    }

    FILE *fp1;
    fp1 = fopen("sorted.txt", "a+");
    for (i = 0; i < record_count; i++)
    {
        fwrite(&p[i], sizeof(struct patient), 1, fp1);
    }

    fclose(fp);
    fclose(fp1);

    remove("data.txt");
    rename("sorted.txt", "data.txt");

    printf("\n\nSorted Record(s) are : \n");
    display();
}

// 5 - Sort the Data
void sort()
{
    FILE *fp;
    fp = fopen("data.txt", "r+");
    // Check File is Able to be Opened
    if (fp == NULL)
    {
        printf("Unable to Open File!\n");
        fclose(fp);
        return;
    }
    fclose(fp);

    printf("~~~~~~~SORTING RECORDS~~~~~~~\n");

    printf("1 -> Ascending Order\n");
    printf("2 -> Descending order\n");
    printf("Choice [1/2] : ");
    int ch;
    scanf("%d", &ch);

    // Ascending Order
    if (ch == 1)
    {
        int param; // parameter
        printf("\nSort By :");
        printf("\n1 -> First Name");
        printf("\n2 -> Last Name");
        printf("\n3 -> Age");
        printf("\n4 -> Admission Date");
```

```c
        printf("\nChoice [1/2/3/4] : ");
        scanf("%d", &param);
        switch (param)
        {
        case 1:
            sort_first_name(ch);
            break;
        case 2:
            sort_last_name(ch);
            break;
        case 3:
            sort_age(ch);
            break;
        case 4:
            sort_date(ch);
            break;
        default:
            printf("\nInvalid choice!");
            break;
        }
    }
    else if (ch == 2)
    {
        int param; // parameter
        printf("\nSort by ");
        printf("\n1 -> First Name");
        printf("\n2 -> Last Name");
        printf("\n3 -> Age");
        printf("\n4 -> Discharge Date");
        printf("\nChoice [1/2/3/4] : ");
        scanf("%d", &param);
        switch (param)
        {
        case 1:
            sort_first_name(ch);
            break;
        case 2:
            sort_last_name(ch);
            break;
        case 3:
            sort_age(ch);
            break;
        case 4:
            sort_date(ch);
            break;
        default:
            printf("\nInvalid choice!");
            break;
        }
    }
```

```
    else
    {
        printf("\n\nInvalid Choice Entered!");
    }
}

// ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~RANGE~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
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// 6 - List all Records of File for Specific Range
void List_Range()
{
    struct patient p;
    struct date d[11];
    int mon, year, found = 0;

    FILE *fp;
    fp = fopen("data.txt", "r+");
    if (fp == NULL)
    {
        printf("Unable to Open File!\n");
        fclose(fp);
        return;
    }

    printf("~~~~~ LIST PATIENTS BASED ON RANGE ~~~~~\n");
    printf("1 -> List all Patients from B-K [B=BHAGYA]\n");
    printf("2 -> List all Patients whose Adm. Date btwn 'given date' till 10 days next\n");
    printf("3 -
> List all Patients whose Adm. month btwn 'given month' till 5 months next\n");
    int ch;
    printf("\nChoice [1/2/3] : ");
    scanf("%d", &ch);

    switch (ch)
    {
    case 1:

        while (fread(&p, sizeof(struct patient), 1, fp))
        {
            if ((p.first_name[0] >= 'B' && p.first_name[0] <= 'K') || (p.first_name[0] >= 'b'
 && p.first_name[0] <= 'k'))
            {
                printf("\n~~ PATIENT DETAILS ~~\n");
                printf("\nPatient Number : %d", p.pno);
                printf("\nFirst Name     : %s", p.first_name);
                printf("\nLast Name      : %s", p.last_name);
                printf("\nAge            : %d", p.age);
                printf("\nGender         : %c", p.gender);
                printf("\nArea           : %s", p.area);
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                printf("\nAdmission Date : %d / %d / %d", p.admission.dd, p.admission.mm, p.a
dmission.yy);
                printf("\nDischarge Date : %d / %d / %d", p.discharge.dd, p.discharge.mm, p.d
ischarge.yy);
                found = 1;
            }
        }
        fclose(fp);

        if (found == 0)
        {
            printf("\n\nNo Records Founds for Above Input!");
        }

        break;
    case 2:

        printf("Enter given date [DD/MM/YYYY] : ");
        scanf("%d %d %d", &d[0].dd, &d[0].mm, &d[0].yy);
        //m -> MAXIMUM Days of Sspecific Month
        int i = 1, m;

        // Calculate Days on Specific Month
        while (i != 11)
        {
            if ((d[i - 1].mm % 2 != 0 && d[i - 1].mm <= 7) || (d[i - 1].mm % 2 == 0 && d[i -
1].mm <= 12))
            {
                m = 31;
            }
            else if (d[i - 1].mm == 2)
            {
                if (d[i - 1].yy % 400 == 0)
                    m = 29;
                else if (d[i - 1].yy % 100 == 0)
                    m = 28;
                else if (d[i - 1].yy % 4 == 0)
                    m = 29;
                else
                {
                    m = 28;
                }
            }
            else
            {
                m = 30;
            }
            if (d[i - 1].dd == m)
            {
                d[i].dd = (d[i - 1].dd + 1) % m;
```

```
                if (d[i - 1].mm == 12)
                {
                    d[i].mm = 1;
                    d[i].yy = d[i - 1].yy + 1;
                }
                else
                {
                    d[i].mm = d[i - 1].mm + 1;
                    d[i].yy = d[i - 1].yy;
                }
            }
            else
            {
                d[i].dd = (d[i - 1].dd + 1);
                d[i].mm = d[i - 1].mm;
                d[i].yy = d[i - 1].yy;
            }
            i++;
        }

        while (fread(&p, sizeof(struct patient), 1, fp))
        {
            i = 0;
            while (i < 11)
            {
                if (cmp(p.admission, d[i]) == 0) //cmp() Returns 0 -> Equal
                {
                    printf("\n~~ PATIENT DETAILS ~~\n");
                    printf("\nPatient Number : %d", p.pno);
                    printf("\nFirst Name     : %s", p.first_name);
                    printf("\nLast Name      : %s", p.last_name);
                    printf("\nAge            : %d", p.age);
                    printf("\nGender         : %c", p.gender);
                    printf("\nArea           : %s", p.area);
                    printf("\nAdmission Date : %d / %d / %d", p.admission.dd, p.admission.mm,
p.admission.yy);
                    printf("\nDischarge Date : %d / %d / %d", p.discharge.dd, p.discharge.mm,
p.discharge.yy);
                    found = 1;
                    break;
                }
                i++;
            }
        }
        fclose(fp);
        if (found == 0)
        {
            printf("\n\nNo Records Founds for Above Input!");
        }
        break;
```

```
    case 3:
        printf("\nEnter Admission Month & Year [MM/YYYY]: ");
        scanf("%d %d", &mon, &year);
        while (fread(&p, sizeof(struct patient), 1, fp))
        {
            if (p.admission.yy == year)
            {
                if (mon <= 7)
                {
                    if (p.admission.mm >= mon && p.admission.mm <= mon + 5)
                    {
                        printf("\n\n-------------------------------------------------------
-----");
                        printf("\nPatient Number : %d", p.pno);
                        printf("\nFirst Name     : %s", p.first_name);
                        printf("\nLast Name      : %s", p.last_name);
                        printf("\nAge            : %d", p.age);
                        printf("\nGender         : %c", p.gender);
                        printf("\nArea           : %s", p.area);
                        printf("\nAdmission Date : %d / %d / %d", p.admission.dd, p.admission
.mm, p.admission.yy);
                        printf("\nDischarge Date : %d / %d / %d", p.discharge.dd, p.discharge
.mm, p.discharge.yy);
                        found = 1;
                    }
                }

                else
                {
                    if (p.admission.mm >= mon && p.admission.mm <= 12)
                    {
                        printf("\n\n-------------------------------------------------------
-----");
                        printf("\nPatient Number : %d", p.pno);
                        printf("\nFirst Name     : %s", p.first_name);
                        printf("\nLast Name      : %s", p.last_name);
                        printf("\nAge            : %d", p.age);
                        printf("\nGender         : %c", p.gender);
                        printf("\nArea           : %s", p.area);
                        printf("\nAdmission Date : %d / %d / %d", p.admission.dd, p.admission
.mm, p.admission.yy);
                        printf("\nDischarge Date : %d / %d / %d", p.discharge.dd, p.discharge
.mm, p.discharge.yy);
                        found = 1;
                    }
                }
            }
            else if (p.admission.yy == year + 1)
            {
                if (p.admission.mm <= mon - 7)
```

```
                {
                    printf("\n\n-------------------------------------------------------------
-");
                    printf("\nPatient Number : %d", p.pno);
                    printf("\nFirst Name     : %s", p.first_name);
                    printf("\nLast Name      : %s", p.last_name);
                    printf("\nAge            : %d", p.age);
                    printf("\nGender         : %c", p.gender);
                    printf("\nArea           : %s", p.area);
                    printf("\nAdmission Date : %d / %d / %d", p.admission.dd, p.admission.mm,
 p.admission.yy);
                    printf("\nDischarge Date : %d / %d / %d", p.discharge.dd, p.discharge.mm,
 p.discharge.yy);
                    found = 1;
                }
            }
        }

        fclose(fp);
        if (found == 0)
        {
            printf("\n\nNo desired Record Found!");
        }
        break;

    default:
        printf("\n\nInvalid Input!");
        fclose(fp);
        break;
    }
}

// ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~GENDER~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~

// 7 - Seperate Record Based on Gender
void Split_by_Gender()
{
    struct patient p;
    FILE *fp;
    FILE *fpm; // Male File Pointer
    FILE *fpf; // Female File Pointer

    fp = fopen("data.txt", "r+");

    if (fp == NULL)
    {
        printf("Unable to Open File!\n");
        fclose(fp);
        return;
```

```c
    }

    fpm = fopen("maledata.txt", "a+");
    fpf = fopen("femaledata.txt", "a+");

    // Incase Text File is Not Made
    if (fpm != NULL)
    {
        fclose(fpm);
        remove("maledata.txt");
        fpm = fopen("maledata.txt", "a+");
    }
    if (fpf != NULL)
    {
        fclose(fpf);
        remove("femaledata.txt");
        fpf = fopen("femaledata.txt", "a+");
    }

    while (fread(&p, sizeof(struct patient), 1, fp))
    {
        if (p.gender == 'M' || p.gender == 'm')
        {
            fwrite(&p, sizeof(struct patient), 1, fpm);
        }
        else if (p.gender == 'F' || p.gender == 'f')
        {
            fwrite(&p, sizeof(struct patient), 1, fpf);
        }
    }

    fclose(fp);
    fclose(fpm);
    fclose(fpf);

    fpm = fopen("maledata.txt", "r+");
    fpf = fopen("femaledata.txt", "r+");

    int found = 0;
    printf("\n\n~~~~~~~ MALE PATIENTS RECORDS ~~~~~~~ ");
    while (fread(&p, sizeof(struct patient), 1, fpm))
    {

        printf("\n~~~ PATIENT DETAILS ~~~\n");
        printf("\nPatient Number : %d", p.pno);
        printf("\nFirst Name     : %s", p.first_name);
        printf("\nLast Name      : %s", p.last_name);
        printf("\nAge            : %d", p.age);
        printf("\nGender         : %c", p.gender);
        printf("\nArea           : %s", p.area);
```

```
        printf("\nAdmission Date : %d / %d / %d", p.admission.dd, p.admission.mm, p.admission
.yy);
        printf("\nDischarge Date : %d / %d / %d", p.discharge.dd, p.discharge.mm, p.discharge
.yy);
        found = 1;
    }

    if (found == 0)
    {
        printf("\n\nNo Male records Found!\n");
    }

    printf("\n-------------------------------------------------------------\n");

    found = 0;
    fclose(fpm);
    printf("\n\n~~~~~~~ FEMALE PATIENTS RECORDS ~~~~~~~ ");
    while (fread(&p, sizeof(struct patient), 1, fpf))
    {

        printf("\n~~~ PATIENT DETAILS ~~~\n");
        printf("\nPatient Number : %d", p.pno);
        printf("\nFirst Name     : %s", p.first_name);
        printf("\nLast Name      : %s", p.last_name);
        printf("\nAge            : %d", p.age);
        printf("\nGender         : %c", p.gender);
        printf("\nArea           : %s", p.area);
        printf("\nAdmission Date : %d / %d / %d", p.admission.dd, p.admission.mm, p.admission
.yy);
        printf("\nDischarge Date : %d / %d / %d", p.discharge.dd, p.discharge.mm, p.discharge
.yy);
        found = 1;
    }
    if (found == 0)
    {
        printf("\n\nNo Female Record's Found!\n");
    }
    fclose(fpf);
}

// ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~DISPLAY~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~~

// 8 - To Display all The Records in File
void display()
{
    FILE *fp;
    fp = fopen("data.txt", "r+");

    if (fp == NULL)
```

```
    {
        printf("Unable to Open File\n");
    }
    else
    {
        if (record_count == 0)
        {
            printf("\nNo Records Found!\n");
            fclose(fp);
            return;
        }

        struct patient p1;
        while (fread(&p1, sizeof(struct patient), 1, fp))
        {
            printf("\n~~~ PATIENT DETAILS ~~~\n");
            printf("\nPatient Number : %d", p1.pno);
            printf("\nFirst Name     : %s", p1.first_name);
            printf("\nLast Name      : %s", p1.last_name);
            printf("\nAge            : %d", p1.age);
            printf("\nGender         : %c", p1.gender);
            printf("\nArea           : %s", p1.area);
            printf("\nAdmission Date : %d / %d / %d", p1.admission.dd, p1.admission.mm, p1.ad
mission.yy);
            printf("\nDischarge Date : %d / %d / %d", p1.discharge.dd, p1.discharge.mm, p1.di
scharge.yy);
        }
    }
    fclose(fp);
}
```

Screenshots:

1) Add Data of 5 Patients

Patient No	First Name	Last Name	Age	Gender [M/F]	Area	Admission Date	Discharge Date
1	Nobita	Kazaki	20	M	Adajan	1/1/2020	2/2/2020
2	Donald	Duck	25	F	CityLight	3/3/2020	4/4/2020
3	Tom	Cruise	35	M	Vesu	5/5/2020	6/6/2020
4	Micky	Sharma	25	M	Vesu	7/7/2020	8/8/2020
5	Goofy	Chopra	20	F	Adajan	9/9/2020	10/10/2020

```
1 -> Add a Record of Patient
2 -> Delete a Record of Patient
3 -> Modify a Record of Patient
4 -> Generate Summary Report
5 -> Sort the Record(s)
6 -> List all Records of File for Specific Range
7 -> Seperate Record Based on Gender
8 -> Display a Record of All Patients
9 -> Exit
8

~~~ PATIENT DETAILS ~~~

Patient Number : 1
First Name     : Nobita
Last Name      : Kazaki
Age            : 20
Gender         : M
Area           : Adajan
Admission Date : 1 / 1 / 2020
Discharge Date : 2 / 2 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 2
First Name     : Donald
Last Name      : Duck
Age            : 25
Gender         : F
Area           : CityLight
Admission Date : 3 / 3 / 2020
Discharge Date : 4 / 4 / 2020
```

```
~~~ PATIENT DETAILS ~~~

Patient Number : 3
First Name     : Tom
Last Name      : Cruise
Age            : 35
Gender         : M
Area           : Vesu
Admission Date : 5 / 5 / 2020
Discharge Date : 6 / 6 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 4
First Name     : Micky
Last Name      : Sharma
Age            : 25
Gender         : M
Area           : Vesu
Admission Date : 7 / 7 / 2020
Discharge Date : 8 / 8 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 5
First Name     : Goofy
Last Name      : Chopra
Age            : 20
Gender         : F
Area           : Adajan
Admission Date : 9 / 9 / 2020
Discharge Date : 10 / 10 / 2020
```

2) Summary Reports

```
1 -> Add a Record of Patient
2 -> Delete a Record of Patient
3 -> Modify a Record of Patient
4 -> Generate Summary Report
5 -> Sort the Record(s)
6 -> List all Records of File for Specific Range
7 -> Seperate Record Based on Gender
8 -> Display a Record of All Patients
9 -> Exit
4

~~ SUMMARY ~~

----------------------------
Number of Patient's Record in DataBase = 5
----------------------------
Number of Male Patient's Record in DataBase   = 3
Number of Female Patient's Record in DataBase = 2
----------------------------
Age    |   Number of Patients
----------------------------
20              2
25              2
35              1
----------------------------
Area      |      Number of Patients
-----------------------------------
Adajan     :     2
CityLight     :     1
Vesu     :     2
-----------------------------------
```

3) Sorting Data [Ascending / Descending]

A) Sorting in Descending Order Based on First Name

```
1 -> Add a Record of Patient
2 -> Delete a Record of Patient
3 -> Modify a Record of Patient
4 -> Generate Summary Report
5 -> Sort the Record(s)
6 -> List all Records of File for Specific Range
7 -> Seperate Record Based on Gender
8 -> Display a Record of All Patients
9 -> Exit
5
~~~~~~~SORTING RECORDS~~~~~~~
1 -> Ascending Order
2 -> Descending order
Choice [1/2] : 2

Sort by
1 -> First Name
2 -> Last Name
3 -> Age
4 -> Discharge Date
Choice [1/2/3/4] : 1


Sorted Record(s) are :

~~~ PATIENT DETAILS ~~~

Patient Number : 3
First Name     : Tom
Last Name      : Cruise
Age            : 35
Gender         : M
Area           : Vesu
Admission Date : 5 / 5 / 2020
Discharge Date : 6 / 6 / 2020
~~~ PATIENT DETAILS ~~~
```

```
First Name      : Nobita
Last Name       : Kazaki
Age             : 20
Gender          : M
Area            : Adajan
Admission Date : 1 / 1 / 2020
Discharge Date : 2 / 2 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 4
First Name      : Micky
Last Name       : Sharma
Age             : 25
Gender          : M
Area            : Vesu
Admission Date : 7 / 7 / 2020
Discharge Date : 8 / 8 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 5
First Name      : Goofy
Last Name       : Chopra
Age             : 20
Gender          : F
Area            : Adajan
Admission Date : 9 / 9 / 2020
Discharge Date : 10 / 10 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 2
First Name      : Donald
Last Name       : Duck
Age             : 25
Gender          : F
Area            : CityLight
Admission Date : 3 / 3 / 2020
Discharge Date : 4 / 4 / 2020
```

B) Sorting in Asending Order Based on First Name

```
1 -> Add a Record of Patient
2 -> Delete a Record of Patient
3 -> Modify a Record of Patient
4 -> Generate Summary Report
5 -> Sort the Record(s)
6 -> List all Records of File for Specific Range
7 -> Seperate Record Based on Gender
8 -> Display a Record of All Patients
9 -> Exit
5
~~~~~~~SORTING RECORDS~~~~~~~
1 -> Ascending Order
2 -> Descending order
Choice [1/2] : 1

Sort By :
1 -> First Name
2 -> Last Name
3 -> Age
4 -> Admission Date
Choice [1/2/3/4] : 1


Sorted Record(s) are :

~~~ PATIENT DETAILS ~~~

Patient Number : 2
First Name     : Donald
Last Name      : Duck
Age            : 25
Gender         : F
Area           : CityLight
Admission Date : 3 / 3 / 2020
Discharge Date : 4 / 4 / 2020
~~~ PATIENT DETAILS ~~~
```

```
First Name      : Goofy
Last Name       : Chopra
Age             : 20
Gender          : F
Area            : Adajan
Admission Date : 9 / 9 / 2020
Discharge Date : 10 / 10 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 4
First Name      : Micky
Last Name       : Sharma
Age             : 25
Gender          : M
Area            : Vesu
Admission Date : 7 / 7 / 2020
Discharge Date : 8 / 8 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 1
First Name      : Nobita
Last Name       : Kazaki
Age             : 20
Gender          : M
Area            : Adajan
Admission Date : 1 / 1 / 2020
Discharge Date : 2 / 2 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 3
First Name      : Tom
Last Name       : Cruise
Age             : 35
Gender          : M
Area            : Vesu
Admission Date : 5 / 5 / 2020
Discharge Date : 6 / 6 / 2020
```

C) Sorting in Descending Order Based on Last Name

```
~~~~~~~SORTING RECORDS~~~~~~~
1 -> Ascending Order
2 -> Descending order
Choice [1/2] : 2

Sort by
1 -> First Name
2 -> Last Name
3 -> Age
4 -> Discharge Date
Choice [1/2/3/4] : 2


Sorted Record(s) are :

~~~ PATIENT DETAILS ~~~

Patient Number : 4
First Name     : Micky
Last Name      : Sharma
Age            : 25
Gender         : M
Area           : Vesu
Admission Date : 7 / 7 / 2020
Discharge Date : 8 / 8 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 1
First Name     : Nobita
Last Name      : Kazaki
Age            : 20
Gender         : M
Area           : Adajan
Admission Date : 1 / 1 / 2020
Discharge Date : 2 / 2 / 2020
~~~ PATIENT DETAILS ~~~
```

```
Patient Number : 2
First Name     : Donald
Last Name      : Duck
Age            : 25
Gender         : F
Area           : CityLight
Admission Date : 3 / 3 / 2020
Discharge Date : 4 / 4 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 3
First Name     : Tom
Last Name      : Cruise
Age            : 35
Gender         : M
Area           : Vesu
Admission Date : 5 / 5 / 2020
Discharge Date : 6 / 6 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 5
First Name     : Goofy
Last Name      : Chopra
Age            : 20
Gender         : F
Area           : Adajan
Admission Date : 9 / 9 / 2020
Discharge Date : 10 / 10 / 2020
```

D) Sorting in Asecnding Order Based on Age

```
5
~~~~~~~SORTING RECORDS~~~~~~~
1 -> Ascending Order
2 -> Descending order
Choice [1/2] : 1

Sort By :
1 -> First Name
2 -> Last Name
3 -> Age
4 -> Admission Date
Choice [1/2/3/4] : 3


Sorted Record is :

~~~ PATIENT DETAILS ~~~

Patient Number : 5
First Name     : Goofy
Last Name      : Chopra
Age            : 20
Gender         : F
Area           : Adajan
Admission Date : 9 / 9 / 2020
Discharge Date : 10 / 10 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 1
First Name     : Nobita
Last Name      : Kazaki
Age            : 20
Gender         : M
Area           : Adajan
Admission Date : 1 / 1 / 2020
Discharge Date : 2 / 2 / 2020
~~~ PATIENT DETAILS ~~~
```

```
Patient Number : 2
First Name     : Donald
Last Name      : Duck
Age            : 25
Gender         : F
Area           : CityLight
Admission Date : 3 / 3 / 2020
Discharge Date : 4 / 4 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 4
First Name     : Micky
Last Name      : Sharma
Age            : 25
Gender         : M
Area           : Vesu
Admission Date : 7 / 7 / 2020
Discharge Date : 8 / 8 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 3
First Name     : Tom
Last Name      : Cruise
Age            : 35
Gender         : M
Area           : Vesu
Admission Date : 5 / 5 / 2020
Discharge Date : 6 / 6 / 2020
```

E) Sorting in Descending Order Based on Discharge Date

```
~~~~~~~SORTING RECORDS~~~~~~~
1 -> Ascending Order
2 -> Descending order
Choice [1/2] : 2

Sort by
1 -> First Name
2 -> Last Name
3 -> Age
4 -> Discharge Date
Choice [1/2/3/4] : 4


Sorted Record(s) are :

~~~ PATIENT DETAILS ~~~

Patient Number : 5
First Name     : Goofy
Last Name      : Chopra
Age            : 20
Gender         : F
Area           : Adajan
Admission Date : 9 / 9 / 2020
Discharge Date : 10 / 10 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 4
First Name     : Micky
Last Name      : Sharma
Age            : 25
Gender         : M
Area           : Vesu
Admission Date : 7 / 7 / 2020
Discharge Date : 8 / 8 / 2020
~~~ PATIENT DETAILS ~~~
```

```
Patient Number : 3
First Name     : Tom
Last Name      : Cruise
Age            : 35
Gender         : M
Area           : Vesu
Admission Date : 5 / 5 / 2020
Discharge Date : 6 / 6 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 2
First Name     : Donald
Last Name      : Duck
Age            : 25
Gender         : F
Area           : CityLight
Admission Date : 3 / 3 / 2020
Discharge Date : 4 / 4 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 1
First Name     : Nobita
Last Name      : Kazaki
Age            : 20
Gender         : M
Area           : Adajan
Admission Date : 1 / 1 / 2020
Discharge Date : 2 / 2 / 2020
```

4) Specific Range Records

A) Patients from Letter B to K

```
6
~~~~~ LIST PATIENTS BASED ON RANGE ~~~~~
1 -> List all Patients from B-K [B=BHAGYA]
2 -> List all Patients whose Adm. Date btwn 'given date' till 10 days next
3 -> List all Patients whose Adm. month btwn 'given month' till 5 months next

Choice [1/2/3] : 1

~~ PATIENT DETAILS ~~

Patient Number : 2
First Name     : Donald
Last Name      : Duck
Age            : 25
Gender         : F
Area           : CityLight
Admission Date : 3 / 3 / 2020
Discharge Date : 4 / 4 / 2020
~~ PATIENT DETAILS ~~

Patient Number : 5
First Name     : Goofy
Last Name      : Chopra
Age            : 20
Gender         : F
Area           : Adajan
Admission Date : 9 / 9 / 2020
Discharge Date : 10 / 10 / 2020
```

B) List Patients from 1/3/2020

```
6
~~~~~ LIST PATIENTS BASED ON RANGE ~~~~~
1 -> List all Patients from B-K [B=BHAGYA]
2 -> List all Patients whose Adm. Date btwn 'given date' till 10 days next
3 -> List all Patients whose Adm. month btwn 'given month' till 5 months next

Choice [1/2/3] : 2
Enter given date [DD/MM/YYYY] : 1 3 2020

~~ PATIENT DETAILS ~~

Patient Number : 2
First Name     : Donald
Last Name      : Duck
Age            : 25
Gender         : F
Area           : CityLight
Admission Date : 3 / 3 / 2020
Discharge Date : 4 / 4 / 2020
```

C) List all Patients from 5/2020 to 10/2020

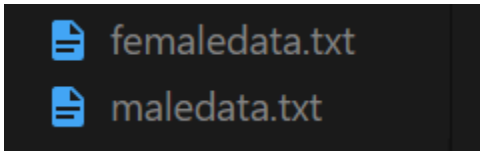
```
Choice [1/2/3] : 3

Enter Admission Month & Year [MM/YYYY]: 5 2020


-------------------------------------------------------------
Patient Number : 5
First Name     : Goofy
Last Name      : Chopra
Age            : 20
Gender         : F
Area           : Adajan
Admission Date : 9 / 9 / 2020
Discharge Date : 10 / 10 / 2020

-------------------------------------------------------------
Patient Number : 4
First Name     : Micky
Last Name      : Sharma
Age            : 25
Gender         : M
Area           : Vesu
Admission Date : 7 / 7 / 2020
Discharge Date : 8 / 8 / 2020

-------------------------------------------------------------
Patient Number : 3
First Name     : Tom
Last Name      : Cruise
Age            : 35
Gender         : M
Area           : Vesu
Admission Date : 5 / 5 / 2020
Discharge Date : 6 / 6 / 2020
```

5) Separate Records based on Gender

```
7


~~~~~~~ MALE PATIENTS RECORDS ~~~~~~~
~~~ PATIENT DETAILS ~~~

Patient Number : 4
First Name     : Micky
Last Name      : Sharma
Age            : 25
Gender         : M
Area           : Vesu
Admission Date : 7 / 7 / 2020
Discharge Date : 8 / 8 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 1
First Name     : Nobita
Last Name      : Kazaki
Age            : 20
Gender         : M
Area           : Adajan
Admission Date : 1 / 1 / 2020
Discharge Date : 2 / 2 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 3
First Name     : Tom
Last Name      : Cruise
Age            : 35
Gender         : M
Area           : Vesu
Admission Date : 5 / 5 / 2020
Discharge Date : 6 / 6 / 2020
-----------------------------------------
```

```
~~~~~~~ FEMALE PATIENTS RECORDS ~~~~~~~
~~~ PATIENT DETAILS ~~~

Patient Number : 2
First Name     : Donald
Last Name      : Duck
Age            : 25
Gender         : F
Area           : CityLight
Admission Date : 3 / 3 / 2020
Discharge Date : 4 / 4 / 2020
~~~ PATIENT DETAILS ~~~

Patient Number : 5
First Name     : Goofy
Last Name      : Chopra
Age            : 20
Gender         : F
Area           : Adajan
Admission Date : 9 / 9 / 2020
Discharge Date : 10 / 10 / 2020
```

Two Files are alo Created!



Submitted By:

BHAGYA VINOD RANA

U19CS012