```c
///////////////////////////////////////////////////*Linked List*\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

/*Liberaries*/
#include<stdlib.h>
#include<stdio.h>

#define True  1
#define False 0

#define Male   1
#define Female 2

#define Admin_Mode      1
#define User_Mode       2
#define Exit_The_System 3

#define Clinic_Introduction() printf("\n\t\t\t\t\t\t\t**********Welcome to Our Clinic**********");\

                              printf("\n\t\t\t\t\t\t\t*****************************************\n\n");

#define ADMIN_FEATURES() printf("\n[1]Add New Patient Record\n");\
                         printf("[2]Edit Patient Record\n");\
                         printf("[3]Reserve a Slot with the Doctor\n");\
                         printf("[4]Cancel Reservation\n");\
                         printf("Exit Admin Mode Press any number else");

#define USER_FEATURES() printf("\n[1]View Patient Records\n");\
                        printf("[2]View Today's Reservation\n\n");

/*STD Types*/
typedef struct Patients Patient;
typedef unsigned short int u32;
typedef unsigned char u8;
typedef enum Admin_Featuress Admin_Features;
typedef enum User_Featuress User_Features;

/*Global Variables*/
Patient New_Patient;
Patient *New;
Patient *Last;
u8 Mode;
u8 Flag_2 = 0;
u32 ListLength = 0;

/*Struct for what i need in linked List (Data, Link)*/
struct Patients
{
    u8 Name[100];
    u32 ID;
    u8 Age;
    u8 Gender;
    Patient *Next;
};

/*Enum for Admin Features*/
enum Admin_Featuress
{
    Add_New_Patient_Record = 1,
    Edit_Patient_Record,
    Reserve_a_Slot_With_The_DoctOR,
    Cancel_Reservation,
    Exit_Admin_Mode
};

/*Enum For User Features*/
enum User_Featuress
{
    View_Patient_Record = 1,
```

```
68      View_Today_Resrvations
69  };
70
71  /*Functions ProtoTypes*/
72  void Clinic_voidModes();
73  void Clinic_voidAddNewPatient();
74  void PrintLinkedList();
75  u8 Clinic_u8IDChecking(u32 ID);
76  u8 Clinic_u8AdminModePassword();
77  void Clinic_VoidAdminFunctions();
78
79  /*Main Function*/
80  void main(void)
81  {
82      /*this to clear the CMD*/
83      system("cls");
84
85      /*Flag_1 for Exit the while Loop*/
86      u8 static Flag_1 = 0;
87
88      /*Local Variables*/
89      u8 i, Pass;
90
91      /*my Variables*/
92
93      u32 static Input;
94
95      u8 ExitFlag = 0;
96
97      /*LOOP*/
98      while(ExitFlag == 0)
99      {
100         Clinic_voidModes();
101         /*Choices avaliable*/
102
103         switch(Mode)
104         {
105             case Admin_Mode:
106                 system("cls");
107                 Clinic_Introduction();
108
109                 printf("\n\t\t\t\t\t\t\t\t\tYou are on Admin Mode");
110                 printf("\n\nPlease, Enter Your Password: ");
111
112                 Pass = Clinic_u8AdminModePassword();
113
114                 if(Pass == True)
115                 {
116                     Clinic_VoidAdminFunctions();
117                 }
118                 else
119                 {
120                     ExitFlag = 1;
121                 }
122             break;
123
124             case User_Mode:
125             PrintLinkedList();
126             break;
127
128             case Exit_The_System:
129                 printf("\n\t\t\t\t\t\t\t\t  ******Thank you******");
130                 printf("\n\t\t\t\t\t\t\t\t ************************************");
131                 ExitFlag = 1;
132             break;
133
134             default:
135                 Flag_2++;
136                 system("cls");
137             break;
138         }
```

```
139     }
140 }
141
142 void Clinic_voidModes()
143 {
144     system("cls");
145
146     while(Flag_2 != 0)
147     {
148         system("cls");
149         Clinic_Introduction();
150         printf("Invailed Choice Please, Try again with right Choice");
151         printf("\nPlease, Enter the Number of the next Features: \n");
152         printf("\n[1]Admin Mode\n[2]User Mode\n[3]Exit the System\n");
153         printf("\nYour Choice is: ");
154         scanf("%d", &Mode);
155         break;
156     }
157     while(Flag_2 == 0)
158     {
159         system("cls");
160         Clinic_Introduction();
161         printf("\nPlease, Enter the Number of the next Features: \n");
162         printf("\n[1]Admin Mode\n[2]User Mode\n[3]Exit the System\n");
163         printf("\nYour Choice is: ");
164         scanf("%d", &Mode);
165         break;
166     }
167 }
168
169 u8 Clinic_u8AdminModePassword()
170 {
171     u8 static i, Password;
172     u32 Pass;
173
174     for(i = 0; i < 3; i++)
175     {
176         if(Pass == 1234)
177         {
178             Password = True;
179             break;
180         }
181
182         scanf("%d", &Pass);
183
184         if(Pass == 1234)
185         {
186             Password = True;
187             break;
188         }
189         else if(i == 2)
190         {
191             printf("\n\n\t\t\t\t\t\t\tYou have Entered the Password 3 Times Wrong");
192             printf("\n\t\t\t\t\t\t\t\t\t****BYE BYE****");
193             Password = False;
194             break;
195         }
196         else
197         {
198             printf("\n****Invalid Password****\n\nPlease, Re-Enter the right Password:
                ");
199         }
200
201     }
202     return Password;
203 }
204
205 void Clinic_VoidAdminFunctions()
206 {
207     u8 Admin_Feature;
208
```

```
209     system("cls");
210
211     Clinic_Introduction();
212
213     printf("\n\t\t\t\t\t\t\t\tYou are on Admin Mode");
214     printf("\nPlease, Choose one of this Features:- \n");
215
216     ADMIN_FEATURES();
217     printf("\n\nPlease, Enter the number of the Feature: ");
218     scanf("%d", &Admin_Feature);
219
220     switch(Admin_Feature)
221     {
222         case Add_New_Patient_Record:
223             Clinic_voidAddNewPatient();
224             break;
225         break;
226
227         case Edit_Patient_Record:
228
229         break;
230
231         case Reserve_a_Slot_With_The_DoctOR:
232
233         break;
234
235         case Cancel_Reservation:
236
237         break;
238
239         case Exit_Admin_Mode:
240             Clinic_voidModes();
241         /*Empty to break the switch case and then break the switch in the main
            function the looping in while loop*/
242         break;
243     }
244 }
245
246 void Clinic_voidAddNewPatient()
247 {
248     u32 IDFC; //ID For Checking
249     u8 Flag_4, Flag_3 = 0, Flag_6 = 0, Again, i;
250     //Flag_3 For Choosing the Gender
251     //Flag_4 For the ID
252     //Flag_6 For Add another Patient or No
253
254     system("cls");
255     Clinic_Introduction();
256     printf("\n\t\t\t\t\t\t\t\tYou are on Admin Mode");
257
258     /*First Node to Creat*/
259     /*that is mean Linked List Length = 0*/
260     if(ListLength == 0)
261     {
262         printf("\nPlease, Enter Your ID: ");
263         scanf("%d", &New_Patient.ID);
264
265         printf("Please, Enter Your Name: ");
266         scanf("%s", &New_Patient.Name);
267
268         printf("Please, Enter the your Age: ");
269         scanf("%d", &New_Patient.Age);
270
271         while(1)
272         {
273             printf("Please, Enter Your Gender: [1]Male\t\t[2]Female\n");
274             printf("Gender is: ");
275             scanf("%d", &New_Patient.Gender);
276             if(((New_Patient.Gender) == Male) || ((New_Patient.Gender) == Female))
277             {
278                 break;
```

```
279             }
280             else
281             {
282                 printf("\nYou to Choose between : [1]Male\t\t[2]Female\n");
283             }
284         }
285 
286         ListLength++;
287     }
288 
289     else
290     {
291         Flag_3 = 0;
292         /*when tha last point to null and you want to add node you will need the
            (Node) Size*/
293         /*so the next is to callculate the New Node Size*/
294         New = (Patient*)malloc(sizeof(Patient));
295 
296         /*After we have a new node we need to assign the values in it*/
297         printf("\nPlease, Enter Your ID: ");
298 
299         for(i = 0; i < 3; i++)
300         {
301             scanf("%d", &IDFC);
302 
303             Flag_4 = Clinic_u8IDChecking(IDFC);
304 
305             if(Flag_4 == True)
306             {
307                 printf("ID Is NOT Repeated\n");
308                 (New -> ID) = IDFC;
309                 break;
310             }
311 
312             if(Flag_4 == False)
313             {
314                 printf("ID Is Repeated Please try another ID: ");
315             }
316         }
317 
318         printf("Please, Enter Your Name: ");
319         scanf("%s", &New -> Name);
320 
321         printf("Please, Enter the your Age: ");
322         scanf("%d", &New -> Age);
323 
324         while(1)
325         {
326             printf("Please, Enter Your Gender: [1]Male\t\t[2]Female\n");
327             printf("Gender is: ");
328             scanf("%d", &(New -> Gender));
329             if(((New -> Gender) == Male) || ((New -> Gender) == Female))
330             {
331                 break;
332             }
333             else
334             {
335                 printf("\nYou to Choose between : [1]Male\t\t[2]Female\n");
336             }
337         }
338 
339         /*then we make the New poit Next and ewual NULL so you can add a new Node*/
340         New -> Next = NULL;
341 
342         /*then you need no make if a new node added to be added in the last*/
343         Last = &New_Patient;
344 
345         /*Search for the Last Node*/
346         while((Last -> Next) != NULL)
347         {
348             Last = (Last -> Next);
```

```
349          }
350          Last -> Next = New;
351
352          /*then you need to increase the legnth*/
353          ListLength++;
354          Flag_3 = 0;
355      }
356
357      while(Flag_6 != 1)
358      {
359          printf("\nDo you want to add another new patient ?\n[1]yes          [2]No\n");
360          scanf("%d",&Again);
361
362          if(Again == 1)
363          {
364           printf("--------------------\n");
365           Clinic_voidAddNewPatient();
366           break;
367          }
368          else if(Again == 2)
369          {
370              Flag_6 = 1;
371          }
372          else
373          {
374              printf("{You must choose [1] OR [2]}\n");
375          }
376      }
377      Flag_6 = 0;
378      Clinic_VoidAdminFunctions();
379  }
380
381  void PrintLinkedList()
382  {
383      printf("\n-------------------------\n");
384
385      if(ListLength > 0)
386      {
387          Last = &New_Patient;
388          u32 i = 1;
389
390          /*Print The Head of the List*/
391          printf("User Name %d = %s\n", i, Last -> Name);
392          printf("User Number %d = %d\n", i, Last -> ID);
393          printf("User Number %d = %d\n\n", i, Last -> Age);
394
395          /*Print the rest of the List*/
396          while((Last -> Next) != NULL)
397          {
398              Last = (Last -> Next);
399
400              printf("User Name %d = %s\n", (i + 1), (Last -> Name));
401              printf("Node Number %d = %d\n", (i + 1), (Last -> ID));
402              printf("Node Number %d = %d\n\n", (i + 1), (Last -> Age));
403              i++;
404          }
405          printf("-------------------------\n");
406      }
407  }
408
409  u8 Clinic_u8IDChecking(u32 ID)
410  {
411      u8 Flag_5 = True;
412
413      if(ListLength > 0)
414      {
415          Last = &New_Patient;
416
417          if((Last -> ID) == ID)
418          {
419              Flag_5 = False;
```

```
420
421             return Flag_5;
422         }
423         else
424         {
425             /*Print the rest of the List*/
426             while((Last -> Next) != NULL)
427             {
428                 Last = (Last -> Next);
429
430                 if((Last -> ID) == ID)
431                 {
432                     Flag_5 = False;
433                     break;
434                 }
435             }
436         }
437     }
438     return Flag_5;
439 }
```