```
#include<iostream>
using namespace std;
int size; // No of Nodes or Appointments
struct SLL_Node
// Node Structure of each Appointment
{
  int start;
  int end;
  int min;
  int max;
  int flag;
  struct SLL_Node *next;
}*head;

class App_Shedule
{
  public:
     void create_Shed();
     void display_Shed();
     void book_App();
     void cancel_App();
     void sort_App();
}A1;

int main()
{
  int ch;
  char ans;
  do
  {
    cout<<"\n\n *** Menu ***";
    cout<<"\n 1. Create Appointment Schedule";
    cout<<"\n 2. Display Free Slots";
    cout<<"\n 3. Book an Appointment";
    cout<<"\n 4. Cancel an Appointment";
    cout<<"\n 5. Sort slots based on Time";
    cout<<"\n\n\t Enter your choice: ";
    cin>>ch;
    switch(ch)
    {
       case 1: A1.create_Shed();
       break;
       case 2: A1.display_Shed();
       break;
       case 3: A1.book_App();
       break;
       case 4: A1.cancel_App();
       break;
       case 5: A1.sort_App();
       break;
       default: cout<<"\n\t Wrong choice!!!";
   }
   cout<<"\n\n\t Do you wanna continue? (y/n) : ";
   cin>>ans;
   } while (ans == 'y');
}

void App_Shedule :: create_Shed()
{
  int i;
  struct SLL_Node *temp, *last;
```

```
  head = NULL;
//Function Definition to create Appointment
  cout<<"\n\n\t How many Appointment Slots: ";
  cin>>size;
  for(i=0; i<size; i++)
  {
     temp = new(struct SLL_Node);
     cout<<"\n\n\t Enter Start Time: ";
     cin>>temp->start;
     cout<<"\n\t Enter End Time: ";
     cin>>temp->end;
     cout<<"\n\n\t Enter Minimum Duration: ";
     cin>>temp->min;
     cout<<"\n\t Enter Maximum Duration: ";
     cin>>temp->max;
     temp->flag = 0;
     temp->next = NULL;

     if(head == NULL)
     {
       head = temp;
       last = head;
     }
     else
     {
       last->next = temp;
       last = last->next;
     }
  }
}
void App_Shedule :: display_Shed()
{
  int cnt = 1;
  struct SLL_Node *temp;
//Function Definition to Display Appointment
  cout<<"\n\n\t ****Appointment Schdule****";
  cout<<"\n\n\t Srno. \tStart \tEnd\tMin_Dur\tMax_Dur\tStatus";
  temp = head;
  while(temp != NULL)
  {
    cout<<"\n\n\t "<<cnt;
    cout<<"\t "<<temp->start;
    cout<<"\t "<<temp->end;
    cout<<"\t "<<temp->min;
    cout<<"\t "<<temp->max;
    if(temp->flag)
    cout<<"\t-Booked-";
    else
      cout<<"\t--Free--";
    temp = temp->next;
    cnt++;
  }
}
void App_Shedule :: book_App()
{
   int start;
   struct SLL_Node *temp;
   cout<<"\n\n\t Please enter Appointment time: ";
   cin>>start;
   temp = head;
   while(temp != NULL)
```

```
   {
     if(start == temp->start)
     {
        if(temp->flag == 0)
        {
            cout<<"\n\n\t Appointment Slot is Booked!!!";
            temp->flag = 1;
        }
        else
          cout<<"\n\n\t Appointment Slot is not Available!!!";
      }
      temp = temp->next;
    }
}
void App_Shedule :: cancel_App()
{
   int start;
   struct SLL_Node *temp;
//Function Defination to Cancel Appointment
   cout<<"\n\n\t Please enter Appointment time to Cancel: ";
   cin>>start;
   temp = head;
   while(temp != NULL)
   {
     if(start ==temp->start)
     {
        if(temp->flag == 1)
        {
            cout<<"\n\n\t Your Appointment Slot is Canceled!!!";
            temp->flag = 0;
        }
        else
         cout<<"\n\n\t Your Appointment was not Booked!!!";
     }
     temp = temp->next;
    }
}
void App_Shedule :: sort_App()
{
    int i,j,val;
    struct SLL_Node *temp;
    for(i=0; i < size-1; i++)
    {
       temp = head;
       while(temp->next != NULL)
       {
         if(temp->start > temp->next->start)
         {
           val = temp->start;
         temp->start = temp->next->start;
         temp->next->start = val;
           val = temp->end;
         temp->end = temp->next->end;
         temp->next->end = val;
           val = temp->min;
         temp->min = temp->next->min;
         temp->next->min = val;
           val = temp->max;
         temp->max = temp->next->max;
         temp->next->max = val;
        }
```

```
        temp = temp->next;
      }
    }
    cout<<"\n\n\t The Appointments got Sorted!!!";
}

/*------------OUTPUT-------------


 *** Menu ***
 1. Create Appointment Schedule
 2. Display Free Slots
 3. Book an Appointment
 4. Cancel an Appointment
 5. Sort slots based on Time

         Enter your choice: 1


         How many Appointment Slots: 3


         Enter Start Time: 8

         Enter End Time: 9


         Enter Minimum Duration: 35

         Enter Maximum Duration: 45


         Enter Start Time: 10

         Enter End Time: 10


         Enter Minimum Duration: 35

         Enter Maximum Duration: 45


         Enter Start Time: 12

         Enter End Time: 1


         Enter Minimum Duration: 35

         Enter Maximum Duration: 45


         Do you wanna continue? (y/n) : y


 *** Menu ***
 1. Create Appointment Schedule
 2. Display Free Slots
 3. Book an Appointment
 4. Cancel an Appointment
 5. Sort slots based on Time
```

```
        Enter your choice: 2


        ****Appointment Schdule****

        Srno.  Start   End     Min_Dur Max_Dur Status

        1       8       9       35      45      --Free--

        2       10      10      35      45      --Free--

        3       12      1       35      45      --Free--

        Do you wanna continue? (y/n) : y


*** Menu ***
1. Create Appointment Schedule
2. Display Free Slots
3. Book an Appointment
4. Cancel an Appointment
5. Sort slots based on Time

        Enter your choice: 3


        Please enter Appointment time: 10


        Appointment Slot is Booked!!!

        Do you wanna continue? (y/n) : y


*** Menu ***
1. Create Appointment Schedule
2. Display Free Slots
3. Book an Appointment
4. Cancel an Appointment
5. Sort slots based on Time

        Enter your choice: 4


        Please enter Appointment time to Cancel: 10


        Your Appointment Slot is Canceled!!!

        Do you wanna continue? (y/n) : y


*** Menu ***
1. Create Appointment Schedule
2. Display Free Slots
3. Book an Appointment
4. Cancel an Appointment
5. Sort slots based on Time

        Enter your choice: 5
```

```
         The Appointments got Sorted!!!

         Do you wanna continue? (y/n) : n

--------------------------------
Process exited after 102.8 seconds with return value 0
Press any key to continue . . .
*/
```