Assignment 2: Tour management

Noida Tour company arranges seven-day tours to Darjeeling, Leh and Ooty. The tourists can be single or members of a group. Each group will have a group leader. Using linked lists data structure, develop a software in C that provides a facility to organize lists containing name of individual/group leader, number of tourists in the group, for a specified date and for a specified destination. All the tours are to start and end in the month of May 2022. Each group of tourists would have a group leader who will be making requests for booking or cancellation. Your program should use the code system indicated below to get various details of the tour requests by reading from the datafile *tour.txt*. It should flag any wrong data encountered while reading.

The first entry on the datafile is going to be an integer N which specifies maximum number of tourists allowable on any tour. Code C1 will be used to introduce a tourist spot. It will be followed by TS1 for Darjeeling, TS2 for Leh and TS3 for Ooty. This code information will remain valid for subsequent entries, till it is changed by another occurrence of C1 on the datafile.

Code C2 will be followed by an integer indicating booking date request. It is guaranteed that requests will arrive in increasing order of dates. Thus, for example, if a request has been made for 14th May, subsequent requests will be only for dates after 14th.

Code C3 will be followed by initials of a group leader followed by number of tourists in that group. The group will be added at the bottom of the tour list. It is guaranteed that on the datafile, there will be no duplicate initials requesting for tours, which means a group leader will be making only a single request for a tour in the whole month. Registration for a group will not be accepted, if this causes the total number of tourists on that tour to exceed N.

Code C3A is to cater for "premium" tourist groups. This will operate in same manner as C3 except that this specific group will be put in top most position of the concerned list. If C3A operation causes the total number of tourists to exceed N, then take appropriate action in your program by removing the groups at the bottom of the list.

Code C5 indicates that a group wants to cancel a tour. This code will be followed by initials of the group leader. The group will be removed from the list.

Code C8 followed by tourist spot code is a command to print the name of the spot, followed by lists for each of relevant dates (in increasing order). Print total number of tourists on that tour, followed by tourists' data. The sample output below indicates the style in which the data needs to be printed.

Code C9 will cause the program to exit. Sample input and output files are given below.

[Hint: First develop a prototype system which caters to a single tour for a specific date and specific destination]

You need to submit a .c file of your code. It should contain at the top
 the name of the assignment,
followed by your name
and entry number and lab group number.

sample input:

```
12   C1 TS2  C2 14 C3 AA 3 C3 BB 4 C3 CC 4    C8 TS2      C2 14 C3A KK 3
C2 20 C3 DD 2 C3 EE 4     C8 TS2
C5 DD       C1 TS1 C2 12  C3 JJ 4  C3 MM 2    C2 26 C3 NN 3 C3 FD 2
C8 TS1     C8 TS2        C9
```

sample output:

```
TS2:  Leh
May 14: 11 tourists: AA  BB   CC
-----------------------------------------
TS2:  Leh
May 14: 10 tourists: KK  AA    BB
May 20: 6  tourists:  DD   EE
----------------------------------
TS1:  Darjeeling
May 12: 6 tourists: JJ  MM
May 26: No trip
--------------------------------------
TS2:  Leh
May 14: 10 tourists: KK  AA    BB
May 20: 4 tourists:     EE
```