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

#define FILENAME     "data08c.txt"   // data file name
#define TITLELEN     30  // max title length
#define MAXNUMGAMES  40  // max number of games in season
#define NAMELEN      25  // max opponent name length
#define CONFLEN       4  // length of conference name
#define NUMINNINGS   10  // max number of innings for each team
#define STATINNING    4  // runs after this inning for stats
#define NUMCOLS       2

//Function Prototypes =========================================================
   int  readDatafile(char title[], char dates[][NUMCOLS], char oppNames[][NAMELEN], char conf[][CONFLEN],
                     int scoreAll[][NUMCOLS], int score4th[][NUMCOLS]);
   void printReport(char title[], char dates[][NUMCOLS], char oppNames[][NAMELEN], char conf[][CONFLEN],
                    int scoreAll[][NUMCOLS], int score4th[][NUMCOLS], int numGames);
   void printHeader(char title[]);

//Main Function ==============================================================
   int main()
   {
      char title[TITLELEN],                 // file ID, report title
           dates[MAXNUMGAMES][NUMCOLS],     // games dates
           conf[MAXNUMGAMES][CONFLEN],      // game location
           oppNames[MAXNUMGAMES][NAMELEN];  // opponent anmes
      int  scoreAll [MAXNUMGAMES][NUMCOLS], // score for all innings
           score4th [MAXNUMGAMES][NUMCOLS], // score for all innings
           numGames;                        // number of games read counted

      //Read filename into the array
      numGames = readDatafile(title, dates, oppNames, conf, scoreAll, score4th);

      if ( numGames < 1 )  printf("No Data exist. Ending Program.\n");
      else  printReport(title, dates, oppNames, conf, scoreAll, score4th, numGames);

      return 0;
   }
//INPUT=================================================================
//Read data from file ==================================================
   int  readDatafile(char title[], char dates[][NUMCOLS], char oppNames[][NAMELEN], char
conf[][CONFLEN],
                      int scoreAll[][NUMCOLS], int score4th[][NUMCOLS])
   {
      FILE *inFile;
      int  oppRuns[MAXNUMGAMES][NUMINNINGS];// read runs all innings
      int  auRuns[MAXNUMGAMES][NUMINNINGS]; // read runs all innings
      int  numGames, g=0, i, ans;           // count games, innings
      int  runSum;                          // total runs for innings
      inFile = fopen(FILENAME, "r");

      if ( inFile == NULL ) printf("There was an error opening the file\n");
      else
      {
         // read the data file
         fgets( title, TITLELEN, inFile );
         while (fscanf(inFile, "%d %d %s %s",&dates[g][0],&dates[g][1],conf[g],oppNames[g]) != EOF)
         {
            for( i=0;i<NUMINNINGS;i++) fscanf(inFile, "%d",&oppRuns[g][i]); // read opp runs
            for( i=0;i<NUMINNINGS;i++) fscanf(inFile, "%d",&auRuns[g][i]);  // read au runs
            g++;
         }
         numGames = g;

        for (g=0;g<numGames;g++)
         {
            //for( i=0;i<NUMINNINGS;i++) printf("%2d",oppRuns[g][i]);
            //printf("\n");

            runSum = 0;
            for( i=0;i<NUMINNINGS;i++) runSum += oppRuns[g][i];
            scoreAll[g][0] = runSum;    // opp total runs for all innings

            runSum = 0;
            for(i=0;i<STATINNING;i++) runSum += oppRuns[g][i];
            score4th[g][0] = runSum;    // opp total runs after some innings

            runSum = 0;
            for( i=0;i<NUMINNINGS;i++) runSum += auRuns[g][i];
            scoreAll[g][1] = runSum;     // au total runs for all innings

            runSum = 0;
            for(i=0;i<STATINNING;i++) runSum += auRuns[g][i];
            score4th[g][1] = runSum;  // au total runs after some innings
         } // end for each game
      } // end else good read
      return numGames;
  }
//OUTPUT==============================================================
//Function to print report. Calls printHearder() and printFooter()====
void printReport(char title[], char dates[][NUMCOLS], char oppNames[][NAMELEN], char conf[][CONFLEN],
                    int scoreAll[][NUMCOLS], int score4th[][NUMCOLS], int numGames)
   {
      int  g=0, secCount=0;             // count of games, columns
      int auLead=0, auTrail=0, auTie=0; // record count
      int auSecWins=0, auSecLoss=0, auSecTies=0; // SEC record count
      int auAllWins=0, auAllLoss=0, auAllTies=0; // all record count

      printHeader( title );

      //*****COMPUTE*****
      for (g=0;g<numGames;g++)
      {
         if(strcmp(conf[g],"SEC") == 0)
         {
            printf("  0%s/0%s  ", dates[g][0], dates[g][1]);
            printf("%-20s %02d-%02d", oppNames[g], scoreAll[g][0], scoreAll[g][1]);
            if ( scoreAll[g][0] < scoreAll[g][1] ) printf(" W \n");
            else                                   printf(" L \n");

            if (scoreAll[g][0] < scoreAll[g][1]) auSecWins++;
            else auSecLoss++;
         } // end if SEC

         // all games record
         if (scoreAll[g][0] < scoreAll[g][1]) auAllWins++;
         else auAllLoss++;

         // stats after 4th inning
         if (score4th[g][0] < score4th[g][1]) auLead++;
         else if (score4th[g][0] > score4th[g][1]) auTrail++;
         else auTie++;
      } // end for

      printf("\nAuburn SEC Record:    %d-%d\n", auSecWins, auSecLoss);
      printf("\nAuburn Season Record: %d-%d\n", auAllWins, auAllLoss);
      printf("Stats after 4th innings: \n");
      printf("AU lead:  %2d\n", auLead);
      printf("AU trail: %2d\n", auTrail);
      printf("AU tie:   %2d\n", auTie);
  }
//Function for printing header
   void printHeader(char title[])
   {
      printf("\n         %s \n", title);
      printf("  DATE   OPPONENT             SCORE W \n");
      printf("                              OP-AU L \n");
      printf("  ------------------------------------\n");
   }
```

COMP1200-CProg - assign 08
Due midnight – Wednesday – April 18
Submit `data08c.txt` and `assign08.c` via Blackboard

Before you start writing your program:

Read all of these instructions carefully. Submitting a development plan is not required for this assignment. I suggest that you create one and use it when writing your program.

Problem:

NOTE: Your submitted file(s) MUST be spelled and cased as instructed. [-5 points per file for not doing so.]

***Program*: assign08.c**

Print a report of the Auburn 2012 softball season game results. The result statistics are saved in `data08c.txt`.

Instructions:

- □ Insert comments at the top and throughout each file
  - Include the follow comments at the beginning of this (and ALL) files.
    // your name
    // assignment number
    // date you completed the assignment
    // statement(s) about collaboration
    // a short narrative about what the file does
  - Use your development plan as a guide for comments throughout each file
- □ Use descriptive variable names.
- □ Use Sample Input/Output as a guide.
- □ Indent blocks.

-5 points for absence of any of these required comments at the top

- □ CONSTANT variables
  - Define a constant variable with the name of the file; use the variable name as the argument with the **`fopen()`**.
  - Define a constant variable with the maximum number of games. Use a number large enough for a full season including possible post season games, SEC playoff and a bowl game, but not too big. The program should work for any Auburn softball season.

- □ Using the data file
  - Protect your program from crashing by making sure that the file opens. If the file doesn't open properly, print an error message and end the program.

- □ Input
  - Read the Auburn 2011 season game results from `data08c.txt`
  - The first line of the data file will be used a the title of the report.
  - There are five (5) columns of data in the data file.
    1 - month, 2 - day, 3 - conference, 4 – opp name, 5 – opp runs, 6 - AU runs
  - Read the data into three (3) integer 2-D arrays and two (2) character arrays. Note the arrays are parallel arrays, i.e., the result information of the first game is in the first row of each of the five arrays; the second game information in the second row of each array, etc.
  - Sum runs for each game for all innings into `scoreAll.`
  - Sum runs for each game for innings 1-4 into `score4th.`
  - Your program should work for any number of games in the file. Count the number of games.

- □ Count
  - Auburn SEC record: wins-losses of just SEC games
  - Auburn record for all games: wins-losses
  - Auburn record after 4th inning: lead, trail, ties

New commands/terms
2-D arrays
string arrays
read data into 2-D arrays
user-defined functions with
2-D array parameters
print with leading zeros
`strcmp()`
`fgets()`

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int  readDatafile(char title[], char dates[][NUMCOLS],
                  char oppNames[][NAMELEN], char conf[][CONFLEN],
                  int scoreAll[][NUMCOLS], int score4th[][NUMCOLS]);
void printReport(char title[], char dates[][NUMCOLS],
                 char oppNames[][NAMELEN], char conf[][CONFLEN],
                 int scoreAll[][NUMCOLS], int score4th[][NUMCOLS],
                 int numGames);
void printHeader(char title[]);
```

Output

- Refer to the Sample Output for the information that should be included in the report.
    - Use the first line of the data file as the title of the column report.
    - The column report is just SEC games.
    - MULTIPLE `printf()`s CAN BE USED TO PRINT ONE LINE.
    - Depending on whether Auburn wins or loses, print “W” or “L”.
- Print a legend that indentifies the flags in the report.

□ Printing

- Column numbers **right-justified**, i.e., right-aligned
- Print the month, day, and scores in the table with leading zeros.

Sample Input/Output: ***<u>THESE ARE PARTIAL LISTS.</u>***

```
       2012 AUBURN SOFTBALL

DATE   OPPONENT                    SCORE W
                                   OP-AU L
------------------------------------
03/14  LSU                         04-01 L
03/14  LSU                         00-02 W
03/16  Georgia                     00-02 W
03/17  Georgia                     06-03 L
03/18  Georgia                     04-02 L
03/23  Kentucky                    08-04 L
03/24  Kentucky                    05-02 L
03/25  Kentucky                    01-02 W
03/27  Alabama                     04-02 L
03/27  Alabama                     05-02 L
03/30  Ole_Miss                    05-09 W
04/01  Ole_Miss                    06-01 L
04/06  Tennessee                   09-01 L
04/07  Tennessee                   05-03 L
04/08  Tennessee                   06-02 L

Auburn SEC Record:    4-11

Auburn Season Record: 22-14
Stats after 4th innings:
AU lead:  19
AU trail: 11
AU tie:    6
```

```
     data08c.txt

2012 AUBURN SOFTBALL
2  9 SWC  Alabama_State     0 0 0 0 0 0 0 0 0 0 0 1 0 3 2 0 0 0 0
2 10 HZN  Wright_State      3 0 0 0 0 1 0 0 0 0 1 5 0 0 2 4 0 0 0 0
2 10 MAM  Bowling_Green     0 0 2 0 0 0 0 0 0 0 3 6 1 0 0 0 0 0 0 0
2 11 SUM  IPFW              0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0
2 12 SOU  Appalachian_St    0 1 0 0 0 1 0 0 0 0 0 0 1 3 1 0 1 0 0 0
2 17 B12  Oklahoma_St       0 0 0 0 0 0 0 0 0 0 0 0 0 2 6 0 0 0 0 0
2 19 ATL  Virgina_Tech      0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
2 19 ATL  Georgia_Tech      0 2 0 3 0 0 0 0 0 0 0 4 0 4 3 1 0 0 0 0
2 22 COL  Georgia_State     1 0 0 0 0 0 0 0 0 0 4 2 0 1 2 0 0 0 0 0
2 24 NOT  Florida_Atlantic  0 0 0 0 0 0 0 0 0 0 1 0 1 0 7 0 0 0 0 0
2 24 NOT  Florida_Atlantic  0 0 0 0 0 1 0 0 0 0 1 3 0 0 2 0 0 0 0 0
2 25 NOT  Michigan_State    1 0 0 0 0 0 0 0 0 0 2 1 0 0 1 0 0 0 0 0
. . .
3 24 SEC  Kentucky          1 0 0 1 3 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0
3 25 SEC  Kentucky          1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 0 0
3 27 SEC  Alabama           2 0 0 0 0 2 0 0 0 0 0 1 0 0 0 0 1 0 0 0
3 27 SEC  Alabama           0 0 0 3 1 0 1 0 0 0 0 0 0 0 2 0 0 0 0 0
3 30 SEC  Ole_Miss          0 4 0 1 0 0 0 0 0 0 0 2 0 0 0 3 0 0 0 4
4  1 SEC  Ole_Miss          2 0 0 0 2 2 0 0 0 0 0 0 0 0 0 0 1 0 0 0
4  6 SEC  Tennessee         0 7 0 2 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
4  7 SEC  Tennessee         2 0 0 0 1 0 0 0 0 2 0 3 0 0 0 0 0 0 0 0
4  8 SEC  Tennessee         2 0 4 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 0 0
```

Submit via Blackboard:

`assign08.c`	C program file
`data08c.txt`	Data file