```
% J Hundley
% assign08.m
% April 3, 2020
% read AU softball stats and print report
clc, clear all

%***** CONSTANT *****
SB_STATS = 'AU_SB_2020_09.txt';
%***** INPUT *****
% is file available?
if ~exist( SB_STATS, 'file' )
    disp( 'File not available' )
else
    % file available
    % read file directly into a column of dates and scores matrix
    [ dates(:,1),dates(:,2), loc,opp, scores(:,1),scores(:,2) ] =...
        textread( SB_STATS, '%f%f %s%s %f%f %*f%*f%*f%*f' );

    %***** OUTPUT *****
    % print season report
    reportGraph( dates, scores, loc, opp );
end % end file available
```

```
% J Hundley
% April 3, 2020
% reportGraph.m used with assign08.m
function [] = reportGraph( date, scores, loc, opp )
% print AU softball report and graph scores

% get size of stats
[ nGames, nStats ] = size( date );

% get season record info -- LOOPS NOT ALLOWED
auWins                = length( find( scores(:,1) > scores(:,2 ) ) );
[ maxSpread, spGame ] = max( abs( scores(:,1) - scores(:,2) ) );
[ maxAU,auGame ]      = max( scores(:,1) );
[ maxOpp,oppGame ]    = max( scores(:,2) );

% print season report: date, scores, batting average
% print title and headers
fprintf( '2020 AU Softball Results as of %02d/%02d\n', date(nGames,:) )
fprintf( 'Date   Opponent         Score W/L \n' )

for g = 1:nGames
    if strfind( loc{g}, 'home' )
        fprintf( '%02d/%02d  %-16s %02d-%02d  ', date(g,:), opp{g}, scores(g,:) )
        if scores(g,1) > scores(g,2)
            fprintf( 'W\n' )
        else
            fprintf( 'L\n' )
        end
    end
end

% season record
fprintf( '\nSeason record, all games: \n' )
fprintf( 'Wins-Losses:       %d-%d\n', auWins, nGames-auWins )
fprintf( 'Largest pt spread: %2d on %02d/%02d \n', maxSpread, date(spGame,1),
date(spGame,2) )
fprintf( 'Most AU runs:      %2d on %02d/%02d \n', maxAU, date(auGame,1), date(auGame,2)
)
fprintf( 'Most Opp runs:     %2d on %02d/%02d \n', maxOpp, date(oppGame,1),
date(oppGame,2) )

% plot Auburn and opponents scores using stacked bar graph
graphScores( scores )
end



function [] = graphScores( scores )
% plot Auburn and opponents scores in separate plots
gamesNum = 1:length( scores(:,1) );
subplot( 2,1,1 )
plot( gamesNum, scores(:,1), 'r:o' )
title( '2020 Auburn Softball Scores' )
xlabel( 'Game number' )
ylabel( 'Scores' )
subplot( 2,1,2 )
plot( gamesNum, scores(:,2), 'k-s' )
title( '2020 Opponent Softball Scores' )
xlabel( 'Game number' )
ylabel( 'Scores' )
end
```

*Read **all** instructions before beginning your work.*

COMP1200-MATLAB – assign09
Due 4:45pm – Friday – April 10, 2020
Submit `assign09.m` and `reportGraph.m` via Canvas

NOTE:
Your submitted file(s) MUST be spelled and cased as instructed.

***Before you start writing your program**:*

Read the complete instructions. Write an algorithm to use to as comments in you script. An **algorithm** contains the steps needed to guide you through solving a problem.

Assign08 scripts can be modified for assign09 scripts.
Modify algorithm and statements to meet current requirements.
Remove statements and comments that are not needed for current requirements.

Problem:

With the 2020 season opener looming in just over two weeks, Auburn softball will enter the upcoming season ranked No. 22 in the inaugural D1 Softball Top 25 preseason rankings. Auburn opens the season in the NFCA Leadoff Classic at Clearwater, Fla., on Friday, Feb. 7 against Baylor at 11 a.m. CT. The Tigers kick off the home slate at Jane B. Moore Field on Thursday, Feb. 13 against Kennesaw State.

Throughout the season, game statistics are posted on the AU athletics website. Assignments 8-10 will analysis parts of this information.

***Program*: assign09.m**

Your assign09.m will read the data file, write a report, and draw a graph.

In assign09.m

Determine whether or not the data file is available.
Use **`textread()`** to read the data file. **Save all data except the four statistics.**
NOTE: games will be added or remore to the data file for grading.
Use a user-defined function to print the report and draw a graph.

In **`reportGraph()`** include all statements and comments needed to print all the output and draw a graph.
Use `strfind()` to include home games only in report.
The season record are for all games.
Get the season record information **WITHOUT USING LOOPS**.
See the output sample for more instructions.

Use the given subfunction to plot Auburn and opponents scores for all games in separate plots.

Do not use commands and statements beyond what has been taught on class.

New commands:
Only continue if file is available otherwise ONLY print message.
`string arrays {}` indexing
`strfind()`
`plot(), subplot()`
If you do not have MATLAB 'help," search for a function at https://www.mathworks.com for assistance.

Continue:
`textread()`
Use functions from previous assignments as needed.
Use descriptive variables.

The function should be named as given and save in a file **`reportGraph.m`**.
Variable names may be different, but the order and quantity should be as given.

```
function [] = reportGraph( date, scores, location, opponent )
% print 2020 SB stats report and draw graph
```

Create **`graphScores()`** as subfunction located in the primary function, **`reportGraph.m`** file. This subfunction is used by the primary function, **`reportGraph()`**, to draw a graph. Colors may differ. See output sample below.

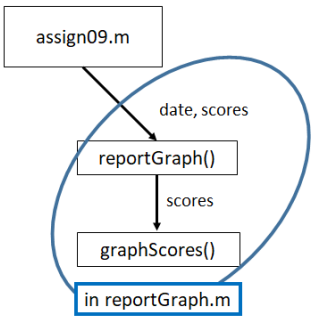
Graph the Auburn and opponents scores using a stacked bar chart. Include a title, x-y axis labels, and legend.

```
function [] = graphScores( scores )
% plot Auburn and opponents scores using stacked bar graph
```

***Problem* CONSTANTS:** (with units)
filename = `AU_SB_2020_09.txt'`
***Problem Inputs*:** (with units)
dates, location, opponents, scores
Problem Outputs: (with units)
See sample output
Other variables: (with units)
As needed
Equation:
See above.
Algorithm:
Using the following section comments and previous assignment files as a guide create an algorithm for the current requirements. Use the algorithm as comments in your `assign08.m`

```
% ***** CONSTANT *****
% ***** INPUT *****
% ***** COMPUTE *****
% ***** OUTPUT *****
```

Structure Diagram



Instructions for all assignment scripts:

- ☐ See Standards for Documentation of MATLAB Programs on the Canvas Resources page.
- ☐ Insert comments at the top and throughout each file.
  - o Include the follow comments at the beginning of this (and ALL) files.
    % submitter's name, **GROUP # or "none"**
    % other group members' names or **"none"**
    % **program file name**, ex. assign02a.m
    % due date of the assignment
    % **statement about collaboration REQUIRED.**
    % a short narrative about what the file does
  - o Use the algorithm given as comments throughout your program.
- ☐ Observe the instructor's rule for naming variables.
  - o Use ALL CAPS for constants variable names.
  - o Start other variables with lower case.
  - o Use descriptive variable names.
- ☐ Use Sample Input/Output as a guide.
- ☐ Code clarity:
  - o Indent blocks as needed. **Use Smart Indent.**
  - o Divide your solution program code into sections as noted in the algorithm. Use blank lines as needed to group statements.
  - o Use section comments as well as the algorithm step comments.
  - o Remove statements from previous assignments that do not apply to the current requirements.
- ☐ Use comments to show units.
- ☐ **Use the CONSTANT and variable names, not numbers. Exceptions are incrementers (or counters) and numbers without identity.**
- ☐ No extra output, i.e. use semicolons

GRADE OF ZERO **for a file if submitter name not part of Canvas group.**

(-3pts) No CURRENT GROUP# or "none".
(-3pts) For your own protection, type "none" for other group members if submitting alone.
(-5pts) Five point penalty for not joining your Canvas group.

(-5pts) Starting with assign06, penalty applied for omitting the name of any group member from a script comment list or an incomplete name of a group member in a script comment list. This penalty will be applied to the group grade if at least one file has incomplete or incorrect name information.

(-5pts) Zero points for comments if no collaboration statement.

Submit via Canvas:

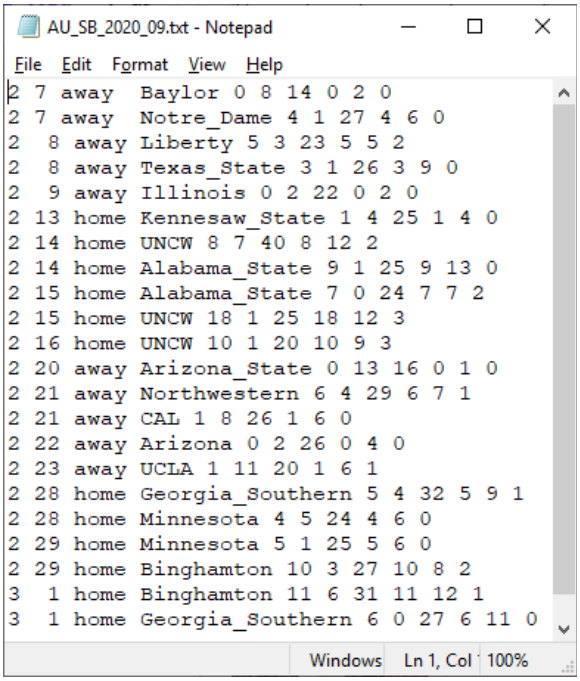
`assign09.m`	MATLAB script file
`reportGraph.m`	user-defined function file

NOTE: Your submitted file(s) MUST be spelled and cased as instructed. One submission per group. Canvas links members to files and rubric. A script cannot run from Canvas. It must be downloaded, saved, and "run".

Sample Input:

Note: grading data file will not contain the same amount of game

	A	B	C	D	E	F	G	H	I	J
1	month	day	Loc	Opponent	sc AU	sc Opp	AB	R	H	HR
2	2	7	away	Baylor	0	8	14	0	2	0
3	2	7	away	Notre Dame	4	1	27	4	6	0
4	2	8	away	Liberty	5	3	23	5	5	2
5	2	8	away	Texas State	3	1	26	3	9	0
6	2	9	away	Illinois	0	2	22	0	2	0
7	2	13	home	Kennesaw State	1	4	25	1	4	0
8	2	14	home	UNCW	8	7	40	8	12	2
9	2	14	home	Alabama State	9	1	25	9	13	0
10	2	15	home	Alabama State	7	0	24	7	7	2
11	2	15	home	UNCW	18	1	25	18	12	3
12	2	16	home	UNCW	10	1	20	10	9	3
13	2	20	away	Arizona State	0	13	16	0	1	0
14	2	21	away	Northwestern	6	4	29	6	7	1
15	2	21	away	CAL	1	8	26	1	6	0
16	2	22	away	Arizona	0	2	26	0	4	0
17	2	23	away	UCLA	1	11	20	1	6	1
18	2	28	home	Georgia Southern	5	4	32	5	9	1
19	2	28	home	Minnesota	4	5	24	4	6	0
20	2	29	home	Minnesota	5	1	25	5	6	0
21	2	29	home	Binghamton	10	3	27	10	8	2
22	3	1	home	Binghamton	11	6	31	11	12	1
23	3	1	home	Georgia Southern	6	0	27	6	11	0



Sample Output:

```
2020 AU Softball Batting Stats as of 03/01
Date   Opponent          Score W/L
02/13  Kennesaw_State    01-04  L
02/14  UNCW              08-07  W
02/14  Alabama_State     09-01  W
02/15  Alabama_State     07-00  W
02/15  UNCW              18-01  W
02/16  UNCW              10-01  W
02/28  Georgia_Southern  05-04  W
02/28  Minnesota         04-05  L
02/29  Minnesota         05-01  W
02/29  Binghamton        10-03  W
03/01  Binghamton        11-06  W
03/01  Georgia_Southern  06-00  W

Season record:
Wins-Losses:        14-8
Largest pt spread: 17 on 02/15
Most AU runs:      18 on 02/15
Most Opp runs:     13 on 02/20
```

Title includes the date of last game in data file
Print the column header over the appropriate column
Slash in date. Dash in scores. Both zero filled. See fprintf() slides.
Opponent left aligned.

Print W for Auburn win. L for Auburn loss

Two plots on same figure
Title and axis labels
Designate two different line color, style, and markers.