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

%***** CONSTANT *****
SB_STATS = 'AU_SB_2020_08.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), scores(:,1),scores(:,2),...
        stats(:,1), stats(:,2),stats(:,3),stats(:,4) ] =...
        textread( SB_STATS, '%f%f%*s%*s%f%f%f%f%f%f' );

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

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

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

% compute game batting average
aveBat = stats( :,3 ) ./ stats( :,1 );

% print season report: date, scores, batting average
% print title and headers
fprintf( '2020 AU Softball Batting Stats as of %02d/%02d\n', date(nGames,:) )
fprintf( 'Date   Score W/L  AB Runs Hits HRuns  Ave\n' )

for g = 1:nGames
    fprintf( '%02d/%02d  %02d-%02d  ', date(g,:), scores(g,:) )
    if scores(g,1) > scores(g,2)
        fprintf( 'W' )
    else
        fprintf( 'L' )
    end
    fprintf( '  %2d   %2d   %2d   %2d   %5.3f\n', stats( g,: ), aveBat(g) )
end
% print average scores and stats; over all batting average
fprintf('Ave: %04.1f-%04.1f  %4.1f %4.1f %4.1f %4.1f  %5.3f\n',...
    mean(scores), mean(stats), sum(stats(:,3))./sum(stats(:,1)) )

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



function [] = graphScores( scores )
% plot Auburn and opponents scores using stacked bar graph
bar( scores, 'stacked' )
title( '2020 AU Softball Scores' )
xlabel( 'Game number' )
ylabel( 'Scores' )
legend( 'Auburn','Opponent' )
end
```

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

COMP1200-MATLAB – assign08
Due 4:45pm – Friday – April 3, 2020
Submit `assign08.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.

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*: assign08.m**

Your assign08.m will read the data file, write a report, and draw a graph.

In assign08.m

Determine whether or not the data file is available.
Use **`textread()`** to read the **`AU_SB_2020.txt`** data file into a three matrices: dates (2 columns), scores (2 columns), and stats (4 columns). The two character columns are not saved.
NOTE: games will be added to the data file as the season progresses.
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.
Batting average = at bats / hits. (AB/H)
See the output sample for more instructions.

Use the given subfunction to plot Auburn and opponents scores in a stacked bar graph.

Do not use commands and statements beyond what has been taught on class.
Do not use commands and statements in assign01 until they have been discussed in class.

New commands:
Only continue if file is available otherwise ONLY print message.
`textread()` not saving character columns
`'stacked' bar()`
If you do not have MATLAB 'help," search for a function at https://www.mathworks.com for assistance.

Continue:
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, stats )
% 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_08.txt'`

***Problem Inputs*:** (with units)
dates, scores, and stats

Problem Outputs: (with units)
See sample output

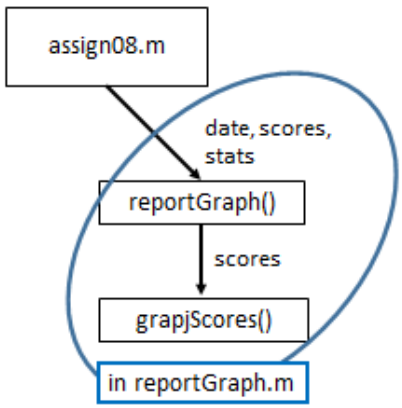
Other variables: (with units)
As needed

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 `assign07.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:

`assign08.m`	MATLAB script file
`reportGraph.m`	user-defined function file

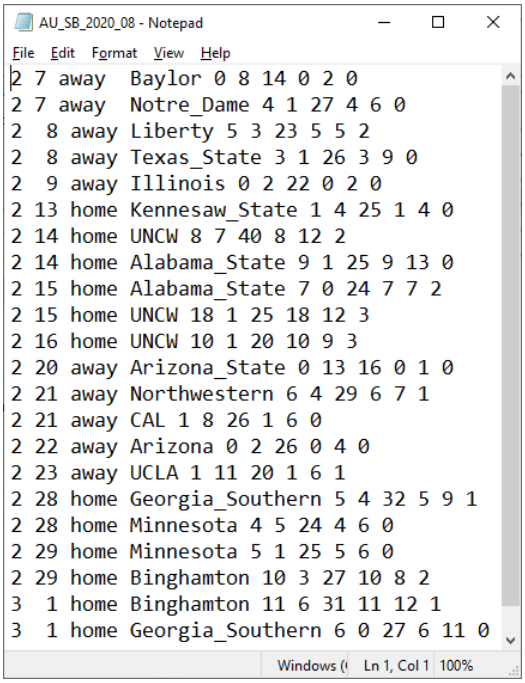
NOTE: Your submitted file(s) MUST be spelled and cased as instructed. One submission per group. Canvas links members to files and rubric. A script cannot run from Canvas. It must be downloaded, saved, and "run".

Sample Input:

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

Game By Game Results batting

mon	day	Loc*	Opponent*	sc AU	sc Opp	AB	R	H	HR
dates				scores		stats			
2	7	away	Baylor	0	8	14	0	2	0
2	7	away	Notre_Dame	4	1	27	4	6	0
2	8	away	Liberty	5	3	23	5	5	2
2	8	away	Texas_State	3	1	26	3	9	0
2	9	away	Illinois	0	2	22	0	2	0
2	13	home	Kennesaw_State	1	4	25	1	4	0
2	14	home	UNCW	8	7	40	8	12	2
2	14	home	Alabama_State	9	1	25	9	13	0
2	15	home	Alabama_State	7	0	24	7	7	2
2	15	home	UNCW	18	1	25	18	12	3
2	16	home	UNCW	10	1	20	10	9	3
2	20	away	Arizona_State	0	13	16	0	1	0
2	21	away	Northwestern	6	4	29	6	7	1
2	21	away	CAL	1	8	26	1	6	0
2	22	away	Arizona	0	2	26	0	4	0
2	23	away	UCLA	1	11	20	1	6	1
2	28	home	Georgia_Southern	5	4	32	5	9	1
2	28	home	Minnesota	4	5	24	4	6	0
2	29	home	Minnesota	5	1	25	5	6	0
2	29	home	Binghamton	10	3	27	10	8	2
3	1	home	Binghamton	11	6	31	11	12	1
3	1	home	Georgia_Southern	6	0	27	6	11	0



Sample Output:

```
2020 AU Softball Batting Stats as of 03/01
Date   Score W/L  AB Runs Hits HRuns  Ave
02/07  00-08  L  14    0    2    0   0.143
02/07  04-01  W  27    4    6    0   0.222
02/08  05-03  W  23    5    5    2   0.217
02/08  03-01  W  26    3    9    0   0.346
02/09  00-02  L  22    0    2    0   0.091
02/13  01-04  L  25    1    4    0   0.160
02/14  08-07  W  40    8   12    2   0.300
02/14  09-01  W  25    9   13    0   0.520
02/15  07-00  W  24    7    7    2   0.292
02/15  18-01  W  25   18   12    3   0.480
02/16  10-01  W  20   10    9    3   0.450
02/20  00-13  L  16    0    1    0   0.063
02/21  06-04  W  29    6    7    1   0.241
02/21  01-08  L  26    1    6    0   0.231
02/22  00-02  L  26    0    4    0   0.154
02/23  01-11  L  20    1    6    1   0.300
02/28  05-04  W  32    5    9    1   0.281
02/28  04-05  L  24    4    6    0   0.250
02/29  05-01  W  25    5    6    0   0.240
02/29  10-03  W  27   10    8    2   0.296
03/01  11-06  W  31   11   12    1   0.387
03/01  06-00  W  27    6   11    0   0.407
Ave: 05.2-03.9  25.2  5.2  7.1  0.8  0.283
```

Print the averages under the appropriate column.

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

Print W for Auburn win. L for Auburn loss.
More than one fprintf() may be used to print a line.

Align number columns on the right side.

Think about what goes before the loop
in the loop and
after the loop.

The axis numbers will change as the figure is resized.
Graph colors may vary.