CSE 410 **Spring 2017**

Computer Project #1

Assignment Overview

This assignment focuses on C shell programming in a Linux environment. You will design and implement a set of C shell scripts which are used to produce statistical reports about Major League Baseball players and teams.

It is worth 30 points (3% of course grade) and must be completed no later than 11:59 PM on Thursday, 1/26.

Assignment Deliverables

The deliverables for this assignment are the following files:

`proj01.script1` -- the C shell script which produces Report #1
`proj01.script2` -- the C shell script which produces Report #2
`proj01.script3` -- the C shell script which produces Report #3
`proj01.script4` -- the C shell script which produces Report #4

Be sure to use the specified file names and to submit your files for grading via the CSE Handin system before the project deadline.

Assignment Specifications

The following files are available on the CSE Linux system:

```
/user/cse410/Projects/project01.data
/user/cse410/Projects/project01.headers
```

The first file contains a list of baseball players from all of the teams in Major League Baseball (the American League and the National League) during the 2016 season. For each player, a number of statistics are listed, such as the number of games played and the number of at bats.

The second file contains column headers which are formatted for use with this data.

You will design and implement four C shell scripts which are capable of producing the reports listed below.

You may use UNIX utility programs (such as "echo", "cat" and "grep") inside your C shell scripts to generate the reports, but you may NOT use an editor program to edit any of the reports.

All four C shell scripts will write their output to standard output. You may use piping within your scripts to connect the output of one utility program to the input of another, but your scripts may not create any temporary files.

1. The C shell script "proj01.script1" will produce a report about the players on a specified team.

The report will include an appropriate title, the column headers described above, and the statistics for all of the players on a specified team, sorted by runs batted in (from highest total to lowest). If more than one player on the team has the same number of runs batted in, the report will list those players by at bats (from lowest to highest).

Your C shell script will assume that the second command-line token is an identifier for the specified team (for example, "DET" or "CLE").

2. The C shell script "proj01.script2" will produce a series of reports about the players on specified teams.

Each report will include an appropriate title, the column headers described above, and the statistics for all of the players on a specified team, sorted by runs batted in (from highest total to lowest). If more than one player on the team has the same number of runs batted in, the report will list those players by at bats (from lowest to highest). Individual reports will be separated by exactly two blank lines.

Your C shell script will assume that the second and each subsequent command-line token is an identifier for a specified team.

3. The C shell script "proj01.script3" will produce a report about the N players with the largest number of runs batted in.

The report will include an appropriate title, the column headers described above, and the statistics for the top N players (where N is a positive integer) from a subset of the teams in Major League Baseball, sorted by runs batted in (from highest total to lowest). If more than one player has the same number of runs batted in, the report will list those players by at bats (from lowest to highest).

Your C shell script will accept two arguments: a positive integer number that specifies the value of N, and a character string which specifies the subset of teams that should be included in the report. This character string will be either "AL" (meaning that only teams from the American League should be included) or "NL" (meaning that only teams from the National League should be included).

4. The C shell script "proj01.script4" will produce a report about the N players with the largest number of runs batted in.

The report will be identical to Report #3 described above. However, your C shell script which produces the report will include error checking.

If the user supplies an invalid number of arguments, your C shell script will display an appropriate error message.

If the user supplies an invalid value as the second token (an integer value which is not greater than zero), your C shell script will display an appropriate error message.

If the user supplies an invalid character string as the third token (something other than "AL" or "NL"), your C shell script will display an appropriate error message.

Assignment Notes

1. The first line of each of your C shell scripts must be the line shown below (where the '#' character is in the first column):

```
#!/bin/tcsh -f
```

2. You may not copy the files containing the data or the column headers into your account. Instead, use absolute pathnames to access the files stored under the "cse410" account.

3. In the data file, the column labeled "L" represents the league in which a given team is a member, the column labeled "TM" represents the team, the column labeled "AB" represents the at bats recorded for each player with a given team, and the column labeled "RBI" represents the runs batted in recorded for each player with a given team.