APPENDIX: 370 HOCKEY DATABASE PROJECT TESTS AND RESULTS

Tests are sorted by command, tests are run on all commands as this covers every function I have implemented.

For each of these tests, assume the database is already in its initialised state and filled with dummy data from the 'filldata' directory.

1. gen_standings tests

No rows are in standings after initialization, this is good.

```
SQL> select * from Standings;

no rows selected
```

Now, run ./main and write the command 'gen_standings'.

```
SQL> select teamCode, wins, losses, overtimeLosses, points, pointPct  from Standings;

TEA       WINS     LOSSES OVERTIMELOSSES     POINTS   POINTPCT
--- ---------- ---------- -------------- ---------- ----------
VAN          1         12              0          2       .077
CGY         14          2              1         29       .853
EDM         10          1              0         20       .909
SEA          7          9              2         16       .444
SJS          3         10              3          9       .281
LAK         11          6              1         23       .639
ANA         11          5              0         22       .688
VGK         13          5              2         28         .7
WPG         10          3              0         20       .769
CHI          3         11              1          7       .233
MIN          9          6              1         19       .594
```

Cropped some out but the below screenshot verifies all 32 teams are in the standings.

```
TEA       WINS     LOSSES OVERTIMELOSSES     POINTS   POINTPCT
--- ---------- ---------- -------------- ---------- ----------
NJD          2          9              1          5       .208
NYI          6          9              1         13       .406
MTL          4         15              0          8       .211
TOR          5          7              1         11       .423
OTT          7          9              3         17       .447
BUF         12          5              0         24       .706
TBL         12          7              1         25       .625
FLA          6          7              2         14       .467
DET          9          4              0         18       .692
BOS         12          5              2         26       .684

32 rows selected.
```

Now, we will try this on an empty games table:

```
SQL> select teamCode, wins, losses, overtimeLosses, points, pointPct  from Standings;

TEA       WINS     LOSSES OVERTIMELOSSES     POINTS   POINTPCT
--- ---------- ---------- -------------- ---------- ----------
VAN          0          0              0          0          0
CGY          0          0              0          0          0
EDM          0          0              0          0          0
SEA          0          0              0          0          0
SJS          0          0              0          0          0
LAK          0          0              0          0          0
ANA          0          0              0          0          0
VGK          0          0              0          0          0
WPG          0          0              0          0          0
CHI          0          0              0          0          0
MIN          0          0              0          0          0
```

We get a standings table with default 0 values as if a new season is about to start!

2. create_game tests

Let's make a game between Tampa Bay and Calgary.
These are what their stats are like before the game.

```
SQL> select * from Standings where teamCode = 'TBL' or teamCode = 'CGY';

SEASON               TEA TEAMNAME                                 CONFERENCE
-------------------- --- ---------------------------------------- ----------
DIVISION        GAMESPLAYED       WINS     LOSSES OVERTIMELOSSES     POINTS
--------------- ----------- ---------- ---------- -------------- ----------
  POINTPCT   GOALSFOR GOALSAGAINST GOALDIFFERENTIAL P
---------- ---------- ------------ ---------------- -
2024-25              CGY Calgary Flames                           Western
Pacific                  17         14          2              1         29
      .853         56           36               20 -

2024-25              TBL Tampa Bay Lightning                      Eastern
Atlantic                 20         12          7              1         25
      .625         56           46               10 -

SEASON               TEA TEAMNAME                                 CONFERENCE
-------------------- --- ---------------------------------------- ----------
DIVISION        GAMESPLAYED       WINS     LOSSES OVERTIMELOSSES     POINTS
--------------- ----------- ---------- ---------- -------------- ----------
  POINTPCT   GOALSFOR GOALSAGAINST GOALDIFFERENTIAL P
---------- ---------- ------------ ---------------- -
```

In main, we use the create_game command and follow the prompts.

If you input an invalid team name, application returns you to main command loop.

```
Enter a command: create_game
Welcome to the game creator. Follow the prompts and input the correct game data.
Enter the home team of the game (3 letter code):
TBB
Home team doesn't exist. Leaving game creator.

Type 'help' to display all commands.
Enter a command:
```

This is the same if you put an invalid input in any field!

```
Type 'help' to display all commands.
Enter a command: create_game
Welcome to the game creator. Follow the prompts and input the correct game data.
Enter the home team of the game (3 letter code):
TBL
Enter the away team of the game (3 letter code):
CGY
Enter the amount of goals the home team scored: a lot
Invalid input. Please enter a valid integer next time.


Type 'help' to display all commands.
Enter a command:
```

Ok, let's create the game:

```
Type 'help' to display all commands.
Enter a command: create_game
Welcome to the game creator. Follow the prompts and input the correct game data.
Enter the home team of the game (3 letter code):
TBL
Enter the away team of the game (3 letter code):
CGY
Enter the amount of goals the home team scored: 3
Enter the amount of goals the away team scored: 2
Enter the amount of shots on goal the home team had: 21
Enter the amount of shots on goal the away team had: 35
Was the game an overtime or shootout game? (Y or N)
```

If the goal difference is 1, the function will ask you if this was an overtime game or not.

```
Was the game an overtime or shootout game? (Y or N)
n
Game with ID 260 added to game records.
Game with ID 260 reflected in standings.
```

I said no, as you can see, the game should be added to the game records and reflected in standings.

The game does exist and with accurate data!

```
SQL> select * from Games where gameID = 260;

    GAMEID HOM AWA GAMEDATE  SEASON               GAMETYPE   WIN  GOALSHOME
---------- --- --- --------- -------------------- ---------- --- ----------
 GOALSAWAY  SHOTSHOME  SHOTSAWAY I
---------- ---------- ---------- -
       260 TBL CGY 13-APR-25 2024-25              Regular    TBL          3
         2         21         35 N
```

The standings has updated data.

```
SEASON               TEA TEAMNAME                                CONFERENCE
-------------------- --- ----------------------------------------- ----------
DIVISION        GAMESPLAYED       WINS     LOSSES OVERTIMELOSSES     POINTS
--------------- ----------- ---------- ---------- -------------- ----------
  POINTPCT   GOALSFOR GOALSAGAINST GOALDIFFERENTIAL P
---------- ---------- ------------ ---------------- -
2024-25              CGY Calgary Flames                          Western
Pacific                  18         14          3              1         29
      .806         58           39               19 -

2024-25              TBL Tampa Bay Lightning                     Eastern
Atlantic                 21         13          7              1         27
      .643         59           48               11 -

SEASON               TEA TEAMNAME                                CONFERENCE
-------------------- --- ----------------------------------------- ----------
DIVISION        GAMESPLAYED       WINS     LOSSES OVERTIMELOSSES     POINTS
--------------- ----------- ---------- ---------- -------------- ----------
  POINTPCT   GOALSFOR GOALSAGAINST GOALDIFFERENTIAL P
---------- ---------- ------------ ---------------- -
```

3. add_game tests

For this test I will be using the ‘testdata’ directory files to create some test games.

We will be using this game for our test:

```
-- Insert Game Record
INSERT INTO Games (gameID, homeTeam, awayTeam, gameDate, season, gameType, winner, goalsHome, goalsAway, shotsHome, shotsAway, isOvertime)
VALUES (262, 'BOS', 'VGK', TO_DATE('2025-04-17', 'YYYY-MM-DD'), '2025 Season', 'Regular', 'BOS', 3, 2, 38, 29, 'N');
```

Here are the standings for Boston and Vegas before the game insertion.

```
SQL> select * from Standings where teamCode = 'BOS' or teamCode = 'VGK';

SEASON               TEA TEAMNAME                                CONFERENCE
-------------------- --- ----------------------------------------- ----------
DIVISION        GAMESPLAYED       WINS     LOSSES OVERTIMELOSSES     POINTS
--------------- ----------- ---------- ---------- -------------- ----------
  POINTPCT   GOALSFOR GOALSAGAINST GOALDIFFERENTIAL P
---------- ---------- ------------ ---------------- -
2024-25              VGK Las Vegas Golden Knights                Western
Pacific                  20         13          5              2         28
        .7         63           51               12 -

2024-25              BOS Boston Bruins                           Eastern
Atlantic                 19         12          5              2         26
      .684         62           50               12 -

SEASON               TEA TEAMNAME                                CONFERENCE
-------------------- --- ----------------------------------------- ----------
DIVISION        GAMESPLAYED       WINS     LOSSES OVERTIMELOSSES     POINTS
--------------- ----------- ---------- ---------- -------------- ----------
  POINTPCT   GOALSFOR GOALSAGAINST GOALDIFFERENTIAL P
---------- ---------- ------------ ---------------- -
```

If we accidentally enter an invalid gameID, the function aborts!

```
Enter a command: add_game
Enter the game ID whose results you want to add to standings:
2620
Game with ID 2620 doesn't exist. Returning.
```

After the game, here are the standings!

```
Enter a command: add_game
Enter the game ID whose results you want to add to standings:
262
Game with ID 262 reflected in standings.
```

```
SEASON               TEA TEAMNAME                                CONFERENCE
-------------------- --- ----------------------------------------- ----------
DIVISION        GAMESPLAYED       WINS     LOSSES OVERTIMELOSSES     POINTS
--------------- ----------- ---------- ---------- -------------- ----------
  POINTPCT   GOALSFOR GOALSAGAINST GOALDIFFERENTIAL P
---------- ---------- ------------ ---------------- -
2024-25              VGK Las Vegas Golden Knights                Western
Pacific                  21         13          6              2         28
      .667         65           54               11 -

2024-25              BOS Boston Bruins                           Eastern
Atlantic                 20         13          5              2         28
        .7         65           52               13 -

SEASON               TEA TEAMNAME                                CONFERENCE
-------------------- --- ----------------------------------------- ----------
DIVISION        GAMESPLAYED       WINS     LOSSES OVERTIMELOSSES     POINTS
--------------- ----------- ---------- ---------- -------------- ----------
  POINTPCT   GOALSFOR GOALSAGAINST GOALDIFFERENTIAL P
---------- ---------- ------------ ---------------- -
```

4. playoff tests

Next, we will take a look at the playoff command.

Here are the standings (in a more readable format) before the playoff status designations.

```
SQL> select division, teamCode, points, playoffStatus from Standings order by conference, division, points desc;

DIVISION       TEA     POINTS P
-------------- --- ---------- -
Atlantic       BOS         28 -
Atlantic       TBL         27 -
Atlantic       BUF         24 -
Atlantic       DET         18 -
Atlantic       OTT         17 -
Atlantic       FLA         14 -
Atlantic       TOR         11 -
Atlantic       MTL          8 -
Metropolitan   CBJ         25 -
Metropolitan   PIT         18 -
Metropolitan   NYI         13 -

DIVISION       TEA     POINTS P
-------------- --- ---------- -
Metropolitan   PHI         12 -
Metropolitan   NYR         10 -
Metropolitan   CAR          8 -
Metropolitan   WSH          8 -
Metropolitan   NJD          5 -
Central        COL         31 -
Central        DAL         30 -
Central        NSH         22 -
Central        WPG         20 -
Central        MIN         19 -
Central        ARI         12 -

DIVISION       TEA     POINTS P
-------------- --- ---------- -
Central        CHI          7 -
Central        STL          6 -
Pacific        CGY         29 -
Pacific        VGK         28 -
Pacific        LAK         23 -
Pacific        ANA         22 -
Pacific        EDM         20 -
Pacific        SEA         16 -
Pacific        SJS          9 -
Pacific        VAN          2 -
```

Now, let’s run the playoff command!

```
SQL> select division, teamCode, points, playoffStatus from Standings order by conference, division, points desc;

DIVISION       TEA     POINTS P
-------------- --- ---------- -
Atlantic       BOS         28 Z
Atlantic       TBL         27 X
Atlantic       BUF         24 X
Atlantic       DET         18 X
Atlantic       OTT         17 X
Atlantic       FLA         14 E
Atlantic       TOR         11 E
Atlantic       MTL          8 E
Metropolitan   CBJ         25 Y
Metropolitan   PIT         18 X
Metropolitan   NYI         13 X

DIVISION       TEA     POINTS P
-------------- --- ---------- -
Metropolitan   PHI         12 E
Metropolitan   NYR         10 E
Metropolitan   CAR          8 E
Metropolitan   WSH          8 E
Metropolitan   NJD          5 E
Central        COL         31 P
Central        DAL         30 X
Central        NSH         22 X
Central        WPG         20 X
Central        MIN         19 E
Central        ARI         12 E

DIVISION       TEA     POINTS P
-------------- --- ---------- -
Central        CHI          7 E
Central        STL          6 E
Pacific        CGY         29 Y
Pacific        VGK         28 X
Pacific        LAK         23 X
Pacific        ANA         22 X
Pacific        EDM         20 E
Pacific        SEA         16 E
Pacific        SJS          9 E
Pacific        VAN          2 E
```

The standings now have accurate playoff statuses! These are updated in the team table too!

```
SQL> select * from teams where teamCode = 'CGY';

TEA LOCATION             NAME                 SALARYCAPHIT SKATERCOUNT
--- -------------------- -------------------- ------------ -----------
GOALTENDERCOUNT CONFERENCE DIVISION       P
--------------- ---------- -------------- -
CGY Calgary              Flames                   71398012          18
              2 Western    Pacific        Y
```

If the standings are empty, the playoff command does nothing.

5. add_player tests

Let's add a player to the Calgary Flames. Here is their relevant data.

```
SQL> select teamCode, skaterCount, goaltenderCount, salaryCapHit from teams where teamCode = 'CGY';

TEA SKATERCOUNT GOALTENDERCOUNT SALARYCAPHIT
--- ----------- -------------- ------------
CGY          18              2     71398012
```

The creator checks that the team exists or else it will abort.

```
What is the player's name?
Luka Karanovic
What team will they play for (enter 3 letter code)?
CCC
Team doesn't exist in league. Leaving player creator.
```

The salary cap is 88000000, so if I give myself a salary of 18000000 (I wish), it wouldn't allow Calgary to add that player to their team.

```
Enter a command: add_player
Welcome to the player creator. Follow instructions and input all required fields.
What is the player's name?
Luka Karanovic
What team will they play for (enter 3 letter code)?
CGY
What is the player's yearly salary?
18000000
Team would be over salary cap. Can't add Luka Karanovic to CGY
```

Here, I added a goaltender with a salary of 10000000 to Calgary, so their goaltenderCOunt should now be 3, and their cap hit should be 81398012.

```
Enter a command: add_player
Welcome to the player creator. Follow instructions and input all required fields.
What is the player's name?
Luka Karanovic
What team will they play for (enter 3 letter code)?
CGY
What is the player's yearly salary?
10000000
What is the player's nationality?
Canada
What is the player's birthdate (in yyyy-mm-dd)?
2005-03-15
What is the player's position?
G
What is the player's jersey number (1-99)?
88
Player added to Players table.
Player added to Goaltenders table.
Team data updated.
```

```
TEA SKATERCOUNT GOALTENDERCOUNT SALARYCAPHIT
--- ----------- -------------- ------------
CGY          18              3     81398012
```

And my name appears in this query!

```
SQL> select name from Goaltenders natural join Players;

NAME
--------------------------------------------------
Luka Karanovic
Tyler Hughes
Emil Sundstr??m
Ryan Millen
```

Since the max goaltenderCount is 3, I can't add another goaltender to Calgary:

```
What is the player's name?
Luka
What team will they play for (enter 3 letter code)?
CGY
What is the player's yearly salary?
10000
What is the player's nationality?
Canada
What is the player's birthdate (in yyyy-mm-dd)?
2006-07-15
What is the player's position?
G
Team would exceed goaltender limit. Can't add player.
```

6. add_skatergame tests

We will use more data from 'testdata' for this test.
Let's use this record as an example.

```
-- PlayerID: 21, gameID: 106, goals: 1, assists: 1, points: 2, shots: 5, hits: 2, plusMinus: 1, TOI: '20:45'
INSERT INTO SkaterGames (playerID, gameID, goals, assists, points, shots, hits, plusMinus, TOI)
VALUES (21, 106, 1, 1, 2, 5, 2, 1, '20:45');
```

Here are their stats before:

```
  PLAYERID      GOALS    ASSISTS     POINTS      SHOTS       HITS  PLUSMINUS
---------- ---------- ---------- ---------- ---------- ---------- ----------
TOI
------
        21          5          3          8         16         10          4
20:30
```

And after:

```
Type 'help' to display all commands.
Enter a command: add_skatergame
Enter the player ID of the skater whose stats you want to update:
21
Enter the game ID of the game they played:
106
Skater record updated with new game data.
```

```
SQL> select * from Skaters where playerID = 21;

  PLAYERID      GOALS    ASSISTS     POINTS      SHOTS       HITS  PLUSMINUS
---------- ---------- ---------- ---------- ---------- ---------- ----------
TOI
------
        21          6          4         10         21         12          5
20:30
```

This command also checks that there is a valid record before doing the update, and returns you to the main command loop if not:

```
Enter a command: add_skatergame
Enter the player ID of the skater whose stats you want to update:
1
Enter the game ID of the game they played:
250
Skater or SkaterGames record doesn't exist. Aborting.
```

7. add_goaliegame tests

We will use more data from ‘testdata’ for this test.
Let’s use this record as an example.

```
-- PlayerID: 17, gameID: 102, record: loss, saves: 30, goalsAgainst: 4, GAA: 3.25
INSERT INTO GoaltenderGames (playerID, gameID, win, loss, OTLoss, savePct, saves, goalsAgainst, GAA)
VALUES (17, 102, 0, 1, 0, 0.882, 30, 4, 3.25);
```

Here are their stats before:

```
SQL> select * from Goaltenders where playerID = 17;

  PLAYERID       WINS     LOSSES   OTLOSSES    SAVEPCT      SAVES GOALSAGAINST
---------- ---------- ---------- ---------- ---------- ---------- ------------
       GAA
----------
        17          8          4          0        .93        300           20
         2
```

And after:

```
Type 'help' to display all commands.
Enter a command: add_goaliegame
Enter the player ID of the skater whose stats you want to update:
17
Enter the game ID of the game they played:
102
Goaltender record updated with new game data.
```

```
SQL> select * from Goaltenders where playerID = 17;

  PLAYERID       WINS     LOSSES   OTLOSSES    SAVEPCT      SAVES GOALSAGAINST
---------- ---------- ---------- ---------- ---------- ---------- ------------
       GAA
----------
        17          8          5          0       .927        330           24
      2.07
```

This command also checks that there is a valid record before doing the update, and returns you to the main command loop if not:

```
Type 'help' to display all commands.
Enter a command: add_goaliegame
Enter the player ID of the skater whose stats you want to update:
1
Enter the game ID of the game they played:
250
Goaltender or GoaltenderGames record doesn't exist. Aborting.
```

8. update_cap tests

The current salary cap is 88000000

```
SQL> select teamCode, skaterCount, goaltenderCount, salaryCapHit from teams where teamCode = 'CGY';

TEA SKATERCOUNT GOALTENDERCOUNT SALARYCAPHIT
--- ----------- --------------- ------------
CGY         18               3     81398012
```

So trying to insert a skater with a salary of 9000000 to Calgary won't work:

```
Type 'help' to display all commands.
Enter a command: add_player
Welcome to the player creator. Follow instructions and input all required fields.
What is the player's name?
Luka
What team will they play for (enter 3 letter code)?
CGY
What is the player's yearly salary?
9000000
Team would be over salary cap. Can't add Luka to CGY
```

But we can update the salary cap (say it goes up):

```
Enter a command: update_cap
Current salary cap is 88000000
What do you want the new salary cap to be?
95000000
Salary cap updated from 88000000 to 95000000
```

And try to insert our player now!

```
What is the player's name?
Luka
What team will they play for (enter 3 letter code)?
CGY
What is the player's yearly salary?
9000000
What is the player's nationality?
Canada
What is the player's birthdate (in yyyy-mm-dd)?
2005-03-15
What is the player's position?
LW
What is the player's jersey number (1-99)?
67
Player added to Players table.
Player added to Skaters table.
Team data updated.
```

We have this new team data:

```
SQL> select teamCode, skaterCount, goaltenderCount, salaryCapHit from teams where teamCode = 'CGY';

TEA SKATERCOUNT GOALTENDERCOUNT SALARYCAPHIT
--- ----------- --------------- ------------
CGY          19               3     90398012
```

It doesn't handle bad inputs:

```
Enter a command: update_cap
Current salary cap is 88000000
What do you want the new salary cap to be?
hamburger
Invalid input. Please enter a valid integer next time.
```

9. new_season tests

Run the gen_standings command beforehand to generate standings.

```
SQL> select count(*) from Games;

  COUNT(*)
----------
       254
```

```
SQL> select count(*) from Standings;

  COUNT(*)
----------
        32
```

Run the command in the application:

```
Enter a command: new_season
Current season is 2024-25
What do you want the new season name to be?
2025-26
Current season updated from 2024-25 to 2025-26
New season started. Dumping all existing game and standings records to historical records.
254 game records dumped to HistoricalGames table.
32 standings records dumped to HistoricalStandings table.
```

This is the output in the application. As you can see, when creating a new season, the existing games and standings records get dumped to historical tables, this is good!

Afterwards, we can see the Games and Standings tables are empty:

```
SQL> select * from Games;

no rows selected
```

```
SQL> select * from Standings;

no rows selected
```

There are 254 rows in the historical games table and 32 in the historical standings table!

```
SQL> select count(*) from HistoricalGames;

  COUNT(*)
----------
       254
```

```
SQL> select count(*) from HistoricalStandings;

  COUNT(*)
----------
        32
```

There is no check for two seasons having the same name, however, this command does handle empty games and standings tables appropriately!

```
Enter a command: new_season
Current season is 2025-26
What do you want the new season name to be?
2025-26
Current season updated from 2025-26 to 2025-26
New season started. Dumping all existing game and standings records to historical records.
No games to dump to historical records. Aborting.
No standings to dump to historical records. Aborting.
```

Next we will test 3 viewer functions, these can be accessed from ‘main’ or ‘viewermain’.

10. skaterstats tests

When you enter, you get prompted with these commands.

```
Type "help" to display all commands.
Enter a command: skaterstats
Welcome to the skater stats viewer.
0 - Leave the stats viewer.
1 - View the current points leaders.
2 - View the current goals leaders.
3 - View the current assists leaders.
4 - View the skaters with the most games played.
```

Invalid inputs don’t kick you out of the loop as intended, only typing 0 does.

```
4 - View the skaters with the most games played.
h
Invalid input. Please enter a valid integer next time.
Invalid command. Try again.
Welcome to the skater stats viewer.
0 - Leave the stats viewer.
1 - View the current points leaders.
2 - View the current goals leaders.
3 - View the current assists leaders.
4 - View the skaters with the most games played.
```

Typing 1 gives you the top 10 skaters in terms of points.

```
Welcome to the skater stats viewer.
0 - Leave the stats viewer.
1 - View the current points leaders.
2 - View the current goals leaders.
3 - View the current assists leaders.
4 - View the skaters with the most games played.
1
Rank    Player Name         Points
----    -----------         ------
1       Jakob Lindstr??m    14
2       Connor O???Reilly   13
3       Brock McKinnon      11
4       Liam Brooks         11
5       Lucas Bernier       11
6       David Li            10
7       Zachary Thomas      10
8       Alexander Shirokov  9
9       Jakub Novak         9
10      Jussi M??kinen      9
---------------------------------
```

(Special characters have a bugged display sadly).

```
Rank    Player Name         Games Played
----    -----------         ------------
1       Alexander Shirokov  20
2       Zachary Thomas      19
3       Jakob Lindstr??m    17
4       Zachary Robinson    17
5       Andrei Malakhov     14
```

Typing 0 brings you to the main command loop:

```
Welcome to the skater stats viewer.
0 - Leave the stats viewer.
1 - View the current points leaders.
2 - View the current goals leaders.
3 - View the current assists leaders.
4 - View the skaters with the most games played.
0
Thanks for using the skater stats viewer.

Type 'help' to display all commands.
Enter a command:
```

All of this is the same for goaliestats and standings. I will show you some of their generated outputs though!

11. goaliestats outputs

```
Enter a command: goaliestats
Welcome to the goaltender stats viewer.
0 - Leave the stats viewer.
1 - View the current wins leaders.
2 - View the current save percentage leaders.
3 - View the current save leaders.
4 - View the current goals against average leaders.
5 - View the current goals against leaders.
6 - View the players with the most games played.
1
Rank    Player Name         Wins
----    -----------         ----
1       Jakob Lindstr??m    8
2       Lucas Bernier       7
3       Alexei Volkov       6
4       Connor O???Reilly   6
5       Jussi M??kinen      5
6       Tyler Hughes        5
7       Alexander Shirokov  5
8       Aidan McLeod        4
9       Ryan Miller         4
10      Nikolai Kozlov      4
--------------------------------
```

```
Rank    Player Name         Goals Against
----    -----------         -------------
1       Connor O???Reilly   16
2       Ryan Miller         19
3       Ethan Crawford      20
4       Emil Sundstr??m     20
5       Lucas Bernier       22
6       Aidan McLeod        22
7       Nikolai Kozlov      24
8       Jakob Lindstr??m    24
9       Alexander Shirokov  25
10      Markus Nieminen     25
---------------------------------
```

```
Rank    Player Name         Save Pct
----    -----------         --------
1       Jakob Lindstr??m    0.927
2       Lucas Bernier       0.925
3       Connor O???Reilly   0.925
4       Alexei Volkov       0.92
5       Tyler Hughes        0.918
6       Alexander Shirokov  0.915
7       Ryan Miller         0.913
8       Nikolai Kozlov      0.91
9       Aidan McLeod        0.91
10      Emil Sundstr??m     0.91
-----------------------------------
Welcome to the goaltender stats viewer.
```

12. standings outputs

On empty standings:

```
Enter a command: standings
Welcome to the standings viewer.
0 - Leave the standings viewer.
1 - View the league standings.
2 - View the division standings.
3 - View the teams with best goal diferential.
1
Rank  Team   GP   W   L   OT  PTS   PointPct   Playoff  Status
----  ----   --   -   -   --  ---   --------   ---------------
-------------------------------------------------------------
```

```
Welcome to the standings viewer.
0 - Leave the standings viewer.
1 - View the league standings.
2 - View the division standings.
3 - View the teams with best goal diferential.
1
```

Rank	Team	GP	W	L	OT	PTS	PointPct	Playoff	Status
1	COL	19	15	3	1	31	0.816	-	
2	DAL	19	15	4	0	30	0.789	-	
3	CGY	18	14	3	1	29	0.806	-	
4	BOS	20	13	5	2	28	0.700	-	
5	VGK	21	13	6	2	28	0.667	-	
6	TBL	21	13	7	1	27	0.643	-	
7	CBJ	15	12	2	1	25	0.833	-	
8	BUF	17	12	5	0	24	0.706	-	
9	LAK	18	11	6	1	23	0.639	-	
10	ANA	16	11	5	0	22	0.688	-	
11	NSH	16	11	5	0	22	0.688	-	
12	EDM	11	10	1	0	20	0.909	-	
13	WPG	13	10	3	0	20	0.769	-	
14	MIN	16	9	6	1	19	0.594	-	
15	DET	13	9	4	0	18	0.692	-	
16	PIT	16	9	7	0	18	0.563	-	
17	OTT	19	7	9	3	17	0.447	-	
18	SEA	18	7	9	2	16	0.444	-	
19	FLA	15	6	7	2	14	0.467	-	
20	NYI	16	6	9	1	13	0.406	-	
21	PHI	16	5	9	2	12	0.375	-	
22	NYR	15	5	8	2	12	0.400	-	
23	ARI	15	6	9	0	12	0.400	-	
24	TOR	13	5	7	1	11	0.423	-	
25	SJS	16	3	10	3	9	0.281	-	
26	CAR	16	4	12	0	8	0.250	-	
27	WSH	15	3	10	2	8	0.267	-	
28	MTL	20	4	16	0	8	0.200	-	
29	CHI	15	3	11	1	7	0.233	-	
30	STL	11	3	8	0	6	0.273	-	
31	NJD	12	2	9	1	5	0.208	-	
32	VAN	13	1	12	0	2	0.077	-	

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3 - View the teams with best goal diferential.
3
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Rank	Team	GF	GA	Diff
1	EDM	46	20	26
2	COL	73	50	23
3	BUF	69	48	21
4	DAL	65	44	21
5	CBJ	59	38	21
6	CGY	59	40	19
7	BOS	65	52	13
8	NSH	49	36	13
9	VGK	65	54	11
10	TBL	60	49	11
11	DET	37	30	7
12	WPG	37	31	6
13	LAK	58	53	5
14	PIT	50	47	3
15	ANA	43	41	2
16	MIN	46	44	2
17	ARI	39	43	-4
18	SEA	41	45	-4
19	NYI	38	44	-6
20	FLA	42	48	-6
21	OTT	51	58	-7
22	STL	33	40	-7
23	NYR	38	50	-12
24	PHI	37	49	-12
25	VAN	31	44	-13
26	TOR	47	61	-14
27	WSH	36	50	-14
28	NJD	19	36	-17
29	SJS	34	52	-18
30	CAR	35	54	-19
31	CHI	28	47	-19
32	MTL	40	72	-32

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Hope you enjoyed this test run overview!
