



Programming Paradigms:

Coursework 1

Testing

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Department of Computing

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BSc Software Development for Business

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"Except where explicitly stated, all work in this report, is my own original work and has not been submitted elsewhere in fulfilment of the requirement of this or any other award"

Signed by Student: 

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1. Test Log

The following section contains the test cases for the Formula 1 console application written in Scala. Each test includes the respective test number, any input or actions needed, the expected output, actual output, result and screenshot reference number – included in the appendices. See next page and Appendix A.

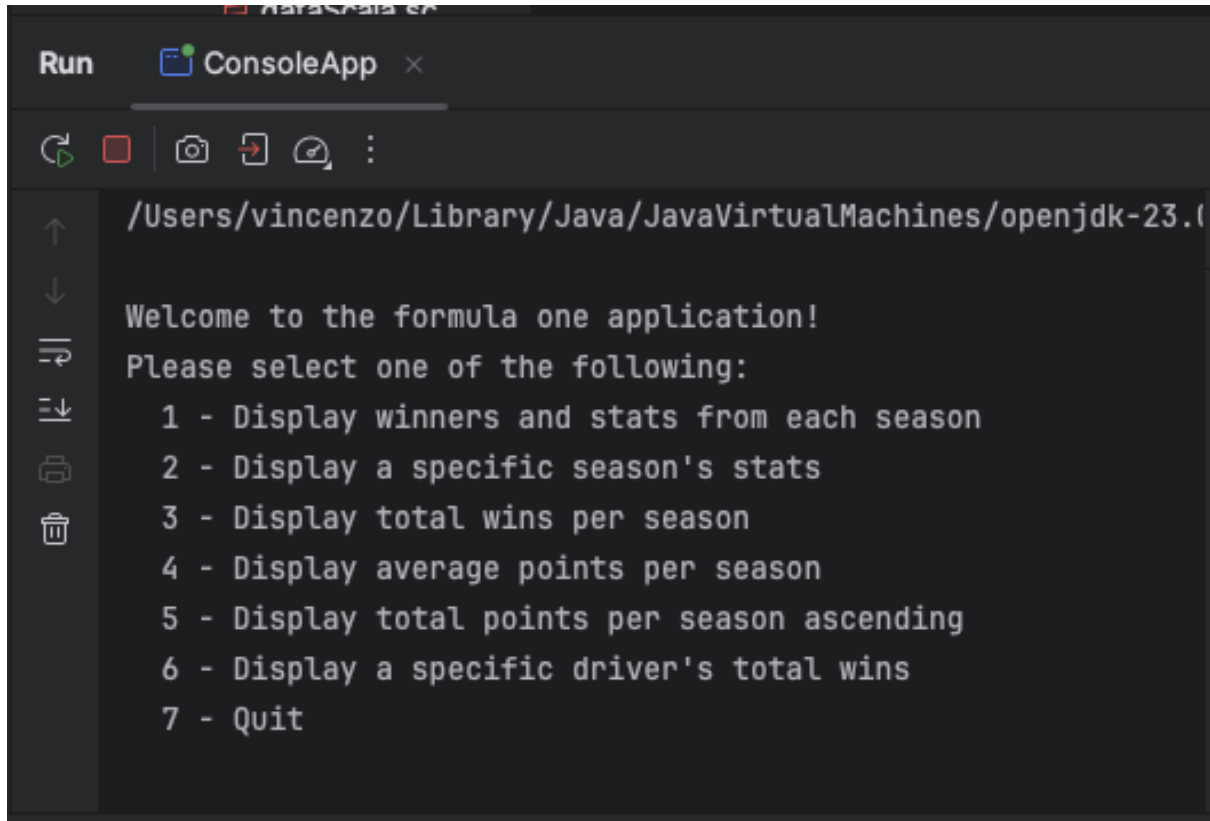
Test No.	Input/Action	Expected Output	Actual Output	Result	Screenshot Reference
1	Start application.	Console welcomes user, prompts user to input number 1-7.	As expected.	Pass	Figure 1
2	Start application. Input '1', hit enter.	Console prints "Option 1 selected...". Console then prints all season winners with their points and wins for that year, then loops back to menu prompting another selection.	As expected.	Pass	Figure 2
3	Start application. Input '2', hit enter. Input '2017', hit enter.	Console prints "Option 2 selected...". Console prints "Please enter the season you want to display:". Console prints all statistics of each driver for that season inputted, then loops back to menu prompting another selection.	As expected.	Pass	Figure 3
4.1	Start application. Input '2', hit enter. Input 's', hit enter.	Console prints "Invalid input 's'. Please enter a valid year between 2017 and 2023.", then loops back to menu prompting another selection.	As expected.	Pass	Figure 4
4.2	Start application. Input '2', hit enter. Input '2016' (invalid year), hit enter.	Console prints "Invalid input '2016'. Please enter a valid year between 2017 and 2023.", then loops back to menu prompting another selection	As expected.	Pass	Figure 5
5	Start application. Input '3', hit enter.	Console prints "Option 3 selected...". Console prints total wins per season, then loops back to menu prompting another selection.	As expected.	Pass	Figure 6
6	Start application. Input '4', hit enter.	Console prints "Option 4 selected...". Console prints average points per season rounded up, then loops back to menu prompting another selection.	As expected.	Pass	Figure 7
7	Start application. Input '5', hit enter.	Console prints "Option 5 selected...". Console prints total points per season ascending, then loops back to menu prompting another selection.	As expected.	Pass	Figure 8

8.1	Start application. Input '6', hit enter. Input 'Lewis Hamilton', hit enter.	Console prints "Option 6 selected..." Console prints "Please enter the player you want to display (case sensitive):". Console prints driver and their total points, then loops back to menu prompting another selection.	As expected	Pass	Figure 9
8.2.	Start application. Input '6', hit enter. Input '2', hit enter.	Console prints "Invalid input '2'. The name wasn't found. Please enter a valid name from the list...", then loops back to menu prompting another selection.	As expected.	Pass	Figure 10
8.2	Start application. Input '6', hit enter. Input name with wrong case last name, e.g., 'Lewis hamilton', hit enter.	Console prints driver and their total points, then loops back to menu prompting another selection.	As expected.	Pass	Figure 11
8.4	Start application. Input '6', hit enter. Hit enter.	Console prints "Invalid input '. The name wasn't found. Please enter a valid name from the list...", then loops back to menu prompting another selection.	As expected.	Pass	Figure 12
8.5	Start application. Input '6', hit enter. Input name with three names, e.g., 'Paul di Resta'. Hit enter.	Console prints driver and their total points, then loops back to menu prompting another selection.	As expected.	Pass	Figure 13
8.6	Start application. Input '6', hit enter. Input name with three names with wrong case in middle name, e.g., 'Paul Di Resta'. Hit enter.	Console prints driver and their total points, then loops back to menu prompting another selection.	As expected.	Pass	Figure 14
8.7	Start application. Input '6', hit enter. Input name with inappropriate spaces, e.g., 'Lewis Hamilton'.	Console prints driver and their total points, then loops back to menu prompting another selection.	As expected.	Pass	Figure 15

9.1	Start application Input '7', hit enter.	Console prints "Option 7 selected..." Console prints "Quitting the application..." Application quits.	As expected.	Pass	Figure 16
9.2	Start application with no 'data.txt' file present in filepath './src/resources/data.txt'.	Console prints "Error reading file: ./src/resources/data.txt (No such file or directory)". Application quits.	As expected.	Pass	Figure 17
9.3	Start application with empty data.txt file.	Console prints "Error: The data file is empty." Application quits.	As expected.	Pass	Figure 18

Appendices

Appendix A:



The screenshot shows a Java IDE's console window titled 'ConsoleApp'. The console output displays the following text:

```
/Users/vincenzo/Library/Java/JavaVirtualMachines/openjdk-23.0  
Welcome to the formula one application!  
Please select one of the following:  
1 - Display winners and stats from each season  
2 - Display a specific season's stats  
3 - Display total wins per season  
4 - Display average points per season  
5 - Display total points per season ascending  
6 - Display a specific driver's total wins  
7 - Quit
```

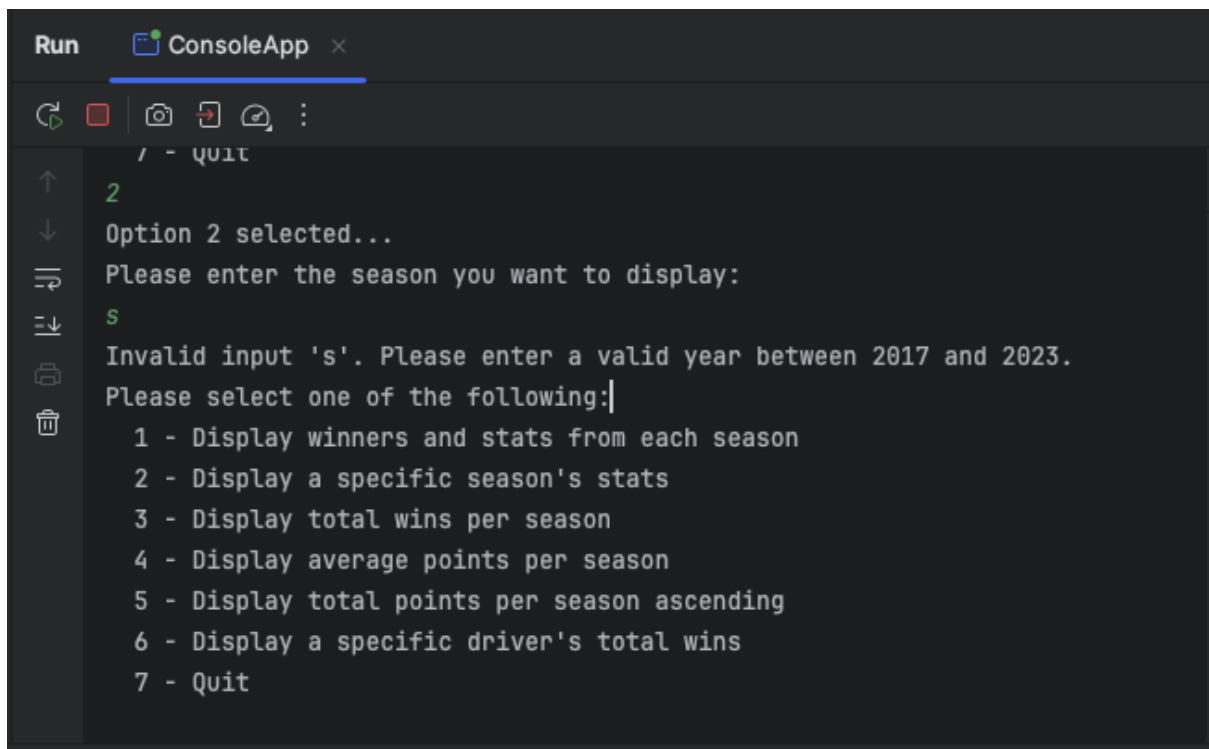
Figure 1

```
Run ConsoleApp x
Option 1 selected...
Season 2020: Winner: Lewis Hamilton, Points: 347.0, Wins: 11
Season 2017: Winner: Lewis Hamilton, Points: 363.0, Wins: 9
Season 2023: Winner: Max Verstappen, Points: 575.0, Wins: 19
Season 2022: Winner: Max Verstappen, Points: 454.0, Wins: 15
Season 2019: Winner: Lewis Hamilton, Points: 413.0, Wins: 11
Season 2021: Winner: Max Verstappen, Points: 395.5, Wins: 10
Season 2018: Winner: Lewis Hamilton, Points: 408.0, Wins: 11
Please select one of the following:
  1 - Display winners and stats from each season
  2 - Display a specific season's stats
  3 - Display total wins per season
  4 - Display average points per season
  5 - Display total points per season ascending
  6 - Display a specific driver's total wins
  7 - Quit
```

Figure 2


```
2
Option 2 selected...
Please enter the season you want to display:
2017
Season: 2017:
Driver: Lewis Hamilton, Points: 363.0, Wins: 9
Driver: Sebastian Vettel, Points: 317.0, Wins: 5
Driver: Valtteri Bottas, Points: 305.0, Wins: 3
Driver: Kimi Raikkonen, Points: 205.0, Wins: 0
Driver: Daniel Ricciardo, Points: 200.0, Wins: 1
Driver: Max Verstappen, Points: 168.0, Wins: 2
Driver: Sergio Perez, Points: 100.0, Wins: 0
Driver: Esteban Ocon, Points: 87.0, Wins: 0
Driver: Carlos Sainz, Points: 54.0, Wins: 0
Driver: Nico Hulkenberg, Points: 43.0, Wins: 0
Driver: Felipe Massa, Points: 43.0, Wins: 0
Driver: Lance Stroll, Points: 40.0, Wins: 0
Driver: Romain Grosjean, Points: 28.0, Wins: 0
Driver: Kevin Magnussen, Points: 19.0, Wins: 0
Driver: Fernando Alonso, Points: 17.0, Wins: 0
Driver: Stoffel Vandoorne, Points: 13.0, Wins: 0
Driver: Jolyon Palmer, Points: 8.0, Wins: 0
Driver: Pascal Wehrlein, Points: 5.0, Wins: 0
Driver: Daniil Kvyat, Points: 5.0, Wins: 0
Driver: Marcus Ericsson, Points: 0.0, Wins: 0
Driver: Pierre Gasly, Points: 0.0, Wins: 0
Driver: Antonio Giovinazzi, Points: 0.0, Wins: 0
Driver: Brendon Hartley, Points: 0.0, Wins: 0
Driver: Jenson Button, Points: 0.0, Wins: 0
Driver: Paul di Resta, Points: 0.0, Wins: 0
Please select one of the following:
  1 - Display winners and stats from each season
  2 - Display a specific season's stats
  3 - Display total wins per season
  4 - Display average points per season
  5 - Display total points per season ascending
  6 - Display a specific driver's total wins
  7 - Quit
```

Figure 3

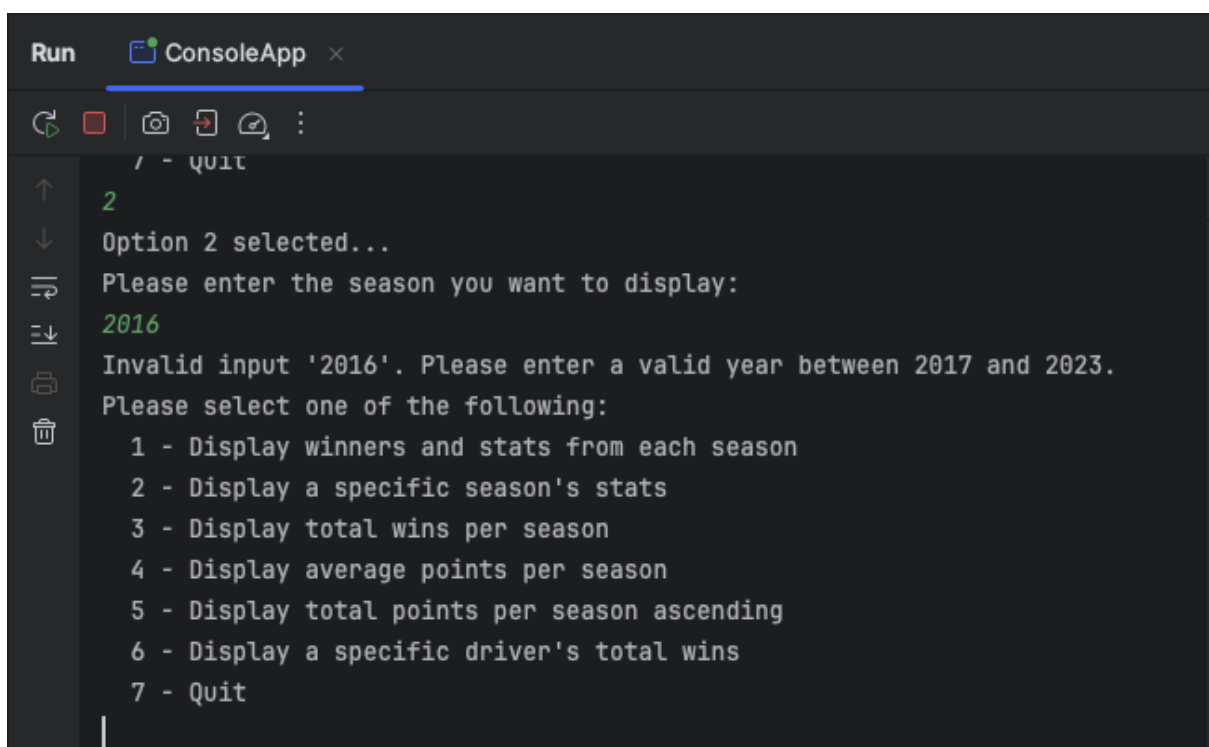


The screenshot shows a console application window titled "ConsoleApp". The application is running and displays a menu with the following options:

```
1 - Display winners and stats from each season
2 - Display a specific season's stats
3 - Display total wins per season
4 - Display average points per season
5 - Display total points per season ascending
6 - Display a specific driver's total wins
7 - Quit
```

The user has entered '2', and the application responds with "Option 2 selected...". The user is then prompted to enter a season, and they have entered 's'. The application responds with "Invalid input 's'. Please enter a valid year between 2017 and 2023." and "Please select one of the following:".

Figure 4

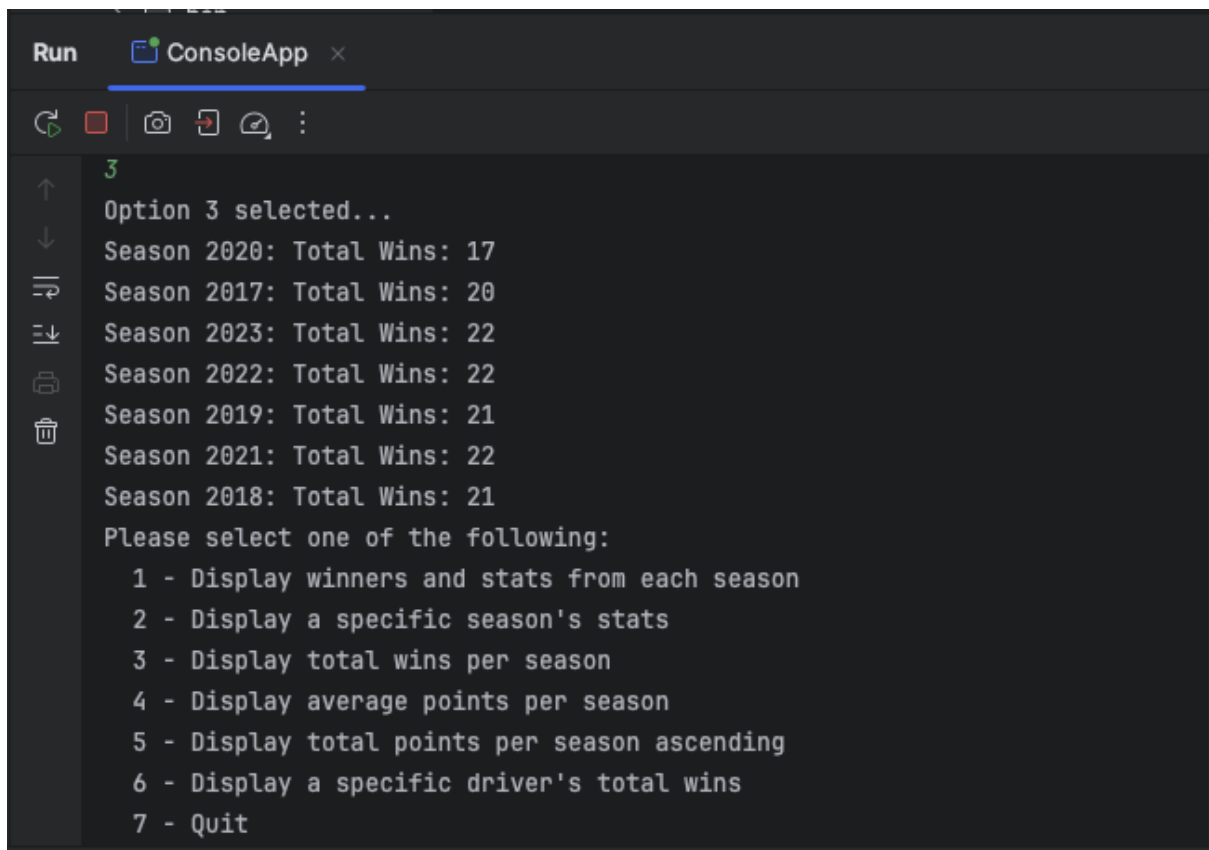


The screenshot shows a console application window titled "ConsoleApp". The application is running and displays a menu with the following options:

```
1 - Display winners and stats from each season
2 - Display a specific season's stats
3 - Display total wins per season
4 - Display average points per season
5 - Display total points per season ascending
6 - Display a specific driver's total wins
7 - Quit
```

The user has entered '2', and the application responds with "Option 2 selected...". The user is then prompted to enter a season, and they have entered '2016'. The application responds with "Invalid input '2016'. Please enter a valid year between 2017 and 2023." and "Please select one of the following:".

Figure 5

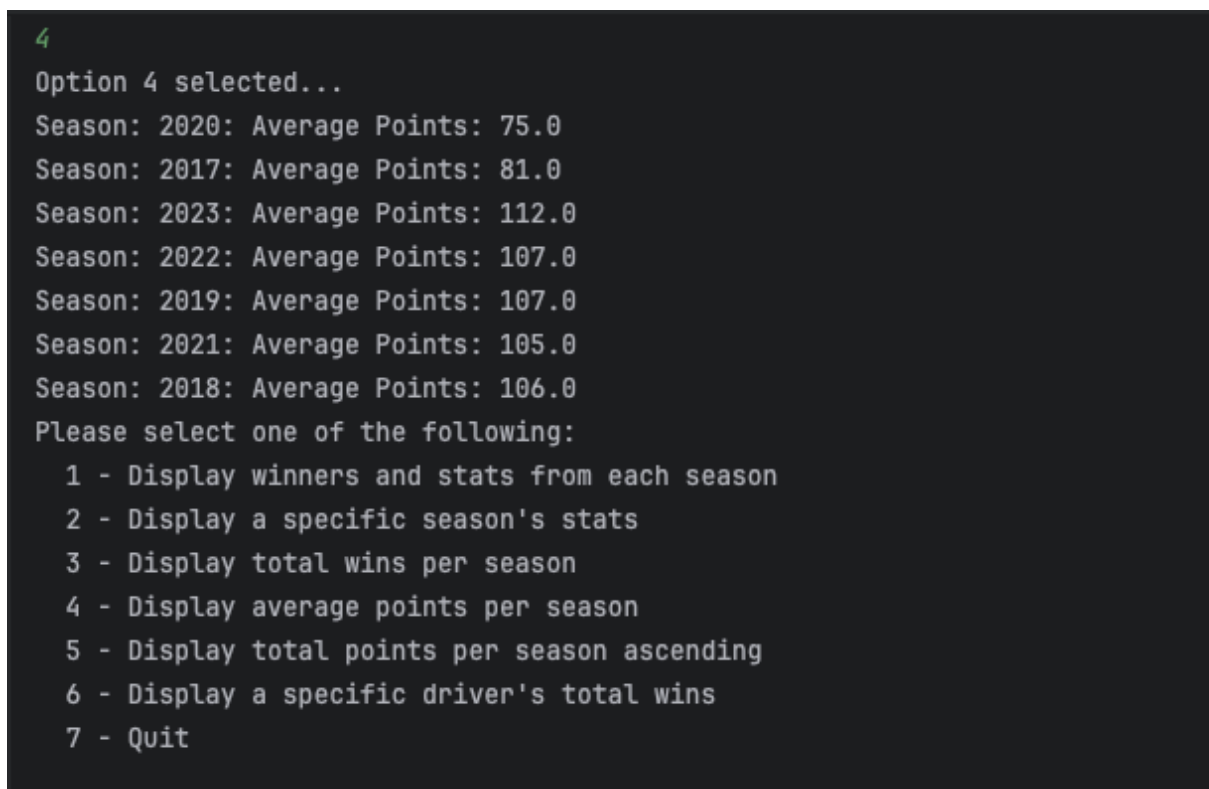


The screenshot shows a console application window titled "ConsoleApp". The application has just received input "3", which corresponds to "Option 3 selected...". It then displays a list of seasons and their total wins. The data is as follows:

Season	Total Wins
2020	17
2017	20
2023	22
2022	22
2019	21
2021	22
2018	21

Below the table, the application prompts the user to "Please select one of the following:" and lists seven options: 1 - Display winners and stats from each season, 2 - Display a specific season's stats, 3 - Display total wins per season, 4 - Display average points per season, 5 - Display total points per season ascending, 6 - Display a specific driver's total wins, and 7 - Quit.

Figure 6



The screenshot shows the same console application window after selecting "Option 4". The application displays the average points for each season. The data is as follows:

Season	Average Points
2020	75.0
2017	81.0
2023	112.0
2022	107.0
2019	107.0
2021	105.0
2018	106.0

The application then prompts the user to "Please select one of the following:" and displays the same seven options as in Figure 6.

Figure 7

```
Run ConsoleApp x
5
Option 5 selected...
Season: 2020: Total Points: 1734.0
Season: 2017: Total Points: 2020.0
Season: 2018: Total Points: 2121.0
Season: 2019: Total Points: 2140.0
Season: 2021: Total Points: 2207.5
Season: 2022: Total Points: 2350.0
Season: 2023: Total Points: 2458.0
Please select one of the following:
  1 - Display winners and stats from each season
  2 - Display a specific season's stats
  3 - Display total wins per season
  4 - Display average points per season
  5 - Display total points per season ascending
  6 - Display a specific driver's total wins
  7 - Quit
```

Figure 8

```
Run ConsoleApp x
6
Option 6 selected...
Please enter the player you want to display (case sensitive):
Lewis Hamilton
Driver: Lewis Hamilton
Total Points: 2392.5
Please select one of the following:
  1 - Display winners and stats from each season
  2 - Display a specific season's stats
  3 - Display total wins per season
  4 - Display average points per season
  5 - Display total points per season ascending
  6 - Display a specific driver's total wins
  7 - Quit
```

Figure 9

```
Run ConsoleApp x
Option 6 selected...
Please enter the player you want to display (case sensitive):
2
Invalid input '2'. The name wasn't found. Please enter a valid name from the list: Lewis Hamilton, Valtteri:
Please select one of the following:
1 - Display winners and stats from each season
2 - Display a specific season's stats
3 - Display total wins per season
4 - Display average points per season
5 - Display total points per season ascending
6 - Display a specific driver's total wins
7 - Quit
```

Figure 10

```
Run ConsoleApp x
Option 6 selected...
Please enter the player you want to display:
Lewis hamilton
Driver: Lewis Hamilton
Total Points: 2392.5
Please select one of the following:
1 - Display winners and stats from each season
2 - Display a specific season's stats
3 - Display total wins per season
4 - Display average points per season
5 - Display total points per season ascending
6 - Display a specific driver's total points
7 - Quit
```

Figure 11

```
6
Option 6 selected...
Please enter the player you want to display (case sensitive):

Invalid input ''. The name wasn't found. Please enter a valid name from the list: Lewis Hamilton, Valtteri
Please select one of the following:
1 - Display winners and stats from each season
2 - Display a specific season's stats
3 - Display total wins per season
4 - Display average points per season
5 - Display total points per season ascending
6 - Display a specific driver's total wins
7 - Quit
```

Figure 12

```
Run ConsoleApp x
option 0 selected...
Please enter the player you want to display:
Paul di Resta
Driver: Paul di Resta
Total Points: 0.0
Please select one of the following:
1 - Display winners and stats from each season
2 - Display a specific season's stats
3 - Display total wins per season
4 - Display average points per season
5 - Display total points per season ascending
6 - Display a specific driver's total points
7 - Quit
```

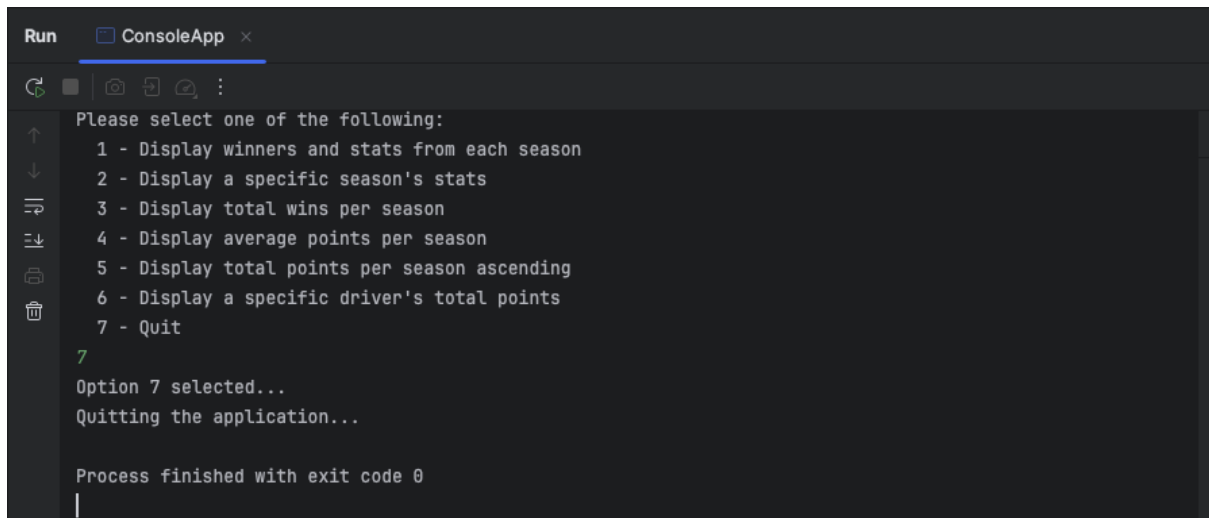
Figure 13

```
Run ConsoleApp x
option 0 selected...
Please enter the player you want to display:
Paul Di Resta
Driver: Paul di Resta
Total Points: 0.0
Please select one of the following:
1 - Display winners and stats from each season
2 - Display a specific season's stats
3 - Display total wins per season
4 - Display average points per season
5 - Display total points per season ascending
6 - Display a specific driver's total points
7 - Quit
```

Figure 14

```
Run ConsoleApp x
option 0 selected...
Please enter the player you want to display:
Lewis Hamilton
Driver: Lewis Hamilton
Total Points: 2392.5
Please select one of the following:
1 - Display winners and stats from each season
2 - Display a specific season's stats
3 - Display total wins per season
4 - Display average points per season
5 - Display total points per season ascending
6 - Display a specific driver's total points
7 - Quit
```

Figure 15



```
Run ConsoleApp x
Please select one of the following:
1 - Display winners and stats from each season
2 - Display a specific season's stats
3 - Display total wins per season
4 - Display average points per season
5 - Display total points per season ascending
6 - Display a specific driver's total points
7 - Quit
7
Option 7 selected...
Quitting the application...

Process finished with exit code 0
```

Figure 16



```
Run ConsoleApp x
/Users/vincenzo/Library/Java/JavaVirtualMachines/openjdk-23.0.1/Contents/Home/bin/java -javaagent:/Applica
Error reading file: ./src/resources/data.txt (No such file or directory)

Process finished with exit code 1
```

bdPara_CW1 > src > ConsoleApp.scala

Figure 17



```
Run ConsoleApp x
/Users/vincenzo/Library/Java/JavaVirtualMachines/openjdk-23.0.1/Contents/Home/bin/java -javaagent:/Applica
Error: The data file is empty.

Process finished with exit code 1
```

Figure 18