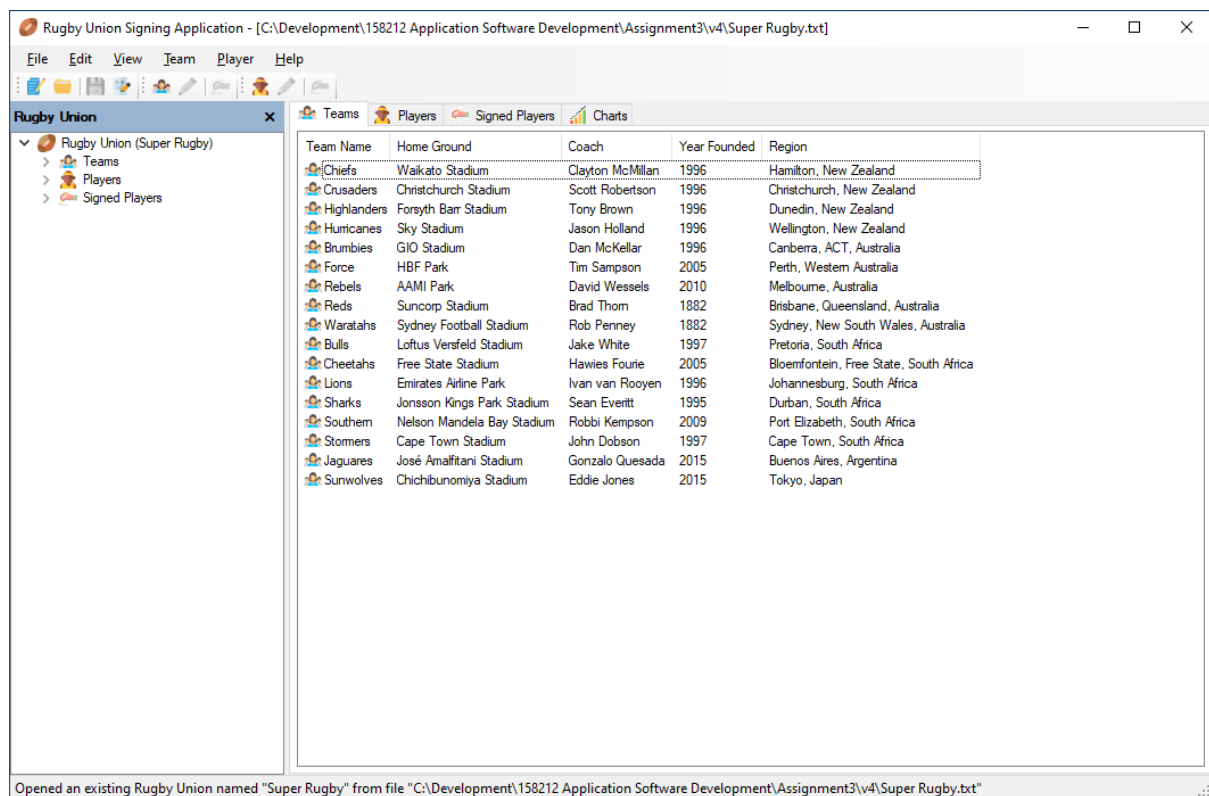


Rugby Union Signing Application

158.212 Application Software Development

Assignment 3



Designed and Written by Damian Coventry

February 2021 - May 2021

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Overview

The Rugby Union Signing Application allows users to create Rugby Union data that is composed of Teams and Players.

The major features of the application are:

- Teams can be created and edited
- Players can be created and edited
- Players can be signed to a Team, and unsigned from a Team
- Charts can display various views of the data
- Data can be copied to the Clipboard, and pasted from the Clipboard
- All data can be searched

Basic Operation

A user creates and manages a Rugby Union document within the main window by using the menu, toolbars, tree control, tabbed documents, and dialog boxes. The document contains any number of Teams and Players, and can be saved to a text file and loaded from a text file.

The user manages the Teams and Players within the document using the main tree control and a set of tabbed documents. The tree control presents Teams, Players, and Signed Players. The user interacts with the tree control via a context menu.

The tabbed documents allow the user to manage each type of data separately. There are four tabbed documents which cannot be closed. The tabbed documents are Teams, Players, Signed Players, and Charts. With the exception of the Charts, the user interacts with the Listview within each tabbed document via a context menu.

The Charts tabbed document provides a read only view of the data. The type of chart to display is chosen from a drop down list within the tabbed document.

All data within the Rugby Union document can be searched via dialog boxes accessible from the Edit menu.

Teams can be imported/exported from/to a text file from the Team menu, likewise for Players. The import feature will not allow duplicate items to be imported.

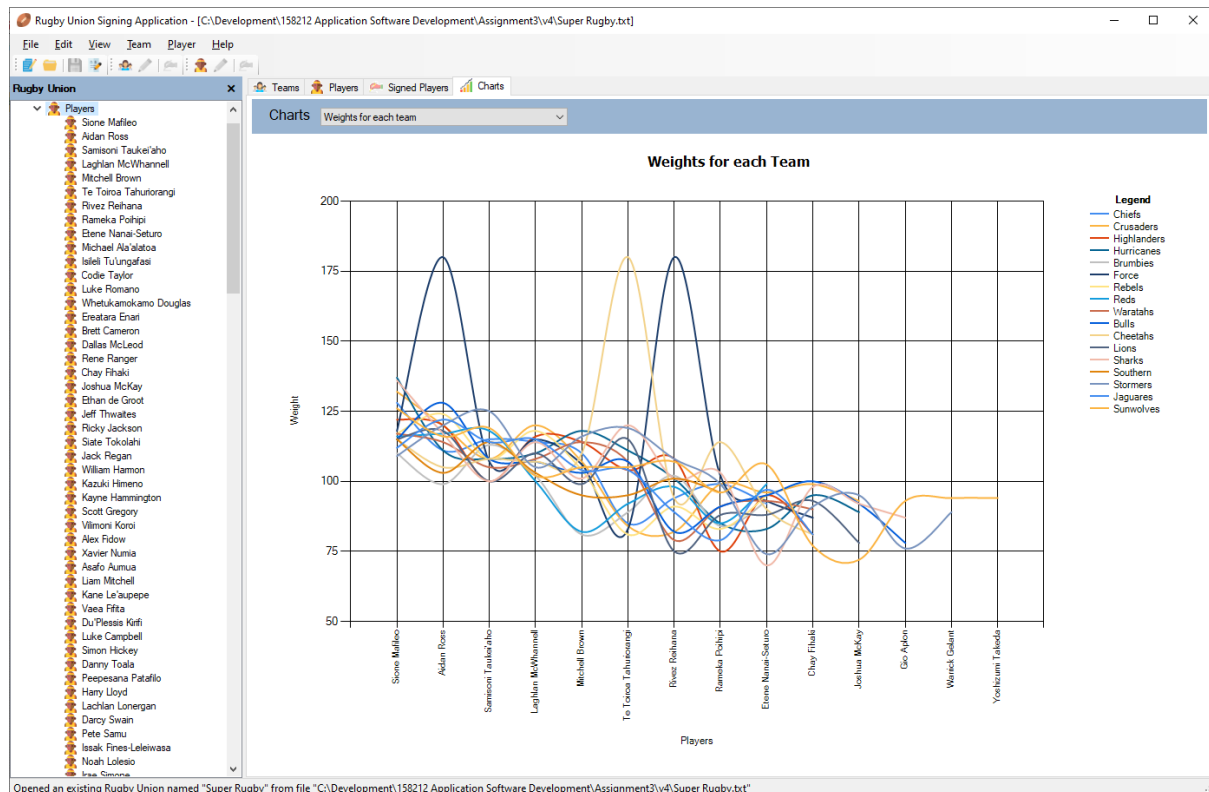
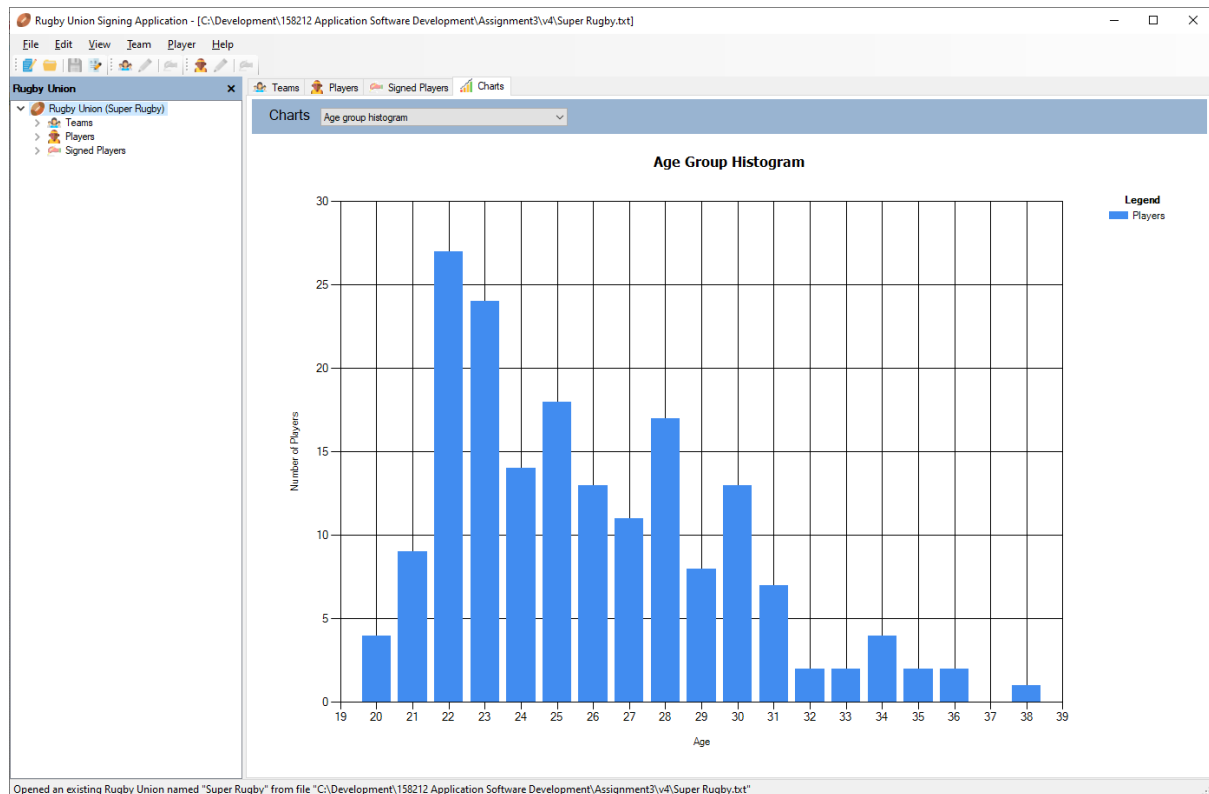
Definitions

Rugby Union	<p>A collection of Teams, Players, and Signed Players.</p> <p>A Rugby Union can be saved to a text file, and loaded from a text file.</p>
Team	<p>A small set of properties that collectively define a Rugby Team. The properties are Name, Home Ground, Coach, Year Founded, and Region.</p> <p>Teams can be imported from a text file, and exported to a text file. A Team can have zero, one, or more Players signed to it.</p>
Player	<p>A small set of properties that collectively define a Rugby Player. The properties are ID, First Name, Last Name, Height, Weight, Date of Birth, and Place of Birth.</p> <p>Players can be imported from a text file, and exported to a text file.</p>
Signed Player	<p>A small set of properties that represent a relationship between a Team and a Player. When this relationship exists, it's referred to as "signing" a Player to a Team.</p> <p>A Player can be signed to zero or one Team at a time.</p>

Super Rugby Demonstration File

The application is supplied with an existing Rugby Union file named “Super Rugby.txt”. It provides a good demonstration of what the application can do.

(See https://en.wikipedia.org/wiki/Super_Rugby for information on Super Rugby)

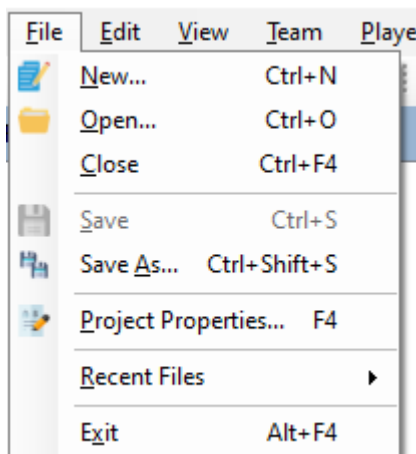


Managing a Rugby Union Document

File Menu

Creating a new Rugby Union

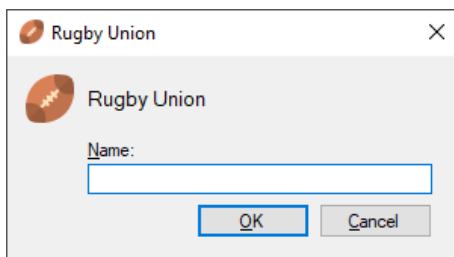
Shortcut Key: Ctrl+N



Creating a new Rugby Union document can be achieved by using the New menu item from the File Menu.

A Rugby Union document requires a name, but nothing else. The name can consist of any character except the ; character.

Once created, the user has an empty container within which any number of Teams and Players can be inserted.



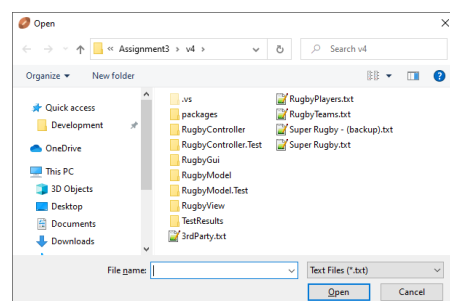
The Rugby Union properties dialog box is shown when the New menu item is clicked. Enter a name and click OK to create a new Rugby Union document. Supplying a name is mandatory.

Opening an existing Rugby Union

Shortcut Key: Ctrl+O

An existing Rugby Union document can be opened at any time during the application, but only one document can be open at once.

Use the Open menu item from the File menu to open a file choosing dialog box. Double clicking a text file whose data is using the expected file format will load the Rugby Union into the application.



Closing an Opened Rugby Union

Shortcut Key: Ctrl+F4

Closing an opened document returns the memory used by the Rugby Union back to the system. Before the document is closed, the user is provided with a chance to save any modified changes to a file.

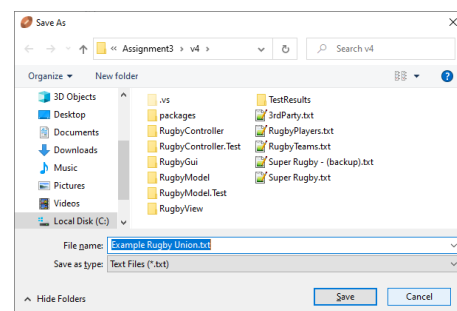
Saving an Opened Rugby Union

Shortcut Keys: Ctrl+S, Ctrl+Shift+S

Using the Save menu item from the File menu saves the Rugby Union to a file. The first time the user Saves the Rugby Union the application will prompt for a filename. Every time after that the application will write the changes to the file and only prompt if there is a problem.

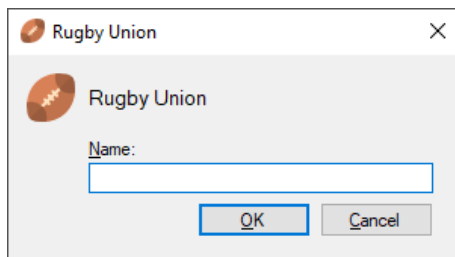
Additionally, the user may use the Save As command any time a Rugby Union is open. This is useful when the user wants to change the name of the file that the data are written into.

The Save As dialog box will default the file name to that of the Rugby Union plus a “.txt” file extension.



Rugby Union properties

Shortcut Key: F4

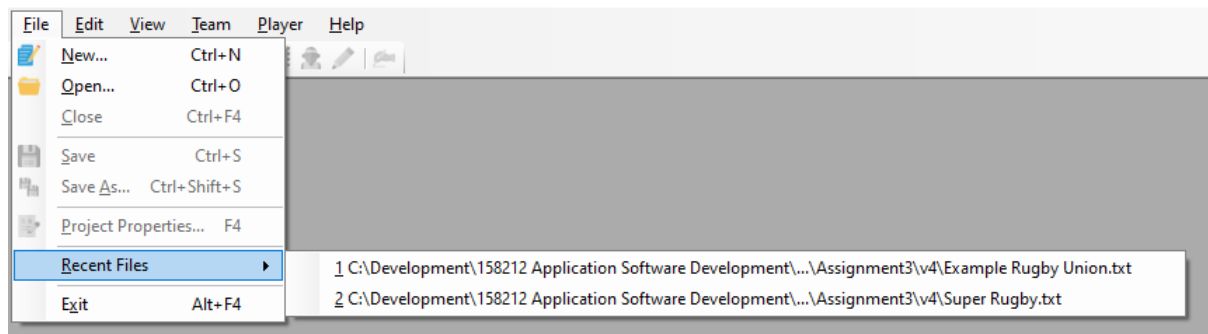


Using the Project properties menu item from the File menu shows the same dialog box that's used when creating a new Rugby Union.

This feature exists so that the user has the ability to rename the Rugby Union.

Recent Files

The Recent Files sub menu is provided so that there is a convenient mechanism to load Rugby Union files that were recently opened.

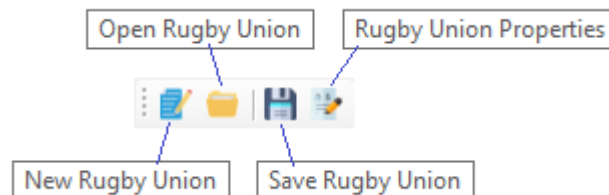


The application will remember the last ten open files. This is achieved by saving the full paths to the last ten files within a file named “Recent Files.txt”.

This file is saved within the same directory as the application. If the user invoking the application does not have write access to the application’s directory, then the recent files will not be saved between invocations of the application.

Rugby Union Toolbar

The Rugby Union toolbar provides a fast way to execute common Rugby Union commands. The available commands are: New Rugby Union, Open Rugby Union, Save Rugby Union, Rugby Union properties.



The toolbar is context aware; it will disable its buttons if the current context deems the command superfluous. The following table explains the various contexts.



No document is open, therefore the Save and properties commands are superfluous.



A document is open and it has not been modified, therefore the Save command is superfluous.



A document is open and has been modified. All commands are available.

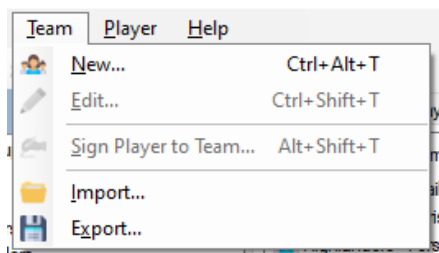
Managing Teams

Teams are managed via the tree control and the Teams tabbed document.

Creating a new Team

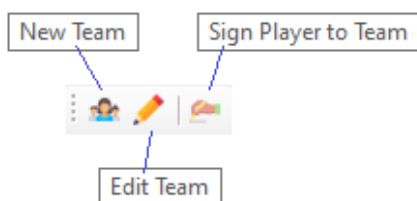
Shortcut Key: Ctrl+Alt+T

There are four ways to create a new Team. The following table describes each of them.



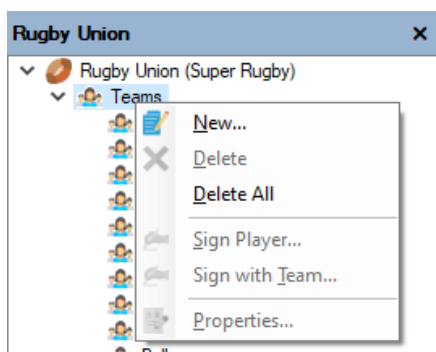
Team menu

Use the New menu item from the Team menu to invoke the Team properties dialog box.



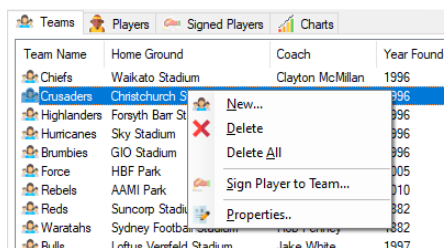
Team toolbar

Use the New Team button from the Team toolbar to invoke the Team properties dialog box.



Tree control

After right clicking on the Teams node within the Tree control, use the New menu item from the context menu to invoke the Team properties dialog box.



Teams tabbed document

After right clicking anywhere within the Teams tabbed document, use the New menu item from the context menu to invoke the Team properties dialog box.

The Team properties dialog box (Create New)

Add Team

Team

Name:

Home Ground:

Coach:

Region:

Year Founded:

Players

(no players signed to team) [Choose...](#)

The dialog box starts with empty fields, except for the Year Founded. No Players will be signed to the Team (if any are available) when a new Team is created.

The application requires the user to enter a value for each field of the Team, however, it does not require Signed Players.

The Name, Home Ground, Coach, and Region fields can consist of any character except the ; character.

The Year Founded field must be numeric.

Duplicate Team names are disallowed. The application will check for duplication when the OK button is used.

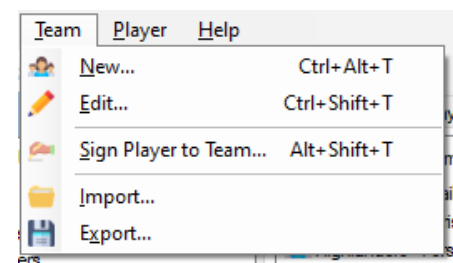
To create a Team, enter a value for each field and use the OK button. The new Team will be added to the Tree control and the Teams tabbed document.

The user may add Players to the Team at this time if desired. See the [Choosing Players for the Team](#) section for more information.

Editing an existing Team

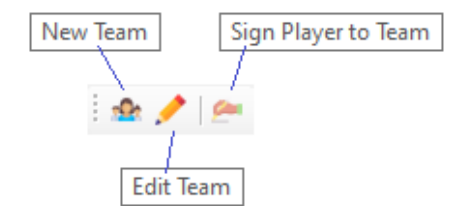
Shortcut Key: Ctrl+Shift+T

There are four ways to edit an existing Team. The following table describes each of them.



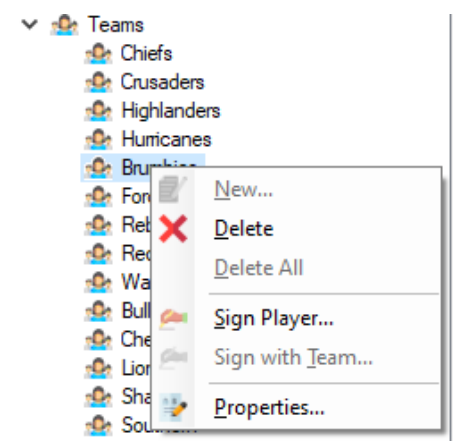
Team menu

After selecting a Team within the main window, use the Edit menu item from the Team menu to invoke the Team properties dialog box.



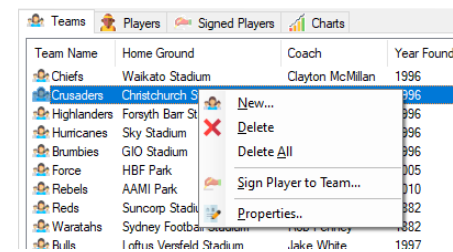
Team toolbar

After selecting a Team within the main window, use the Edit Team button from the Team toolbar to invoke the Team properties dialog box.



Tree control

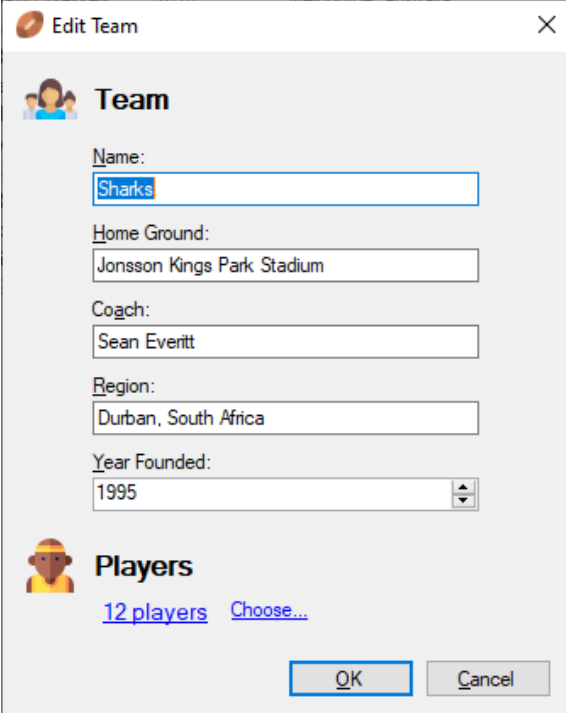
After right clicking on a Team within the Tree control, use the properties menu item from the context menu to invoke the Team properties dialog box.



Teams tabbed document

After right clicking on a Team within the Teams tabbed document, use the New menu item from the context menu to invoke the Team properties dialog box.

The Team properties dialog box (Edit Existing)



Edit Team

Team

Name:

Home Ground:

Coach:

Region:

Year Founded:

Players

[12 players](#) [Choose...](#)

The dialog box starts with the fields populated with the state of the selected Team. If the Team has Signed Players then the Players link at the bottom of the dialog box will indicate the number of Players.

The user may change the value of any field and then use the OK button to accept the changes.

The application requires that no field contains the ; character.

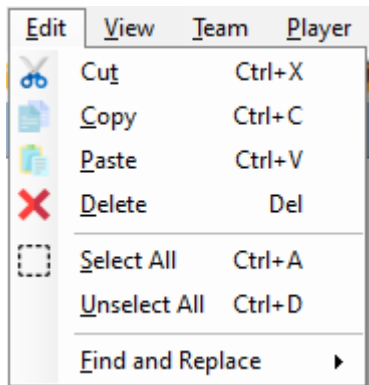
Duplicate Team names are disallowed. The application will check for duplication when the OK button is used.

The user may edit the Players that are signed to this Team. See the [Choosing Players for the Team](#) section for more information.

Deleting an existing Team

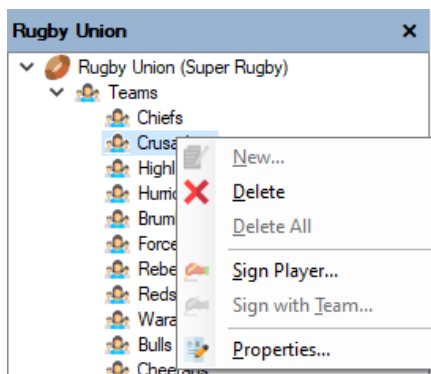
Shortcut Key: Del

There are three ways to delete an existing Team. The following table describes each of them.



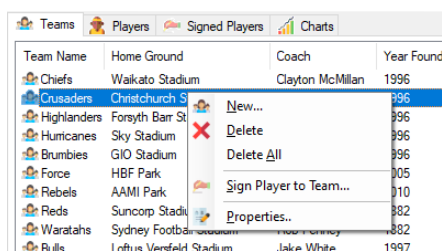
Edit menu

Select an existing Team within either the Tree control, Teams tabbed document, or both. Then use the Delete menu item from the Edit menu.



Tree control

After right clicking on an existing Team within the Tree control, use the Delete menu item from the context menu to delete the Team.



Teams tabbed document

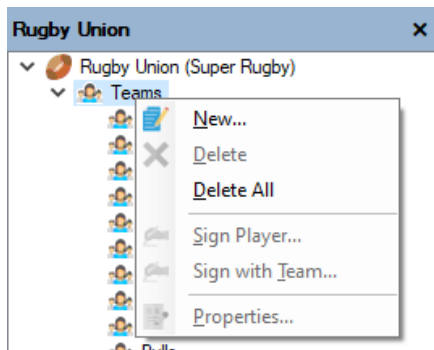
After right clicking on an existing Team within the Teams tabbed document, use the Delete menu item from the context menu to delete the Team.

Important delete Team note

Deleting a Team **also deletes Signed Players** for that Team. This does *not* delete the Players, just the *relationship* between the Player and the Team.

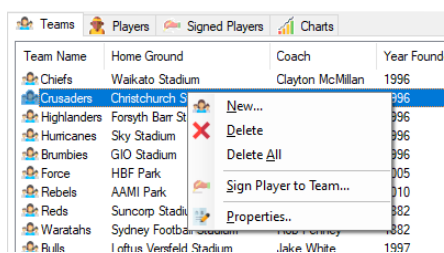
Deleting all existing Teams

There are two ways to delete all Teams. The following table describes both of them.



Tree control

After right clicking on the Teams node within the Tree control, use the Delete All menu item from the context menu to delete all existing Teams.



Teams tabbed document

After right clicking anywhere within the Teams tabbed document, use the Delete All menu item from the context menu to delete all existing Teams.

Important delete all Teams note

Deleting all Teams **also deletes all Signed Players**. This does *not* delete all the Players, just the *relationship* between the Players and the Teams.

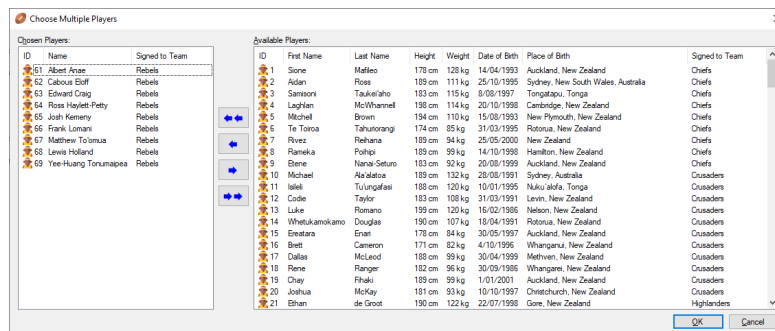
Choosing Players for the Team

Players can be assigned to a Team one by one, or for a much faster approach, multiple Players can be selected and signed to the Team simultaneously.

One by one Player signing is achieved via the Sign Player to Team dialog box. Signing multiple Players simultaneously is achieved via the Choose Multiple Players dialog box.



Sign Player to Team dialog box

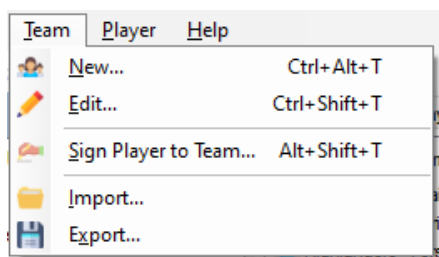


Choose Multiple Players dialog box

One by one Player signing

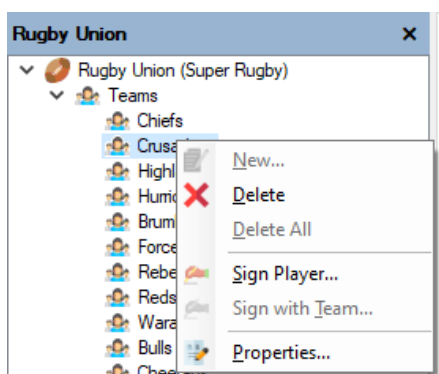
Shortcut Key: Alt+Shift+T

There are seven ways to invoke the Sign Player to Team dialog box. The following table describes five of them. The other two are described in the [Editing an existing Signed Player](#) section.



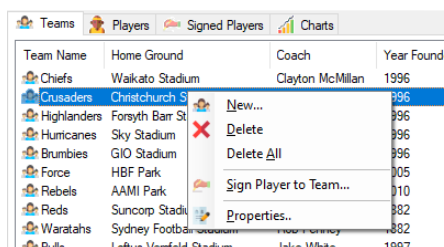
Team menu

Select an existing Team within either the Tree control, Teams tabbed document, or both. Then use the Sign Player to Team menu item.



Tree control

After right clicking on an existing Team within the Tree control, use the Sign Player menu item from the context menu.



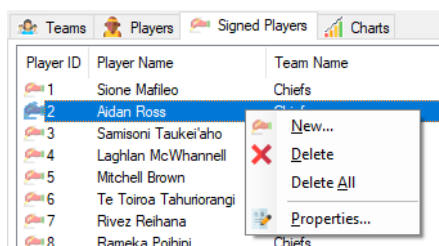
Teams tabbed document

After right clicking on an existing Team within the Teams tabbed document, use the Sign Player to Team menu item from the context menu.



Signed Players tabbed document 1

After right clicking anywhere within the Signed Players tabbed document, use the New menu item from the context menu

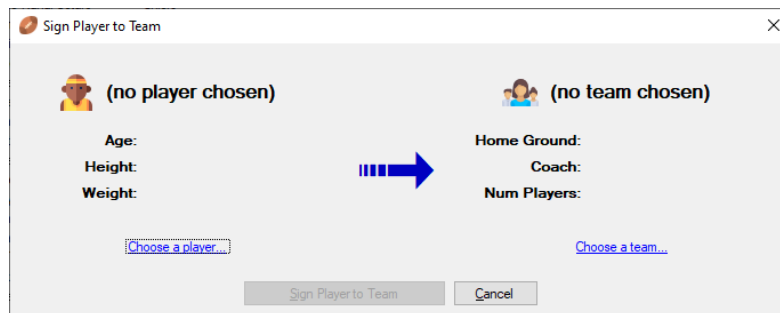


Signed Players tabbed document 2

After right clicking on an existing Signed Player within the Signed Players tabbed document, use the properties menu item from the context menu.

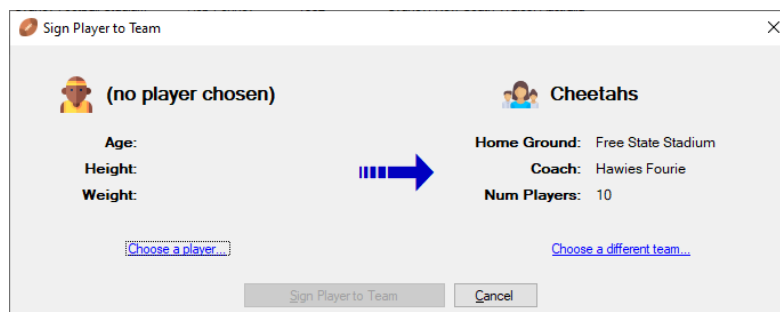
Sign Player to Team dialog box

When the Sign Player to Team dialog box is invoked it is initialised with whatever contextual data are available. If a Team is selected then that Team's information is loaded into the dialog box. Likewise for a selected Player.

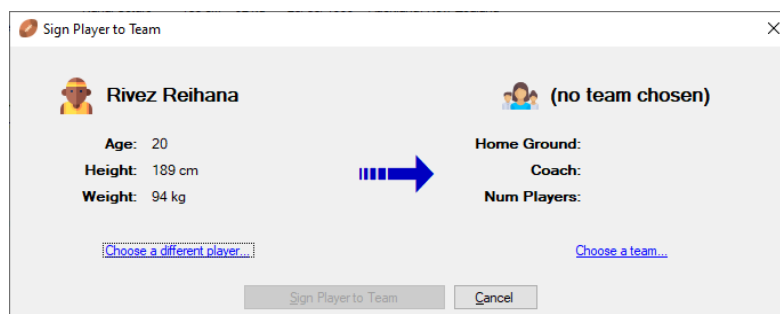


This example shows the dialog box with neither a Team nor a Player loaded.

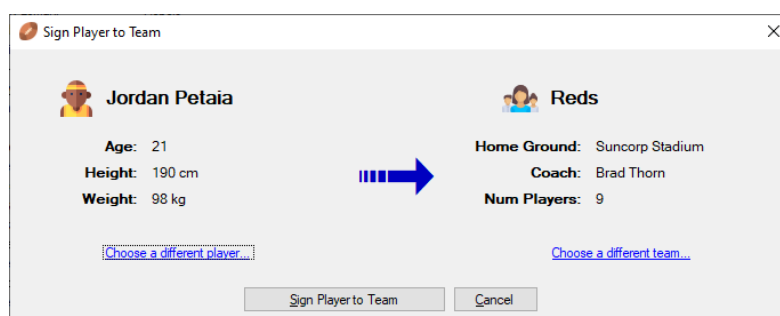
The Sign Player to Team button will not enable until both a Team and Player are chosen.



This example shows a Team loaded but not a Player.



This example shows a Player loaded but not a Team.



This example shows both a Team and a Player loaded. A context for this use case is double clicking a Signed Player within the Signed Players tabbed document.

Notice the Sign Player to Team button is enabled.

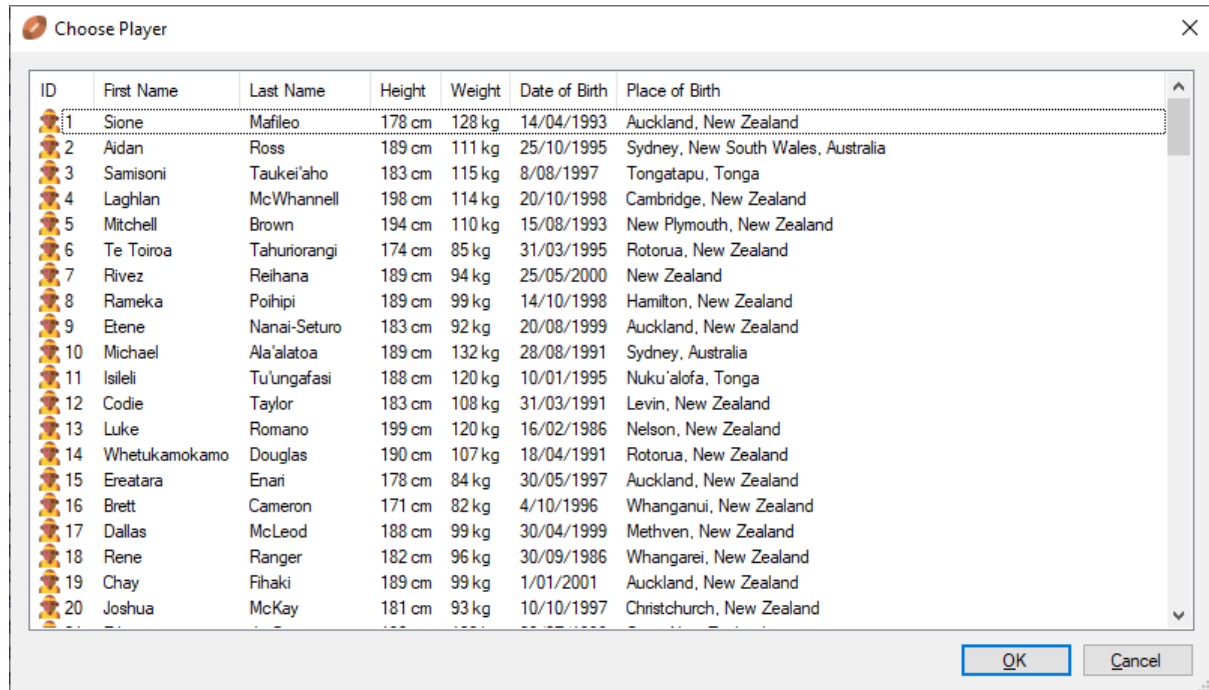
To perform the actual signing command choose a Team and a Player, then click the Sign Player to Team button.

To choose a Player, click the Choose a Player/Choose a different Player link. This will open the [Choose Player dialog box](#).

To choose a Team, click the Choose a Team/Choose a different Team link. This will open the [Choose Team dialog box](#).

Once both are chosen the Sign Player to Team button will enable.

Choose Player dialog box

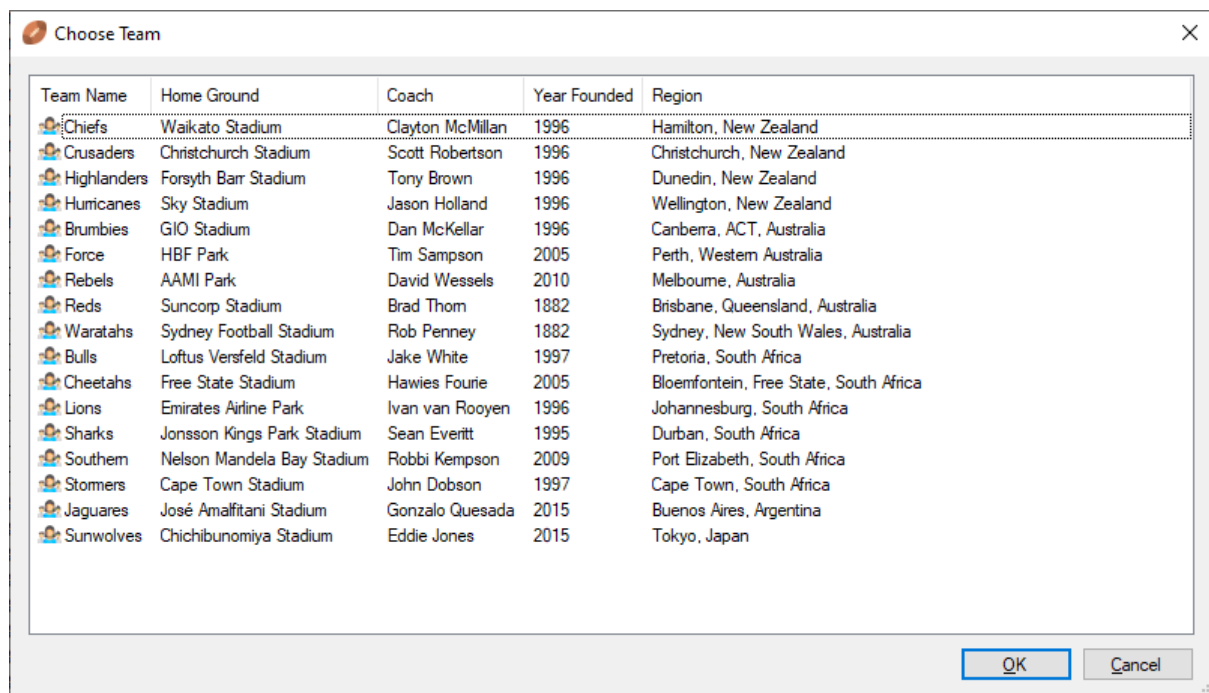


Double clicking a Player from this list is one way to choose a Player. The other way is to select a Player then click the OK button.

If there are no Players available then the user will not be able to inform the application of a Player choice.

The columns within this dialog box are sortable by clicking on the column headers. If the context that invoked this dialog box contained a selected Player, then this dialog box will select that Player when it is invoked.

Choose Team dialog box



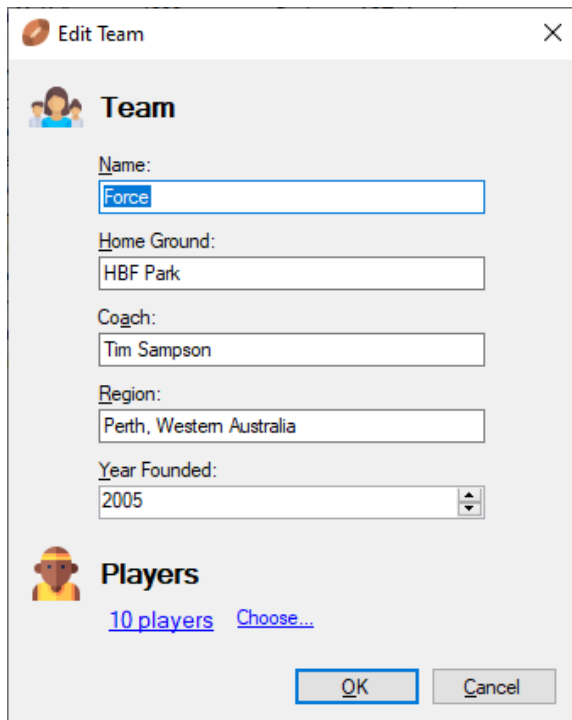
Double clicking a Team from this list is one way to choose a Team . The other way is to select a Team then click the OK button.

If there are no Teams available then the user will not be able to inform the application of a Team choice.

The columns within this dialog box are sortable by clicking on the column headers. If the context that invoked this dialog box contained a selected Team, then this dialog box will select that Team when it is invoked.

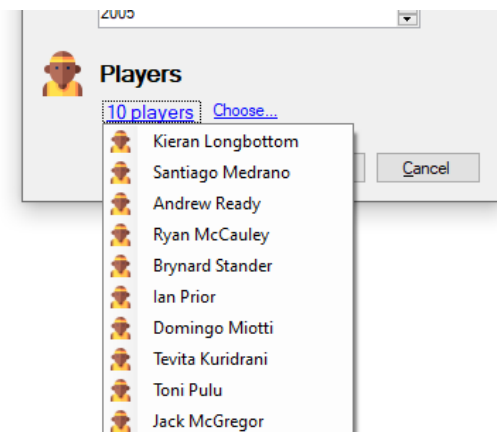
Multiple simultaneous Player signing

This feature is accessed when creating a new Team, or editing an existing Team. The Team properties dialog box contains a link that invokes the Choose Multiple Players dialog box.



The 'Edit Team' dialog box is shown. It has a title bar with a close button. The 'Team' section includes fields for Name (Force), Home Ground (HBF Park), Coach (Tim Sampson), Region (Perth, Western Australia), and Year Founded (2005). The 'Players' section shows '10 players' and a 'Choose...' link. At the bottom are 'OK' and 'Cancel' buttons.

Begin the process by invoking the Team properties. For this example, the Force Team was double clicked within the Teams tabbed document.

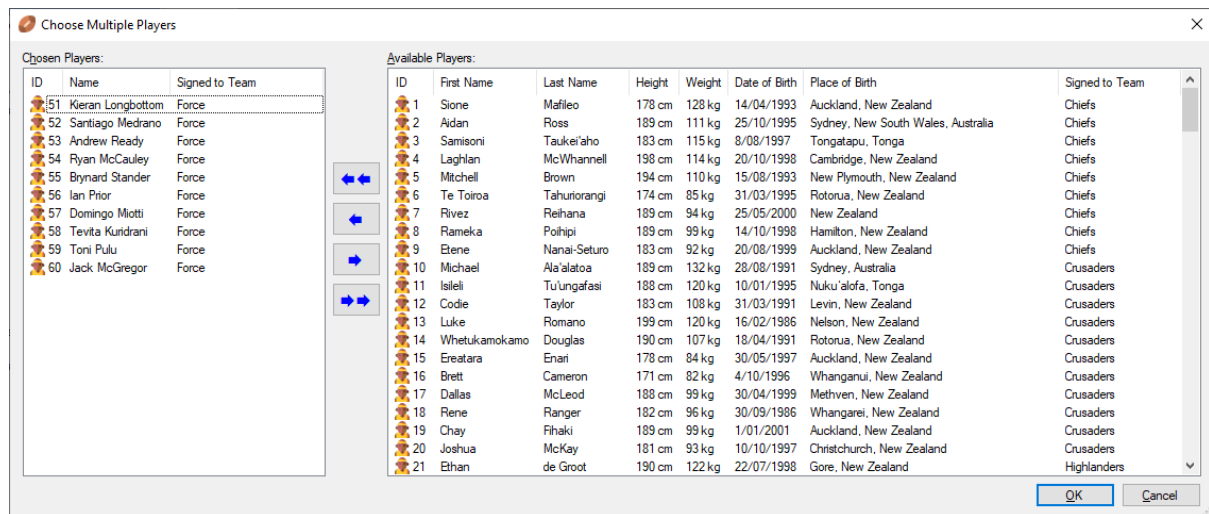


The 'Choose Multiple Players' dialog box is shown. It lists 10 players: Kieran Longbottom, Santiago Medrano, Andrew Ready, Ryan McCauley, Brynard Stander, Ian Prior, Domingo Miotti, Tevita Kuridrani, Toni Pulu, and Jack McGregor. The '10 players' link is highlighted, and the 'Choose...' link is visible. A 'Cancel' button is at the bottom right.

The Players currently signed to the Team can be viewed by clicking the 'X Players' link, where X is the amount of currently Signed Players.

Use the Choose link to open the [Choose Multiple Players dialog box](#).

Choosing multiple Players from the set of available Players, and unambiguously indicating the chosen set of Players, requires a large dialog box.



The list of chosen Players is on the left. If no Players have been chosen then this list will be empty.

If the context that invoked this dialog box contained one or more chosen Players, then those Players will be loaded into the left hand list box.

The list box on the right contains all available Players. As Players are chosen they are moved from the right hand list box to the left hand list box. If the user 'unchoses' a Player then that Player is moved back to the right hand list box.

The act of choosing a Player is performed by the two buttons with left facing arrows. The double left arrow button chooses all available Players. The single left arrow button chooses the selected Player or Players.

The act of 'unchoosing' a Player is performed by the two buttons with right facing arrows. The double right arrow button returns all chosen Players to the set of available Players. The single right arrow returns the selected chosen Player or Players to the set of available Players.

If there are no Players available then the user will not be able to inform the application of a set of chosen Players.

The user uses the OK button to indicate to the application that they have made their final selection. The application will prompt to confirm an empty selection, but it will not prohibit this choice. If there are no Players available then this prompt will always occur.

Choosing an empty set of Players is one way to remove all Signed Players from a Team.

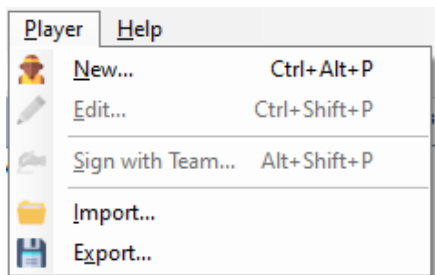
Managing Players

Players are managed via the tree control and the Players tabbed document.

Creating a new Player

Shortcut Key: Ctrl+Alt+P

There are four ways to create a new Player. The following table describes each of them.



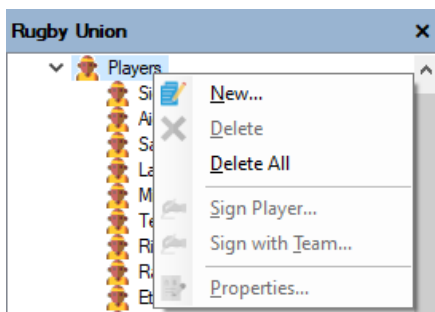
Player menu

Use the New menu item from the Player menu to invoke the Player properties dialog box.



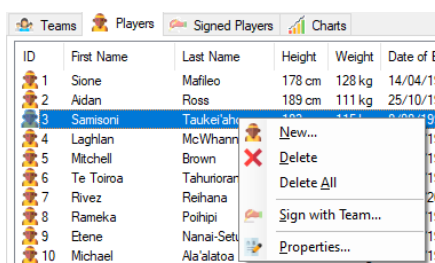
Player toolbar

Use the New Player button from the Player toolbar to invoke the Player properties dialog box.



Tree control

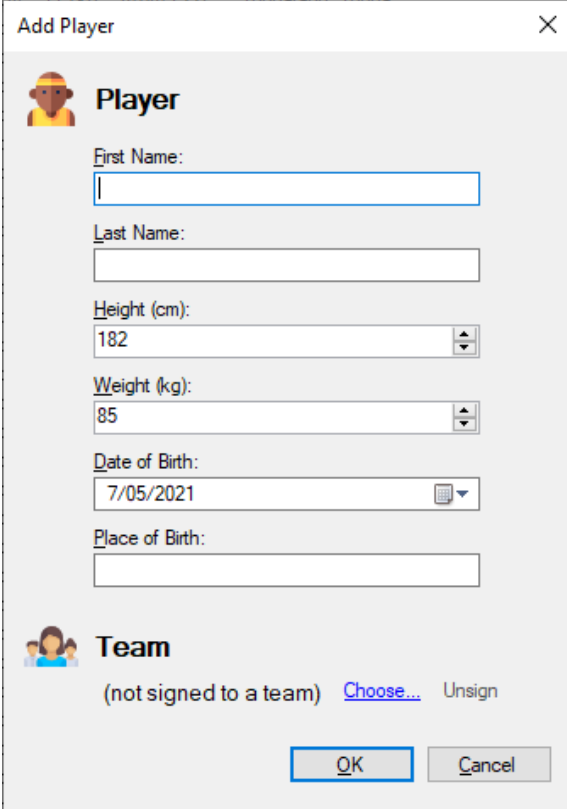
After right clicking on the Players node within the Tree control, use the New menu item from the context menu to invoke the Player properties dialog box.



Players tabbed document

After right clicking anywhere within the Players tabbed document, use the New menu item from the context menu to invoke the Player properties dialog box.

The Player properties dialog box (Create New)



Add Player

Player

First Name:

Last Name:

Height (cm):

Weight (kg):

Date of Birth:

Place of Birth:

Team

(not signed to a team) [Choose...](#) [Unsign](#)

The dialog box starts with the string fields empty, and the numeric and date fields with default values. The Player will not be signed to a Team (if one is available) when a new Player is created.

The application requires the user to enter a value for each field of the Player, however, it does not require a Team signing.

The First Name, Last Name, and Place of Birth fields can consist of any character except the ; character.

The Height and Weight fields must be numeric.

The Date of Birth field must be a date. The youngest allowable age is 18 years old, the oldest is 40.

Duplicate Player names are disallowed. The application will check for duplication when the OK button is used.

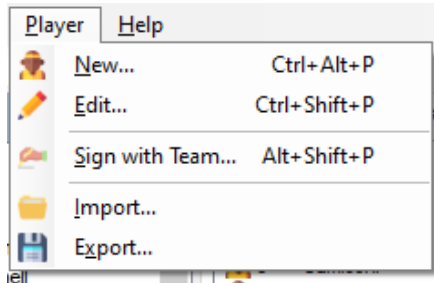
To create a Player, enter a value for each field and use the OK button. The new Player will be added to the Tree control and the Players tabbed document.

The user may choose a Team for the Player at this time if desired. See the [Choosing a Team for the Player](#) section for more information.

Editing an existing Player

Shortcut Key: Ctrl+Shift+P

There are four ways to edit an existing Player. The following table describes each of them.



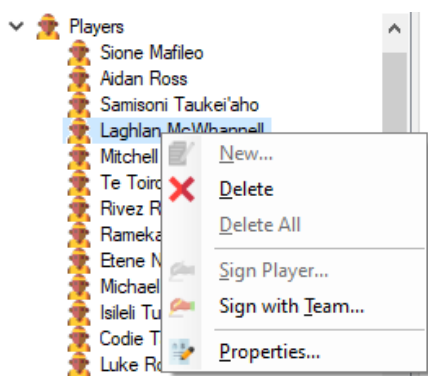
Player menu

After selecting a Player within the main window, use the Edit menu item from the Player menu to invoke the Player properties dialog box.



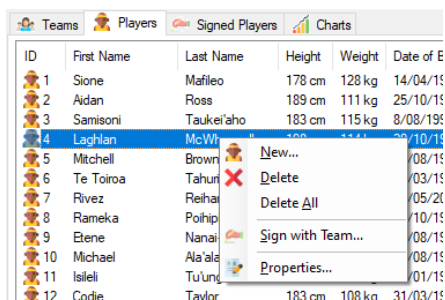
Player toolbar

After selecting a Player within the main window, use the Edit Player button from the Player toolbar to invoke the Player properties dialog box.



Tree control

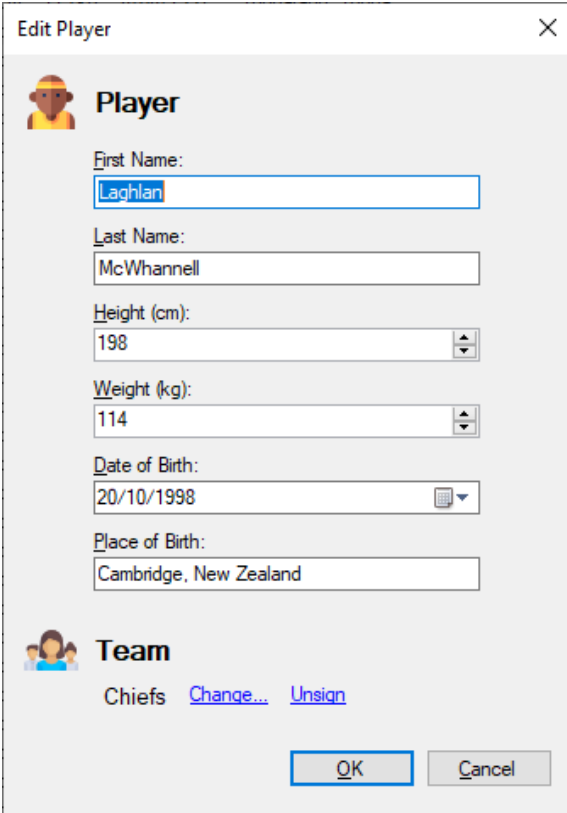
After right clicking on a Player within the Tree control, use the properties menu item from the context menu to invoke the Player properties dialog box.



Players tabbed document

After right clicking on a Player within the Players tabbed document, use the New menu item from the context menu to invoke the Player properties dialog box.

The Player properties dialog box (Edit Existing)



Edit Player

Player

First Name:

Last Name:

Height (cm):

Weight (kg):

Date of Birth:

Place of Birth:

Team

Chiefs [Change...](#) [Unsign](#)

The dialog box starts with the fields populated with the state of the selected Player.

If the Player has signed with a Team then the label at the bottom of the dialog box will indicate the Team and provide options to manage that relationship. The user can change the Team, and Unsign from a Team altogether.

The user may change the value of any field and then use the OK button to accept the changes.

The application requires that no field contains the ; character.

Duplicate Player names are disallowed. The application will check for duplication when the OK button is used.

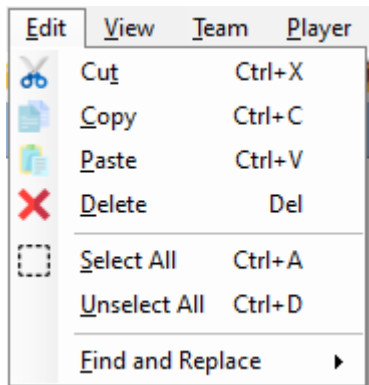
The user may change the Team that this Player is signed with. See the [Choosing a Team for the Player](#) section for more information.

The user may also unsign the Player from their current Team. There is no requirement for a Player to be signed to a Team.

Deleting an existing Player

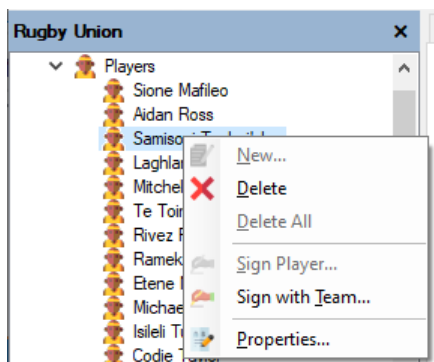
Shortcut Key: Del

There are three ways to delete an existing Player. The following table describes each of them.



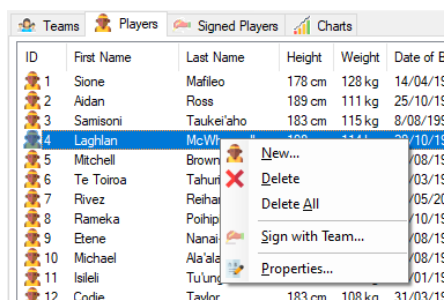
Edit menu

Select an existing Player within either the Tree control, Players tabbed document, or both. Then use the Delete menu item from the Edit menu.



Tree control

After right clicking on an existing Player within the Tree control, use the Delete menu item from the context menu to delete the Player.



Players tabbed document

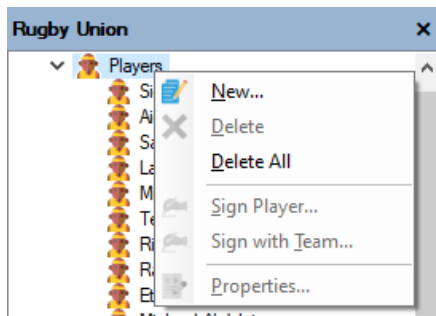
After right clicking on an existing Player within the Players tabbed document, use the Delete menu item from the context menu to delete the Player.

Important delete Player note

Deleting a Player **also deletes the Signed Player** associated with that Player. This does *not* delete the Team, just the *relationship* between the Player and the Team.

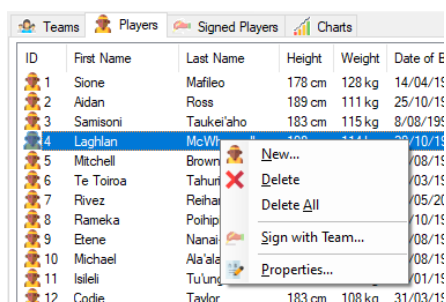
Deleting all existing Players

There are two ways to delete all Players. The following table describes both of them.



Tree control

After right clicking on the Players node within the Tree control, use the Delete All menu item from the context menu to delete all existing Players.



Players tabbed document

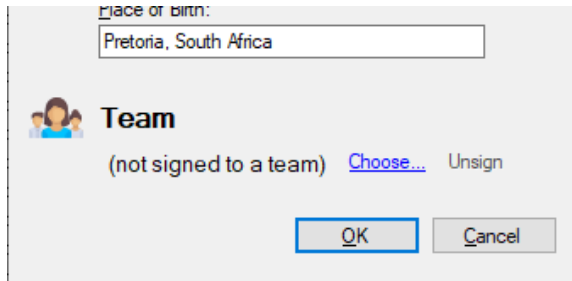
After right clicking anywhere within the Players tabbed document, use the Delete All menu item from the context menu to delete all existing Players.

Important delete all Players note

Deleting all Players **also deletes all Signed Players**. This does *not* delete all Teams, just the *relationships* between the Players and the Teams.

Choosing a Team for the Player

The user can choose a Team for a Player during interaction with the Player properties dialog box. The following table explains how the dialog box presents the functionality.

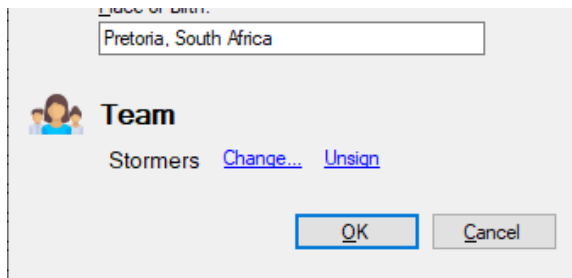


The screenshot shows a dialog box with a 'Place of birth' field containing 'Pretoria, South Africa'. Below this is a section titled 'Team' with a player icon. The text '(not signed to a team)' is displayed, followed by a blue 'Choose...' link and a grey 'Unsign' link. At the bottom are 'OK' and 'Cancel' buttons.

When a Player is not signed to a Team, the dialog box indicates this fact with a label.

The user can use the Choose link to indicate to the application which Team to sign this Player to.

Clicking the link opens the Choose Team dialog box. See the [Choose Team dialog box](#) section for more information.



The screenshot shows the same dialog box, but the 'Team' section now displays 'Stormers' next to the player icon. The text 'Stormers' is followed by a blue 'Change...' link and a blue 'Unsign' link. The 'OK' and 'Cancel' buttons remain at the bottom.

When a Player is signed to a Team, the dialog box indicates this fact with a label.

The user can use the Unsign link to perform the unsigning action. The dialog box will change to the 'unsigned state' shown just above.

Using the Choose link provides the same Choose Team dialog box workflow as above.

If there are no Teams available then the user will not be able to inform the application of a Team choice.

Note that choosing a Team for a Player can also be achieved by using the Player signing workflows. See the [One by one Player signing](#) and [Multiple simultaneous Player signing](#) sections for more information.

Managing Signed Players

Signed Players are managed via the tree control and the Signed Players tabbed document.

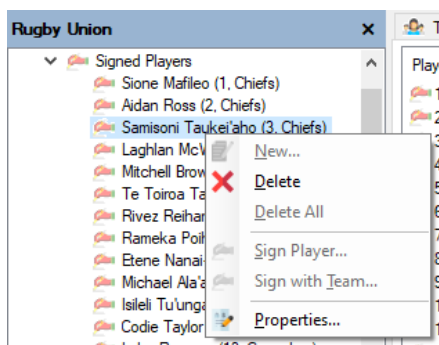
Creating a new Signed Player

There are many ways to create a new Signed Player. See the following sections for details.

- [Choosing Players for the Team](#)
- [One by one Player signing](#)
- [Multiple simultaneous Player signing](#)
- [Choosing a Team for the Player](#)

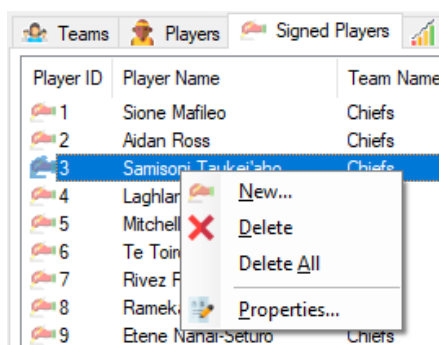
Editing an existing Signed Player

The previous bulleted list contains sections describing how to edit a Signed Player as well as creating a new one. The following table describes two more ways to invoke the Sign Player to Team dialog box so that a Signed Player can be edited.



Tree control

After right clicking on a Signed Player within the Tree control, use the properties menu item from the context menu to invoke the [Sign Player to Team dialog box](#).



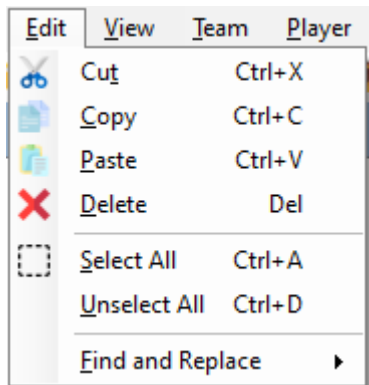
Signed Players tabbed document

After right clicking on a Signed Player within the Signed Players tabbed document, use the properties menu item from the context menu to invoke the [Sign Player to Team dialog box](#).

Deleting an existing Signed Player

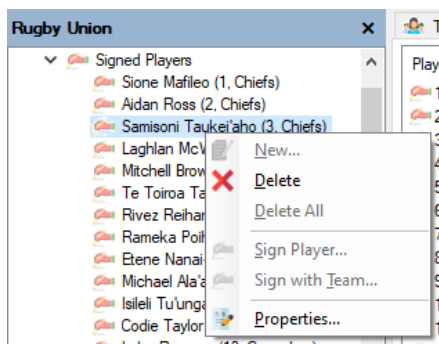
Shortcut Key: Del

There are four ways to delete an existing Signed Player. The following table describes each of them.



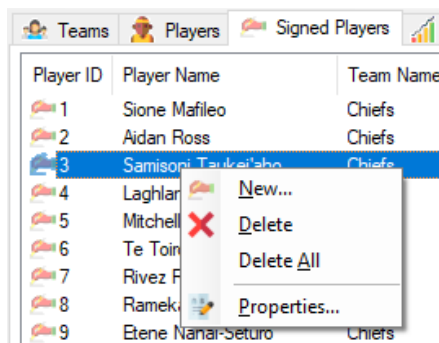
Edit menu

Select an existing Signed Player within either the Tree control, Signed Players tabbed document, or both. Then use the Delete menu item from the Edit menu.



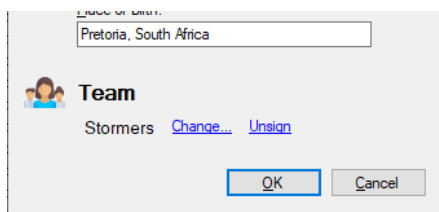
Tree control

After right clicking on an existing Signed Player within the Tree control, use the Delete menu item from the context menu to delete the Signed Player.



Signed Players tabbed document

After right clicking on an existing Signed Player within the Signed Players tabbed document, use the Delete menu item from the context menu to delete the Signed Player.

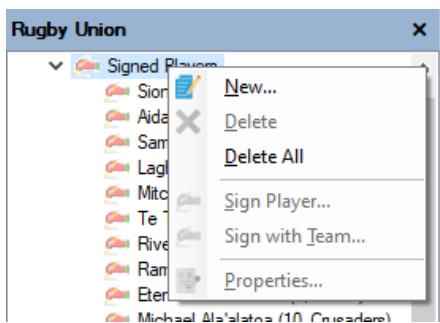


Player properties dialog box

Use the Unsign link, then click the OK button to unsign a Player from a Team.

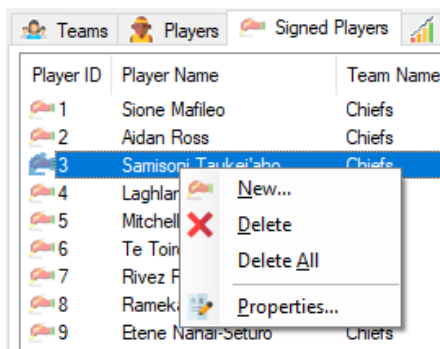
Deleting all existing Signed Players

There are two ways to delete all Signed Players. The following table describes both of them.



Tree control

After right clicking on the Signed Players node within the Tree control, use the Delete All menu item from the context menu to delete all existing Signed Players.



Signed Players tabbed document

After right clicking anywhere within the Signed Players tabbed document, use the Delete All menu item from the context menu to delete all existing Signed Players.

Clipboard Integration

Integration with the system Clipboard allows for data to be exchanged with external applications. It also provides a convenient way to create multiple Teams, Players, and Signed Players quickly.

Copying data to the Clipboard

Shortcut Key: Ctrl+C

The application's Tree control and its Listview controls all contain Clipboard integration. The Tree control does not support multi select and therefore only one Tree control item can be copied to the Clipboard at once.

The Listview controls support multi select and therefore allow multiple items to be copied to the Clipboard at once.

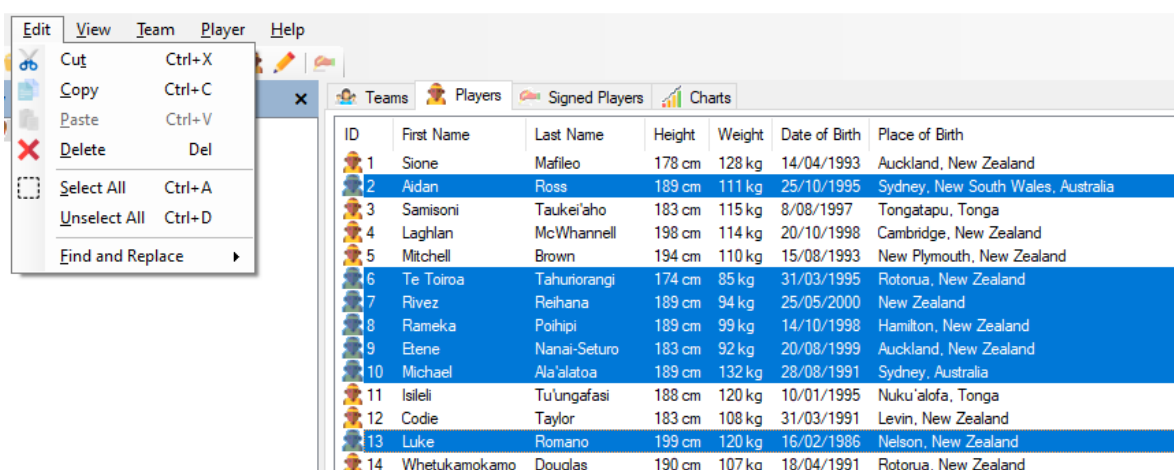
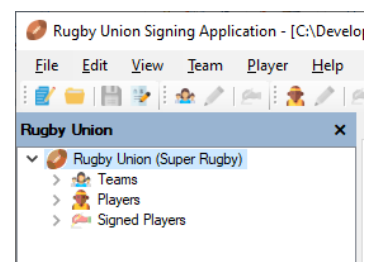
The following tables demonstrate some of the Clipboard support.

Copying the Rugby Union name

Select the root node within the Tree control.

Use the Copy menu item from the Edit menu, or press Ctrl+C. The Rugby Union's name will be copied to the Clipboard.

Use the Paste feature of another application (usually shortcut key Ctrl+V) to paste the Rugby Union's name from the Clipboard into that application.



Copying Teams, Players, and Signed Players

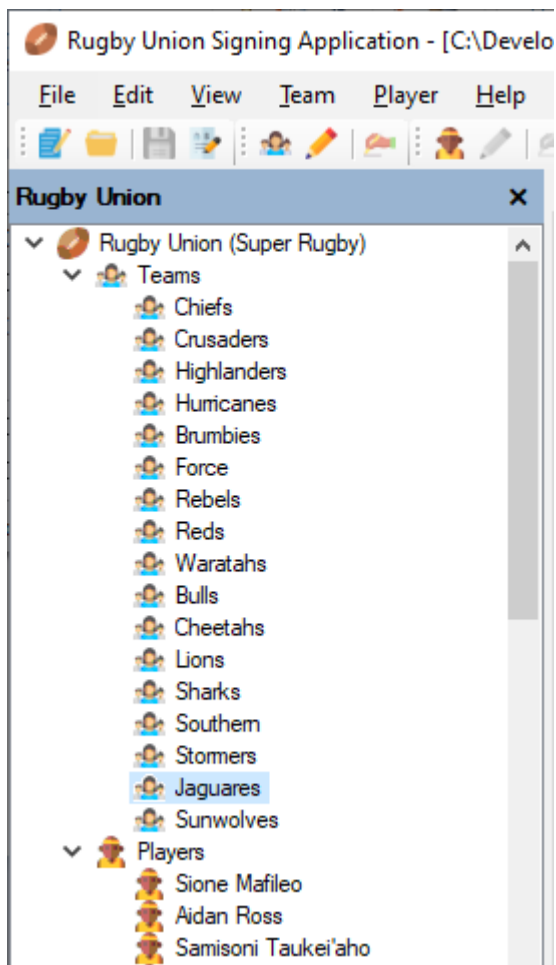
The Listview controls within the Teams, Players, and Signed Players tabbed documents allow multiple items to be selected at once. The user can then press Ctrl+C, or use the

Copy menu item from the Edit menu, to copy the selected items to the Clipboard.

When it is Teams being copied, just the Team information is copied, not the associated Signed Players.

When it is Players being copied, just the Player information is copied, not the associated Signed Players.

When it is Signed Players being copied, just the Signed Player information is copied, not the associated Teams and Players.



Copying from the Tree control

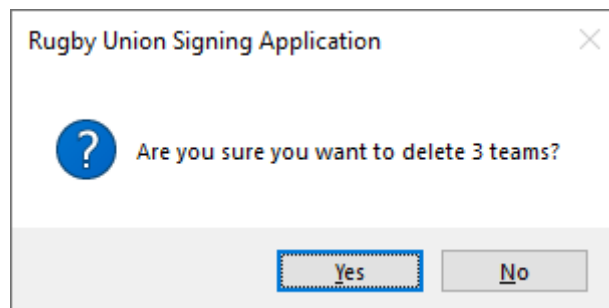
The Tree control allows items to be copied to the Clipboard. Due to it only allowing one item at a time to be selected, the user can only copy one Team, Player, or Signed Player at a time to the Clipboard.

Cutting data to the Clipboard

Shortcut Key: Ctrl+X

An alternative to copying data to the Clipboard is cutting data to the Clipboard. The difference is the data are removed from the application after they are copied to the Clipboard.

This is evident by the prompt the application displays when using the Cut menu item from the Edit menu:

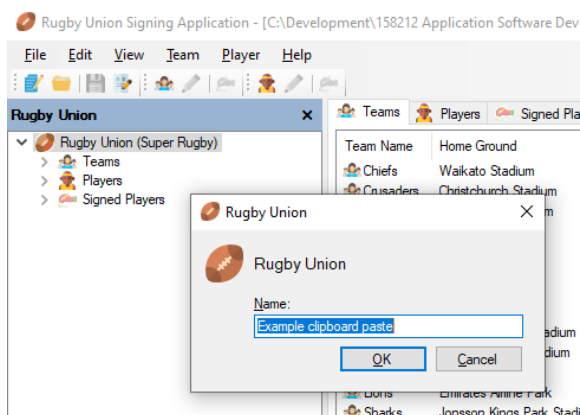


If the user chooses No the data are still copied to the Clipboard. If the user chooses Yes then the data are deleted from the application, but are still on the Clipboard.

Pasting data from the Clipboard

Shortcut Key: Ctrl+V

The user can paste four types of data into the application: a name for the Rugby Union, a single Team, a single Player, a single Signed Player.



Pasting a name for the Rugby Union

Copy plain text to the Clipboard from anywhere. It must be plain; any text decorated with styles such as bold, underline, etc, will be rejected.

Select the root node from within the Tree control. Press Ctrl+V, or use the Paste menu item from the Edit menu.

The application responds by invoking the [Rugby Union properties](#) dialog box. The text from the Clipboard will be copied into the text box.

If the user uses the OK button then the Rugby Union will be renamed.

Pasting Teams, Players, and Signed Players

The Tree control and Listview controls support pasting from the Clipboard. There are three requirements on the Clipboard data for this to work:

1. Plain text only
2. The data format must match the destination
3. A single item only

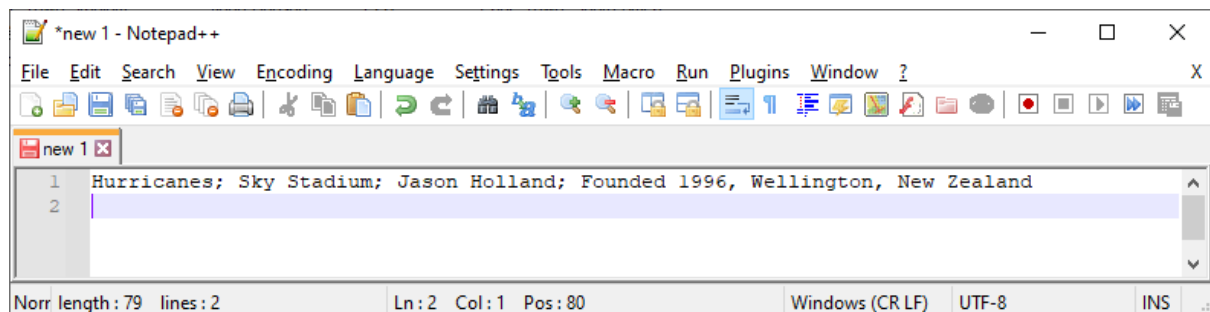
The first and third requirements are straightforward: do not try to paste anything other than plain undecorated text, and do not try to paste lists of items.

The second requirement might sound intimidating, but the application demonstrates the required formats when it copies items to the Clipboard. The formats are also easily shown when [Saving an Opened Rugby Union](#) to a file, then opening that file within a Text Editor.

The copy and paste paradigm creates a convenient way to create data within the application. See the [Conveniently create Teams, Players, and Signed Players](#) section for more information.

Data Format for Teams

To demonstrate the data format for Teams, select a Team within either the Tree control or the Teams tabbed document, press Ctrl+C, open a Text Editor and paste the information. The result will look like this:

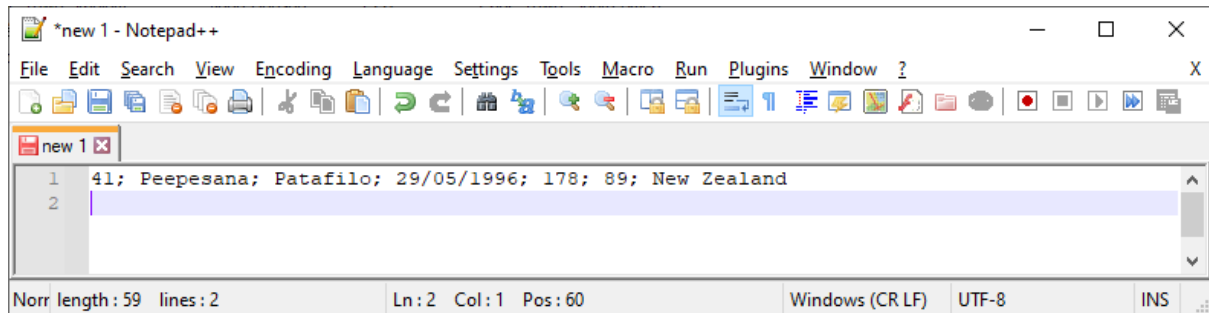


Change the name Hurricanes to something else, change Wellington to something else. Copy the entire line to the clipboard. Within the Rugby Union application, select any Team within the Tree control or the Teams tabbed document, then press Ctrl+V. Any invalid data will not be loaded by the application.

The application responds by invoking the Team properties dialog box, and copying the clipboard information into the dialog box's fields. Clicking the OK button will create a new Team with the data.

Data format for Players

To demonstrate the data format for Players, select a Player within either the Tree control or the Players tabbed document, press Ctrl+C, open a Text Editor and paste the information. The result will look like this:

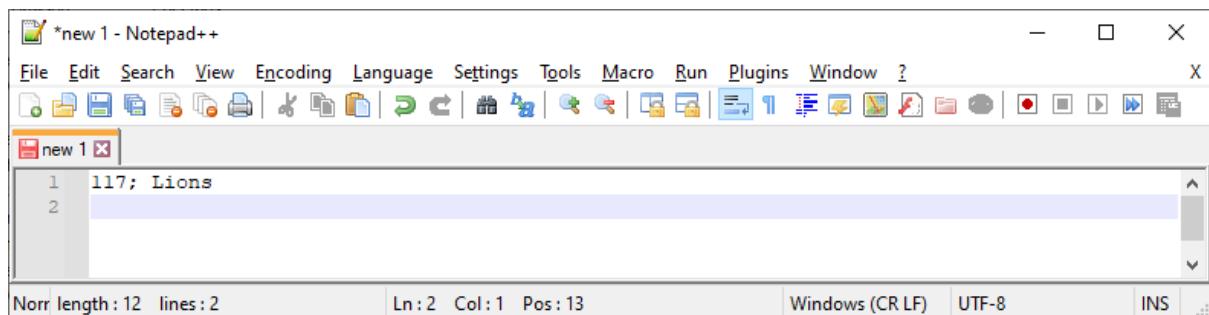


Change the name Peepesana to something else, change 29/05/1996 to something else. Copy the entire line to the clipboard. Within the Rugby Union application, select any Player within the Tree control or the Players tabbed document, then press Ctrl+V. Any invalid data will not be loaded by the application.

The application responds by invoking the Player properties dialog box, and copying the clipboard information into the dialog box's fields. Clicking the OK button will create a new Player with the data.

Data format for Signed Players

To demonstrate the data format for Signed Players, select a Signed Player within either the Tree control or the Signed Players tabbed document, press Ctrl+C, open a Text Editor and paste the information. The result will look like this:



Change the name Lions to Reds. Copy the entire line to the clipboard. Within the Rugby Union application, select any Signed Player within the Tree control or the Signed Players tabbed document, then press Ctrl+V. Any invalid data will not be loaded by the application.

The application responds by invoking the Sign Player to Team dialog box, and copying the clipboard information into the dialog box's fields. Clicking the Sign Player to Team button will create a new Signed Player with the data.

Conveniently create Teams, Players, and Signed Players

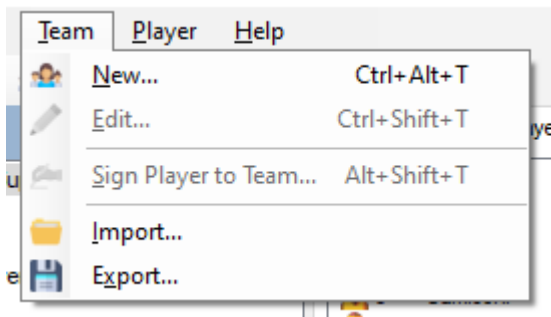
The copy and paste paradigm creates a convenient way to create data within the application.

From within the Teams tabbed document, select a Team, then press Ctrl+C, then press Ctrl+V. The application responds by invoking the Team properties dialog box. Change the Team name to something else and press OK. Press Ctrl+V again and create another Team. This workflow allows for fast creation of data.

The pattern works with the Tree control, and the other tabbed documents too.

Importing and Exporting Teams

The application allows Team data to be imported in bulk, and exported in bulk.



The Team menu contains the Import menu item and the Export menu item.

Using the Import menu item causes the application to prompt for a file to open.

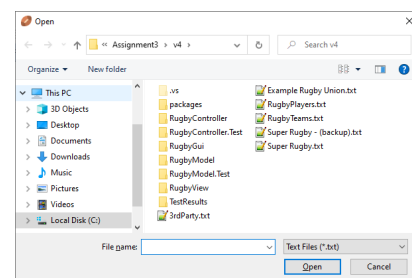
Using the Export menu item causes the application to prompt for a file to create.

Importing Teams

Importing a set of Teams involves identifying an existing file, the application loading and parsing that file, and then the application creating a new Team for each found record.

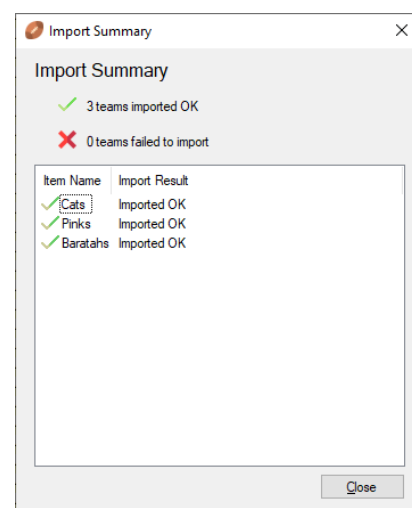
The user begins by clicking Import from the Team menu.

The dialog box to the right is shown. The user double clicks a file whose format matches the [Data Format for Teams](#).



The application will load and parse the file. So that the user can see the exact results of the importation, the Import Summary dialog box to the right is shown once the import is completed.

The import will not allow duplicates. Any duplicated data will be flagged with a red 'X' image and counted within the summary label at the top of the dialog box.

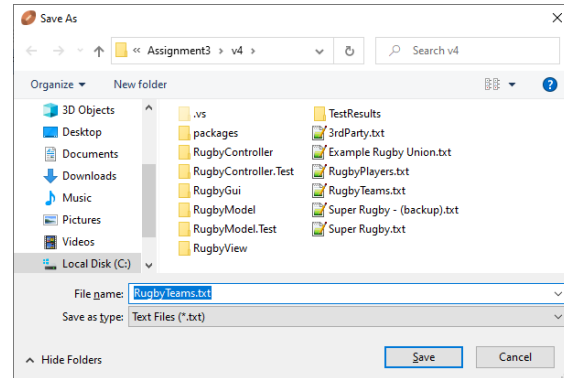


Exporting Teams

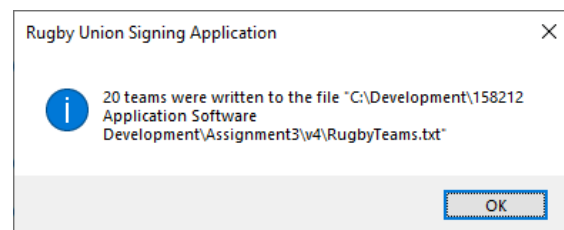
Exporting all Teams involves identifying a file to create or overwrite, the application creating a record in the [Data Format for Teams](#) for each loaded team, and then the application writing all of those records into the file.

The user begins by clicking Export from the Team menu.

The dialog box to the right is shown. The user enters a name for the file, accepts the default, or chooses an existing file to overwrite.

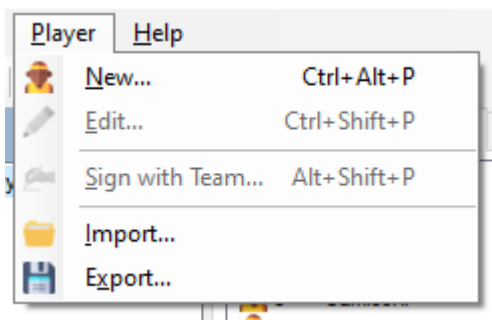


The application will internally create a record for each loaded team, and then write each record out to the chosen file. The record will be formatted as [Data Format for Teams](#).



Importing and Exporting Players

The application allows Player data to be imported in bulk, and exported in bulk.



The Player menu contains the Import menu item and the Export menu item.

Using the Import menu item causes the application to prompt for a file to open.

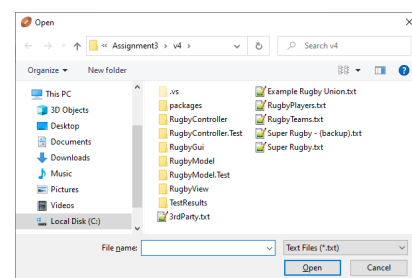
Using the Export menu item causes the application to prompt for a file to create.

Importing Players

Importing a set of Players involves identifying an existing file, the application loading and parsing that file, and then the application creating a new Player for each found record.

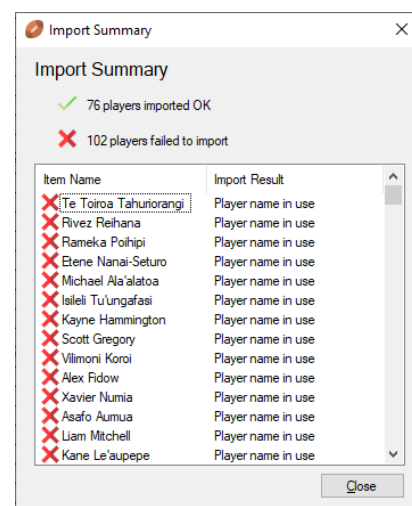
The user begins by clicking Import from the Player menu.

The dialog box to the right is shown. The user double clicks a file whose format matches the [Data Format for Players](#).



The application will load and parse the file. So that the user can see the exact results of the importation, the Import Summary dialog box to the right is shown once the import is completed.

The import will not allow duplicates. Any duplicated data will be flagged with a red 'X' image and counted within the summary label at the top of the dialog box.



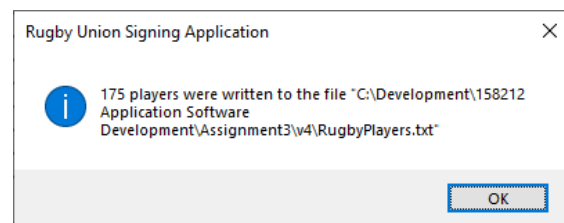
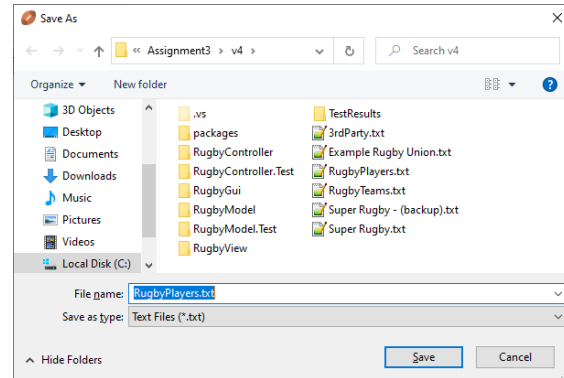
Exporting Players

Exporting all Players involves identifying a file to create or overwrite, the application creating a record in the [Data Format for Players](#) for each loaded Player, and then the application writing all of those records into the file.

The user begins by clicking Export from the Player menu.

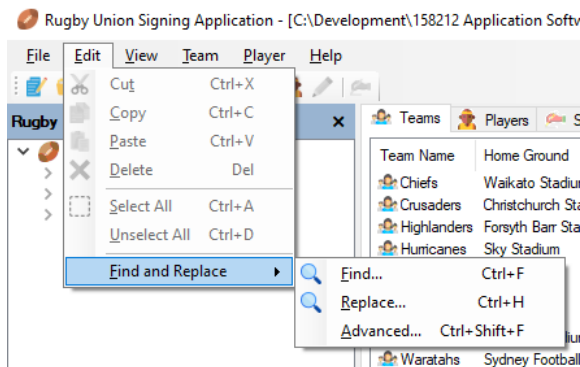
The dialog box to the right is shown. The user enters a name for the file, accepts the default, or chooses an existing file to overwrite.

The application will internally create a record for each loaded Player, and then write each record out to the chosen file. The record will be formatted as [Data Format for Players](#).



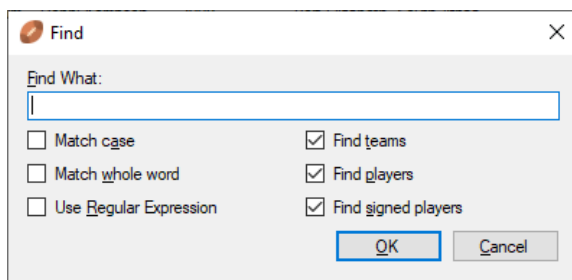
Find and Replace

All data within the application can be searched. The mechanism that the application uses is to present a Find dialog box, capture the user's choices, then run an internal algorithm to search for data that matches. The results of the search are presented in a window docked to the bottom of the main window.



Shortcut Key: Ctrl+F

The user begins a search operation by using the Find menu item within the Find and Replace sub menu. This sub menu is located within the Edit menu.



Using the aforementioned menu item causes the application to invoke the Find dialog box.

This dialog box remembers any previously entered values, and therefore will be pre-populated for each invocation after the first one.

Find Options

The find dialog box captures text to search for, and six options to change the behaviour of the search operation.

The following table describes each of these fields.

Find What

This field contains the text that is being searched for. There are no restrictions on what can be entered here.

Match case

By default the search operation is case insensitive. This means uppercase and lowercase letters will match one another if they are the same letter of the alphabet.

Tick this box to cause the search operation to match letters based on their case as well as their location within the alphabet.

Match whole word

By default the search operation is a "contains" match. This means that if any part of the data contains all of the "Find What" text exactly as typed, then the data will cause a match.

Tick this box to change the search operation to a whole word match. This means that all of the data within a field must match all of the “Find What” data.

Use Regular Expression

Ticking this box causes the search operation to treat the “Find What” text differently.

With this box ticked, the operation becomes pattern matching via a [Regular Expression engine](#).

With this box unticked, the operation is a simple “contains” or “whole word” text compare (based on the state of the “Match whole word” tick box).

Pattern matching via Regular Expressions is a topic too large for this user manual. A good resource for Regular Expressions is [here](#).

Find teams

Tick this box to search the fields within the Teams.

Find players

Tick this box to search the fields within the Players.

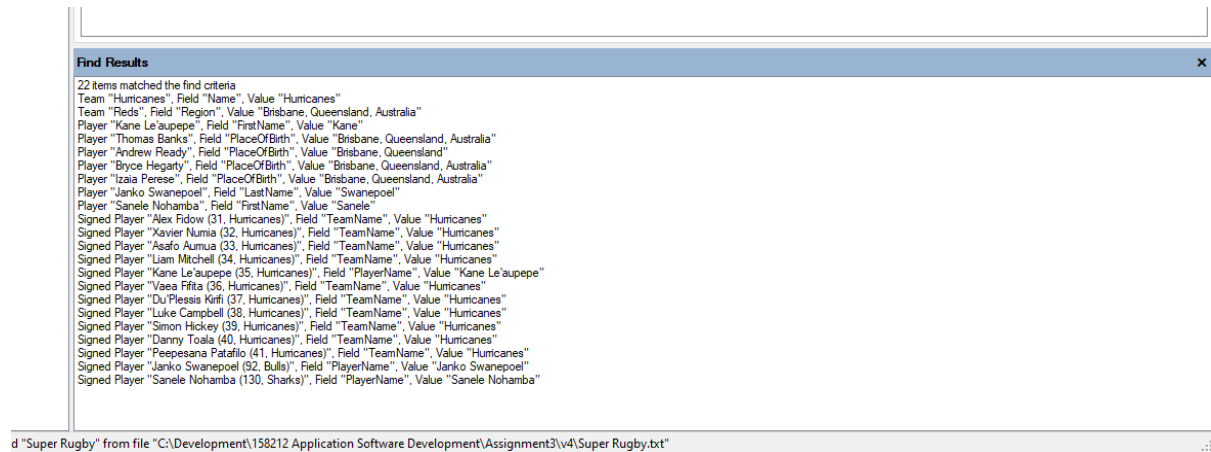
Find signed players

Tick this box to search the fields within the Signed Players.

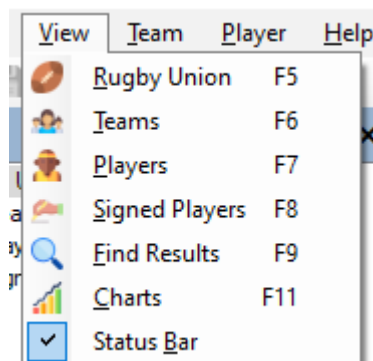
Note that at least one of these last three tick boxes must be ticked, and something must be entered into Find What before the dialog will run a search operation.

Find Results

Using the OK button within the Find dialog box begins a search operation. When that operation completes the results will be inserted into the Find Results window.



This example shows the results from searching for the text "ane" within the [Super Rugby Demonstration File](#).

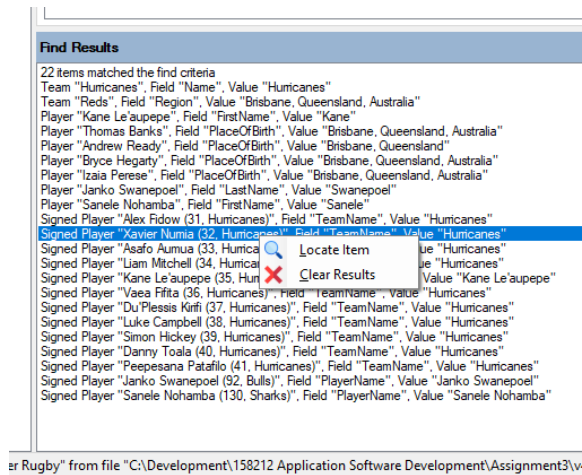


The Find Results window can be shown and hidden at any time by using the Find Results menu item from the View menu.

Shortcut key: F9

Locating the found item

The Find Results window allows the user to quickly locate the found item within both the Tree control and the applicable tabbed document.



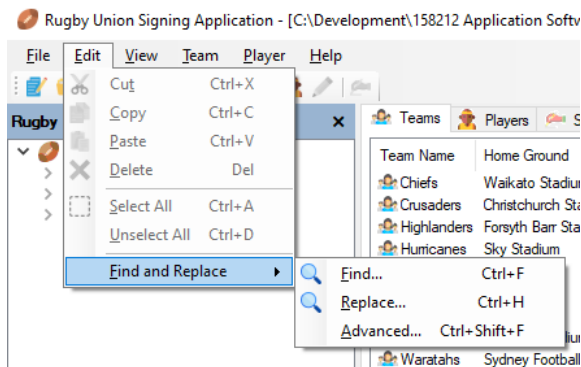
Right clicking on a found item causes the application to show a context menu at that location.

Clicking the Locate Item menu item will cause the Tree control to reveal the found item. The applicable tabbed document will also be made the current tab, and the item will be selected within the Listview inside that tab.

Another way to achieve the same result is by double clicking the found item.

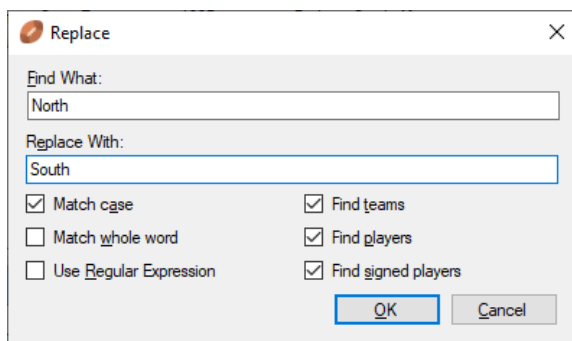
Replace

The application allows for found text to be replaced as the search operation is running.



Shortcut Key: Ctrl+H

The user begins a search and replace operation by using the Replace menu item within the Find and Replace sub menu. This sub menu is located within the Edit menu.



Using the aforementioned menu item causes the application to invoke the Replace dialog box.

This dialog box remembers any previously entered values, and therefore will be pre-populated for each invocation after the first one.

Replace Options

The Replace dialog box and its options are identical to the Find dialog box, except for the addition of a “Replace With” field.

The search and replace operation works as one would intuitively expect; if a field matches the search criteria, then its value is replaced with the “Replace With” text. However, there are a few restrictions placed upon the operation. The following table discusses the issues.

Team names are not replaced

The name of a Team uniquely identifies it. Replacing the name would require checking for duplicates, and cascading the rename throughout Signed Players.

Player IDs are not replaced

Player IDs are allocated and assigned internally. A user can search for them, but the management of the IDs must remain under the control of the application.

Player First Names are not replaced

The first name of a Player is part of a composite key that uniquely identifies it. Replacing the first name would require checking for duplicates, and cascading the rename throughout Signed Players.

Player Last Names are not replaced

The last name of a Player is part of a composite

key that uniquely identifies it. Replacing the last name would require checking for duplicates, and cascading the rename throughout Signed Players.

Data types are preserved

The search and replace operation will not attempt to replace an Integer with text, or a Date with text that is in an unexpected format.

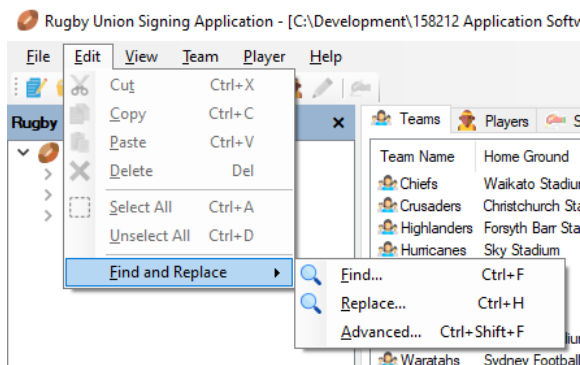
Signed Players are not replaced

Signed Players are relationships between Teams and Players. They consist entirely of two unique IDs and therefore fall under the rules above about replacing unique IDs.

Advanced Find and Replace

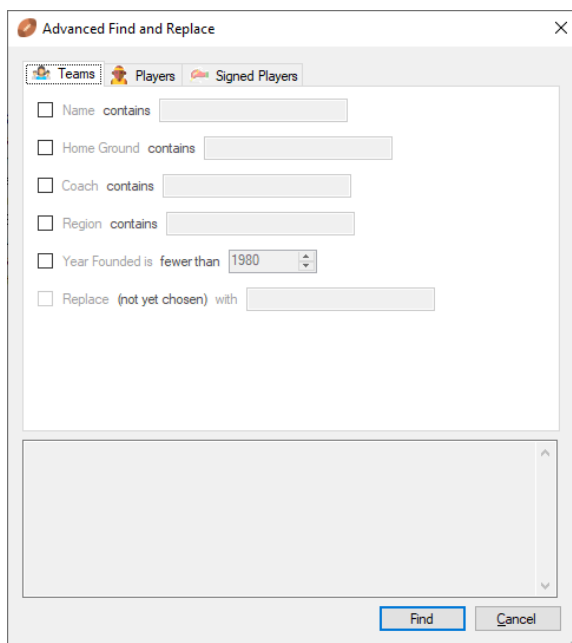
The application provides an Advanced Find and Replace operation. At its core, it's the same idea as the [Find and Replace](#) mechanism discussed earlier in this manual. It has two major points of difference:

- Very specific searching can be defined by the user
- Either Teams or Players or Signed Players are searched, not some combination of the three



Shortcut Key: Ctrl+Shift+F

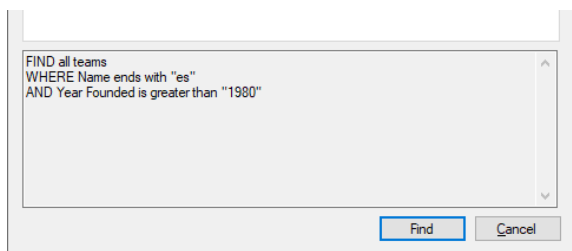
The user begins an advanced search operation by using the Advanced menu item within the Find and Replace sub menu. This sub menu is located within the Edit menu.



Using the aforementioned menu item causes the application to invoke the Advanced Find and Replace dialog box.

The tick boxes next to each field can be used to include that field within the search. The combination of fields can be anything the user wants.

This dialog box remembers any previously entered values, and therefore will be pre-populated for each invocation after the first one.



As the user ticks boxes for fields to include, chooses an operation for each field, then gives it a parameter, the dialog responds by showing the search query that will be run when the OK button is used.

Overview

The user will choose either Teams, Players, or Signed Players to search. The user cannot choose more than one type because the search criteria are about to get very specific.

After the user has chosen the type of entity to search, they choose which fields of that entity to search. From there, they choose how to match data within that field. This provides a mechanism for the user to be very specific with which data they want to locate.

After the user has made their Find criteria choices, they can optionally choose to replace whatever data is found.

Teams Advanced Find and Replace

The screenshot shows a dialog box titled "Advanced Find and Replace" with a close button (X) in the top right corner. It has three tabs: "Teams" (selected), "Players", and "Signed Players". Under the "Teams" tab, there are five search criteria, each with a checkbox and a text input field: "Name contains", "Home Ground contains", "Coach contains", "Region contains", and "Year Founded is fewer than 1980" (with a dropdown arrow). Below these is a "Replace (not yet chosen) with" checkbox and a text input field. At the bottom right are "Find" and "Cancel" buttons.

The Teams page lists each available field of a Team. The user can enable searching of a field by ticking the box next to a field.

When ticked, the individual controls for searching that field will enable.

This dialog box remembers any previously entered values, and therefore will be pre-populated for each invocation after the first one.

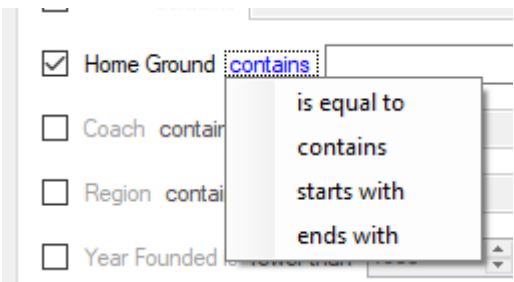
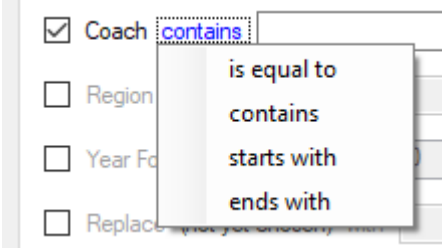
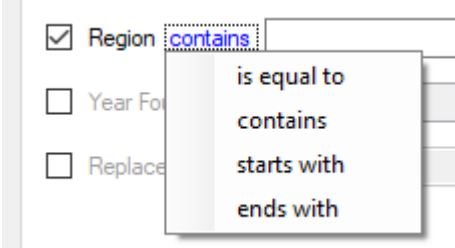
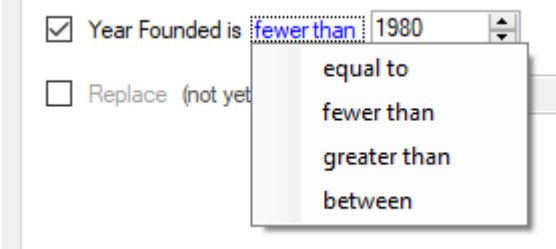
This screenshot shows the same dialog box, but with the "Name" checkbox checked. A dropdown menu is open next to the "contains" text, showing four options: "is equal to", "contains", "starts with", and "ends with". The "ends with" option is highlighted. Below the dialog box, there is an example of a valid choice: a checked checkbox next to "Name", followed by "ends with" and a text input field containing "es".

The Name field is text. The user can choose which operation to use from the shown list.

The user must provide a value for the operation.

For example the following choices are valid:

☒ Name ends with

	<p>The Home Ground field is text. The user can choose which operation to use from the shown list.</p> <p>The user must provide a value for the operation.</p> <p>For example the following choices are valid:</p> <p><input checked="" type="checkbox"/> Home Ground <u>contains</u> <input type="text" value="Park"/></p>
	<p>The Coach field is text. The user can choose which operation to use from the shown list.</p> <p>The user must provide a value for the operation.</p> <p>For example the following choices are valid:</p> <p><input checked="" type="checkbox"/> Coach <u>ends with</u> <input type="text" value="son"/></p>
	<p>The Region field is text. The user can choose which operation to use from the shown list.</p> <p>The user must provide a value for the operation.</p> <p>For example the following choices are valid:</p> <p><input checked="" type="checkbox"/> Region <u>contains</u> <input type="text" value="land"/></p>
	<p>The Year Founded field is numeric. The user can choose which operation to use from the shown list.</p> <p>The user must provide a value for the operation, or two values for the “between” operation.</p> <p>For example the following choices are valid:</p> <p><input checked="" type="checkbox"/> Year Founded is <u>between</u> <input type="text" value="1995"/> and <input type="text" value="2010"/></p>

An example of complete search criteria follows.

Advanced Find and Replace

Teams | **Players** | **Signed Players**

☐ Name contains

☒ Home Ground contains

☐ Coach contains

☒ Region ends with

☒ Year Founded is between and

☐ Replace (not yet chosen) with

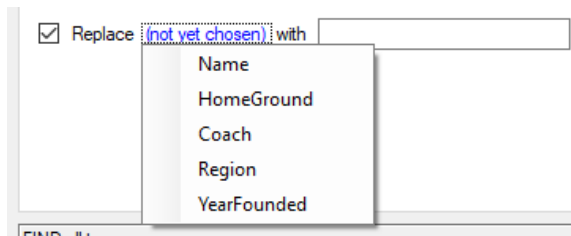
FIND all teams
WHERE Home Ground contains "park"
AND Region ends with "land"
AND Year Founded is between "1995" and "2010"

Find **Cancel**

The results will be inserted into the [Find Results window](#) in the same fashion as the [Find and Replace](#) discussed earlier.

Using the Replace option

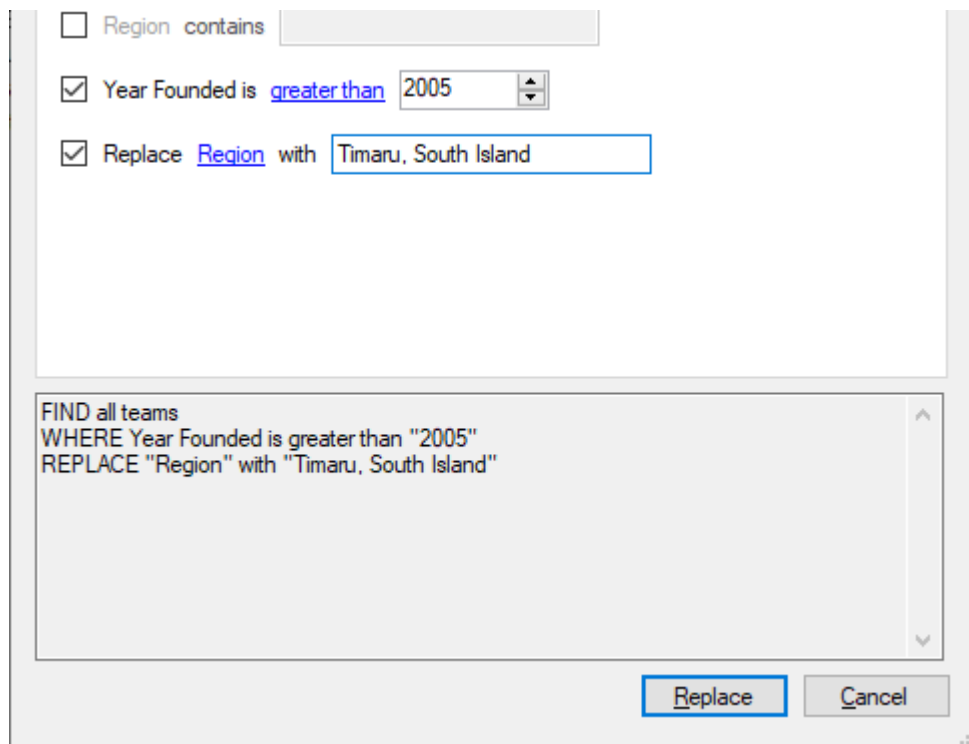
Optionally the user can choose to replace whatever data are found. This is achieved simply by ticking the box of the Replace option, choosing a field, and entering a parameter.



The screenshot shows a dialog box with a 'Replace' checkbox checked. Next to it is a dropdown menu currently showing '(not yet chosen)'. The dropdown menu is open, displaying a list of available fields: Name, HomeGround, Coach, Region, and YearFounded. To the right of the dropdown is a text input field for the replacement value.

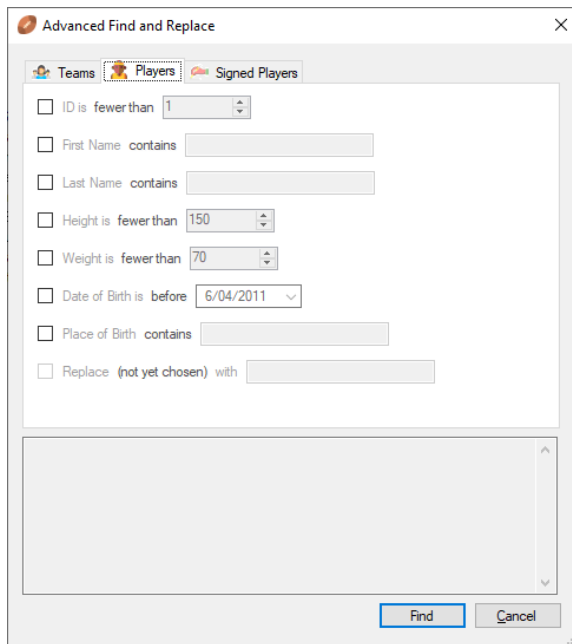
The Teams page will insert the available fields. The user must choose one then enter a value to replace this field's value with.

When the replace option is used, the dialog box's Find button changes to a Replace button. For example:



The screenshot shows the full dialog box. It has three search criteria: 'Region contains' (unchecked), 'Year Founded is greater than 2005' (checked), and 'Replace Region with Timaru, South Island' (checked). Below the criteria is a text area containing the generated SQL query: 'FIND all teams WHERE Year Founded is greater than "2005" REPLACE "Region" with "Timaru, South Island"'. At the bottom right are 'Replace' and 'Cancel' buttons. The 'Replace' button is highlighted with a blue border.

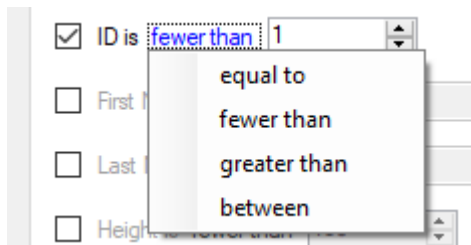
Players Advanced Find and Replace



The Players page lists each available field of a Player. The user can enable searching of a field by ticking the box next to a field.

When ticked, the individual controls for searching that field will enable.

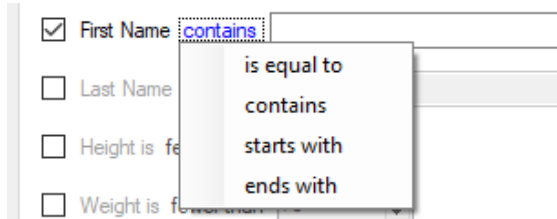
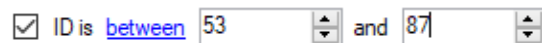
This dialog box remembers any previously entered values, and therefore will be pre-populated for each invocation after the first one.



The ID field is numeric. The user can choose which operation to use from the shown list.

The user must provide a value for the operation, or two values for the “between” operation.

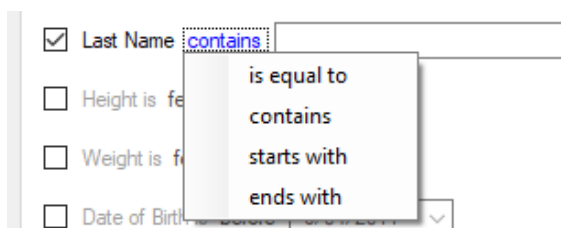
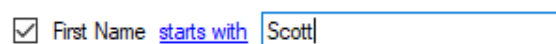
For example the following choices are valid:



The First Name field is text. The user can choose which operation to use from the shown list.

The user must provide a value for the operation.

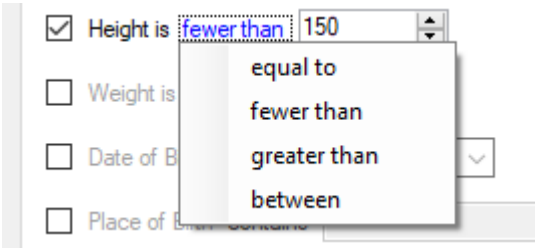
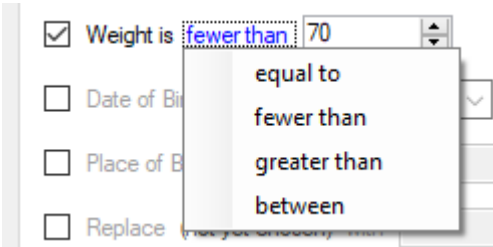
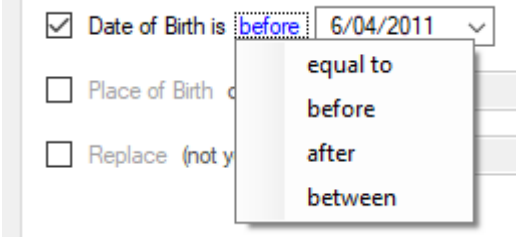
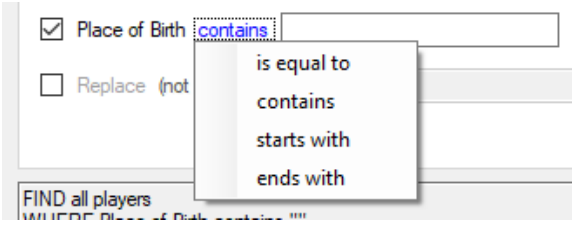
For example the following choices are valid:



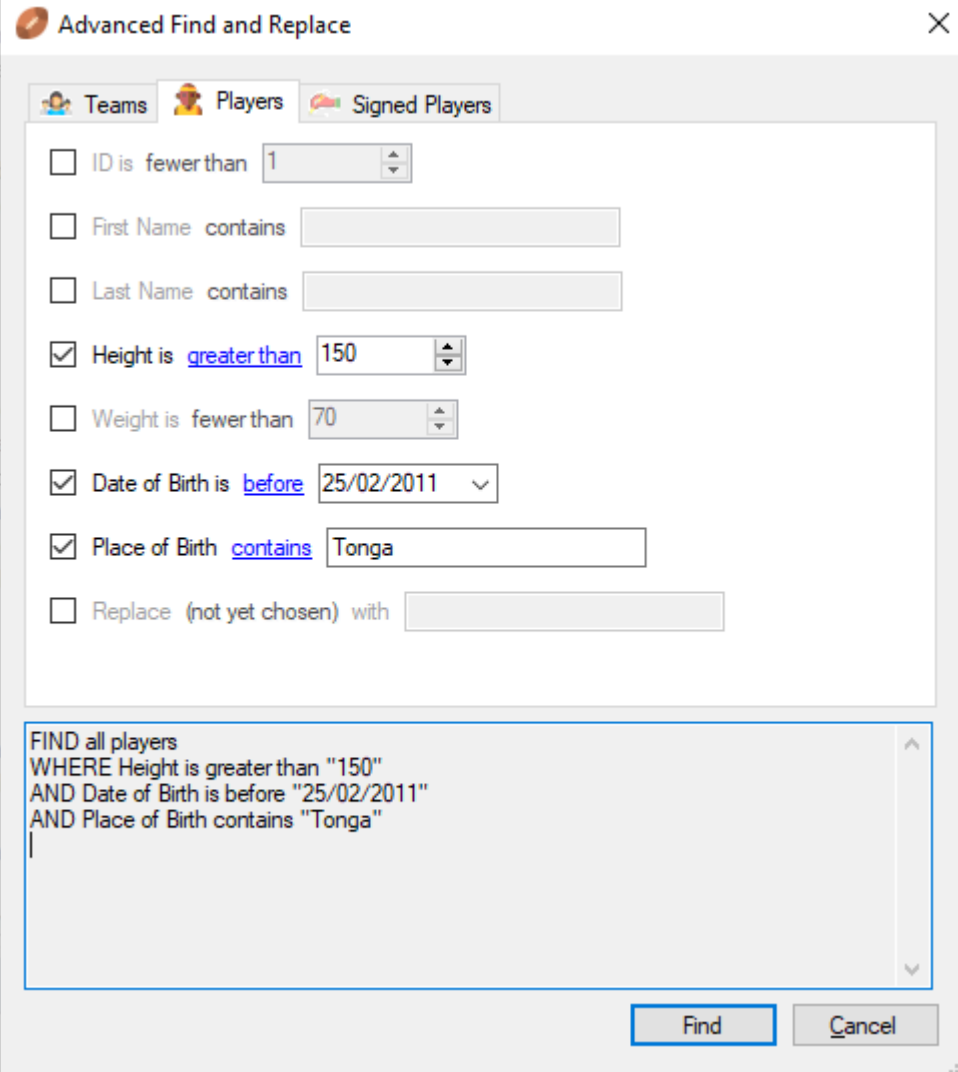
The Last Name field is text. The user can choose which operation to use from the shown list.

The user must provide a value for the operation.

For example the following choices are valid:

	<input checked="" type="checkbox"/> Last Name <u>contains</u> <input type="text" value="le'aupepe"/>
	<p>The Height field is numeric. The user can choose which operation to use from the shown list.</p> <p>The user must provide a value for the operation, or two values for the “between” operation.</p> <p>For example the following choices are valid:</p> <input checked="" type="checkbox"/> Height is <u>fewer than</u> <input type="text" value="180"/>
	<p>The Weight field is numeric. The user can choose which operation to use from the shown list.</p> <p>The user must provide a value for the operation, or two values for the “between” operation.</p> <p>For example the following choices are valid:</p> <input checked="" type="checkbox"/> Weight is <u>equal to</u> <input type="text" value="85"/>
	<p>The Date of Birth field is Date. The user can choose which operation to use from the shown list.</p> <p>The user must provide a value for the operation, or two values for the “between” operation.</p> <p>For example the following choices are valid:</p> <input checked="" type="checkbox"/> Date of Birth is <u>between</u> <input type="text" value="10/08/1993"/> and <input type="text" value="1/11/2001"/>
	<p>The Place of Birth field is text. The user can choose which operation to use from the shown list.</p> <p>The user must provide a value for the operation.</p> <p>For example the following choices are valid:</p> <input checked="" type="checkbox"/> Place of Birth <u>contains</u> <input type="text" value="Tonga"/>

An example of complete search criteria follows.



The image shows a software window titled "Advanced Find and Replace" with a close button (X) in the top right corner. It features three tabs: "Teams", "Players" (which is selected), and "Signed Players". Below the tabs, there are several search criteria, each with a checkbox and a text input field or dropdown menu. The criteria are: "ID is fewer than 1" (unchecked), "First Name contains" (unchecked), "Last Name contains" (unchecked), "Height is greater than 150" (checked), "Weight is fewer than 70" (unchecked), "Date of Birth is before 25/02/2011" (checked), and "Place of Birth contains Tonga" (checked). At the bottom of the criteria list is a checkbox for "Replace (not yet chosen) with" followed by an empty text field. Below the criteria list is a large text area containing the following SQL-like query: "FIND all players", "WHERE Height is greater than '150'", "AND Date of Birth is before '25/02/2011'", and "AND Place of Birth contains 'Tonga'". At the bottom right of the window are two buttons: "Find" and "Cancel".

Advanced Find and Replace

Teams Players Signed Players

☐ ID is fewer than 1

☐ First Name contains

☐ Last Name contains

☒ Height is greater than 150

☐ Weight is fewer than 70

☒ Date of Birth is before 25/02/2011

☒ Place of Birth contains Tonga

☐ Replace (not yet chosen) with

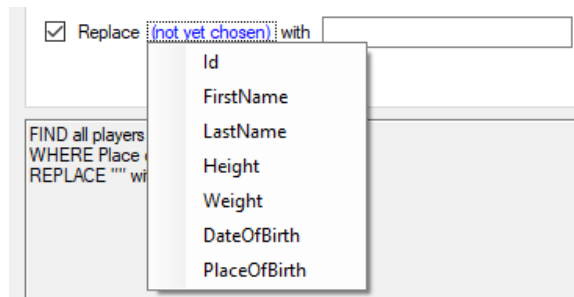
FIND all players
WHERE Height is greater than "150"
AND Date of Birth is before "25/02/2011"
AND Place of Birth contains "Tonga"

Find Cancel

The results will be inserted into the [Find Results window](#) in the same fashion as the [Find and Replace](#) discussed earlier.

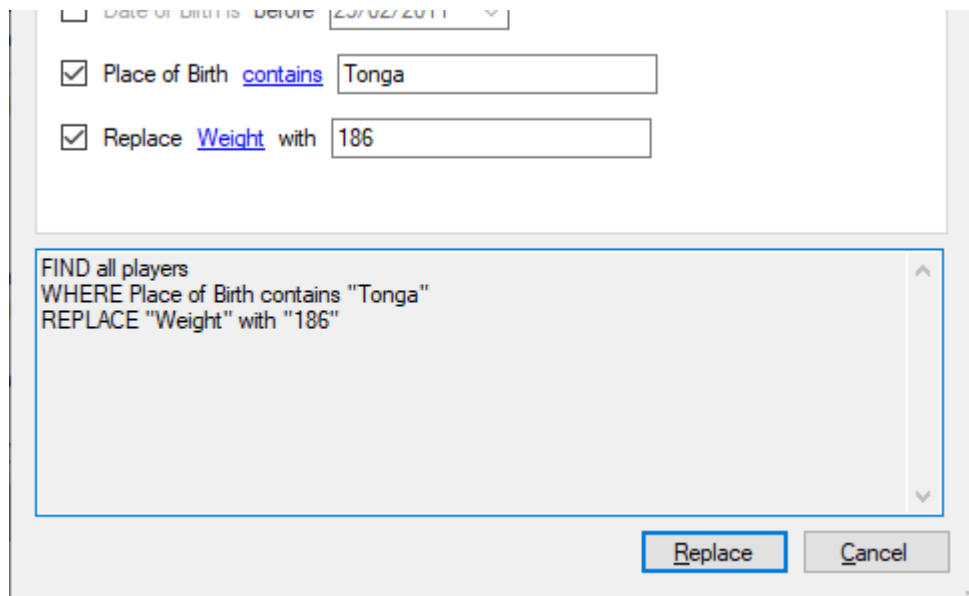
Using the Replace option

Optionally the user can choose to replace whatever data are found. This is achieved simply by ticking the box of the Replace option, choosing a field, and entering a parameter.



The Players page will insert the available fields. The user must choose one then enter a value to replace this field's value with.

When the replace option is used, the dialog box's Find button changes to a Replace button. For example:



Signed Players Advanced Find and Replace

Advanced Find and Replace

Teams Players Signed Players

☐ Player ID is fewer than 1

☐ Player Name contains

☐ Team Name contains

☐ Replace (not yet chosen) with

Find Cancel

The Signed Players page lists each available field of a Signed Player. The user can enable searching of a field by ticking the box next to a field.

When ticked, the individual controls for searching that field will enable.

This dialog box remembers any previously entered values, and therefore will be pre-populated for each invocation after the first one.

☒ Player ID is fewer than 1

☐ Player Name

☐ Team Name

☐ Replace (not yet chosen)

equal to
fewer than
greater than
between

The Player ID field is numeric. The user can choose which operation to use from the shown list.

The user must provide a value for the operation, or two values for the “between” operation.

For example the following choices are valid:

☒ Player ID is greater than 50

☒ Player Name contains

☐ Team Name

☐ Replace (not yet chosen)

is equal to
contains
starts with
ends with

The Player Name field is text. The user can choose which operation to use from the shown list.

The user must provide a value for the operation.

For example the following choices are valid:

☒ Player Name ends with es

☒ Team Name contains

☐ Replace (not yet chosen)

is equal to
contains
starts with
ends with

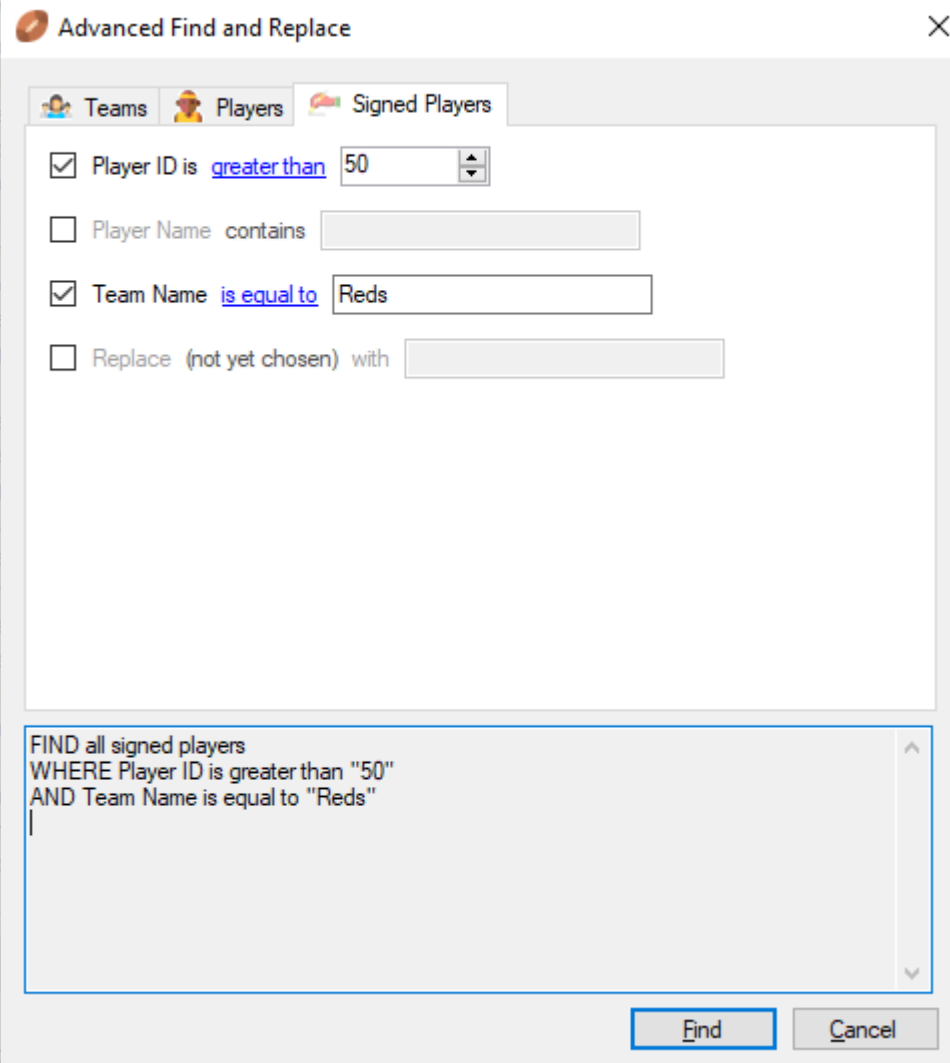
The Team Name field is text. The user can choose which operation to use from the shown list.

The user must provide a value for the operation.

For example the following choices are valid:

	<input checked="" type="checkbox"/> Team Name is equal to <input type="text" value="Reds"/>
--	---

An example of complete search criteria follows.



The image shows a screenshot of the 'Advanced Find and Replace' dialog box. It has a title bar with a close button. Below the title bar are three tabs: 'Teams' (selected), 'Players', and 'Signed Players'. The 'Teams' tab contains four search criteria, each with a checkbox and a text field. The first criterion is 'Player ID is [greater than](#) 50' with a checked checkbox. The second is 'Player Name contains' with an unchecked checkbox and an empty text field. The third is 'Team Name [is equal to](#) Reds' with a checked checkbox. The fourth is 'Replace (not yet chosen) with' with an unchecked checkbox and an empty text field. Below these criteria is a large text area containing the SQL query: 'FIND all signed players WHERE Player ID is greater than "50" AND Team Name is equal to "Reds"'. At the bottom right are 'Find' and 'Cancel' buttons.

Advanced Find and Replace

Teams Players Signed Players

☒ Player ID is [greater than](#) 50

☐ Player Name contains

☒ Team Name [is equal to](#) Reds

☐ Replace (not yet chosen) with

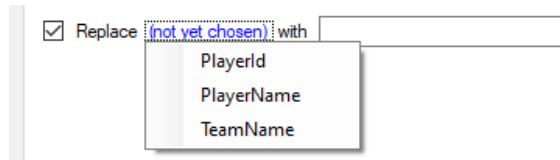
FIND all signed players
WHERE Player ID is greater than "50"
AND Team Name is equal to "Reds"

Find Cancel

The results will be inserted into the [Find Results window](#) in the same fashion as the [Find and Replace](#) discussed earlier.

Using the Replace option

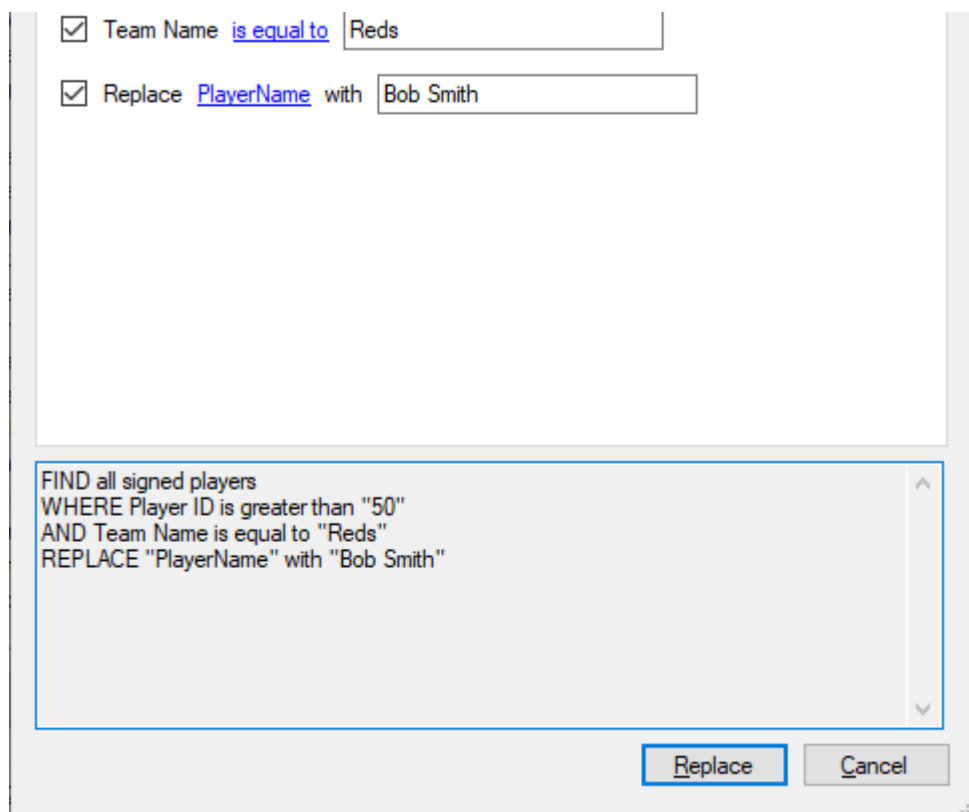
Optionally the user can choose to replace whatever data are found. This is achieved simply by ticking the box of the Replace option, choosing a field, and entering a parameter.



A partial screenshot of a software interface. It shows a checked checkbox labeled 'Replace' followed by a dropdown menu currently displaying '(not yet chosen)'. The dropdown menu is open, showing three options: 'PlayerId', 'PlayerName', and 'TeamName'. To the right of the dropdown is an empty text input field.

The Signed Players page will insert the available fields. The user must choose one then enter a value to replace this field's value with.

When the replace option is used, the dialog box's Find button changes to a Replace button. For example:



A screenshot of a dialog box with a light gray background. At the top, there are two checked checkboxes. The first is labeled 'Team Name' followed by the text 'is equal to' and a text input field containing 'Reds'. The second is labeled 'Replace' followed by a dropdown menu showing 'PlayerName' and a text input field containing 'Bob Smith'. Below these is a large text area with a blue border containing the following text: 'FIND all signed players', 'WHERE Player ID is greater than "50"', 'AND Team Name is equal to "Reds"', and 'REPLACE "PlayerName" with "Bob Smith"'. At the bottom right of the dialog box are two buttons: 'Replace' and 'Cancel'.

Charts

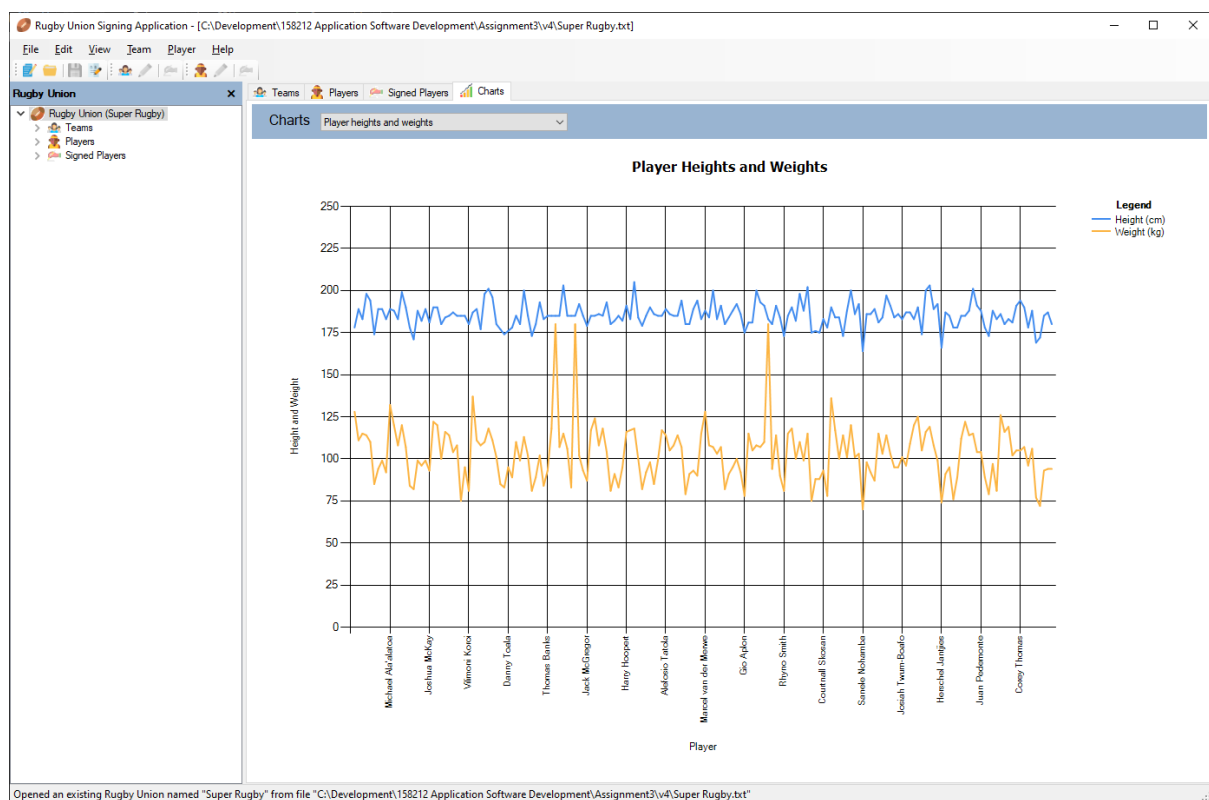
Shortcut Key: F11

The application comes with six charts. Each of whom provides a read-only view of the Rugby Union document data. The following images were made with the [Super Rugby Demonstration File](#).

Player Heights and Weights Chart

This chart plots two different series of data as lines on the same chart. The first series is Player heights, the second Player Weights.

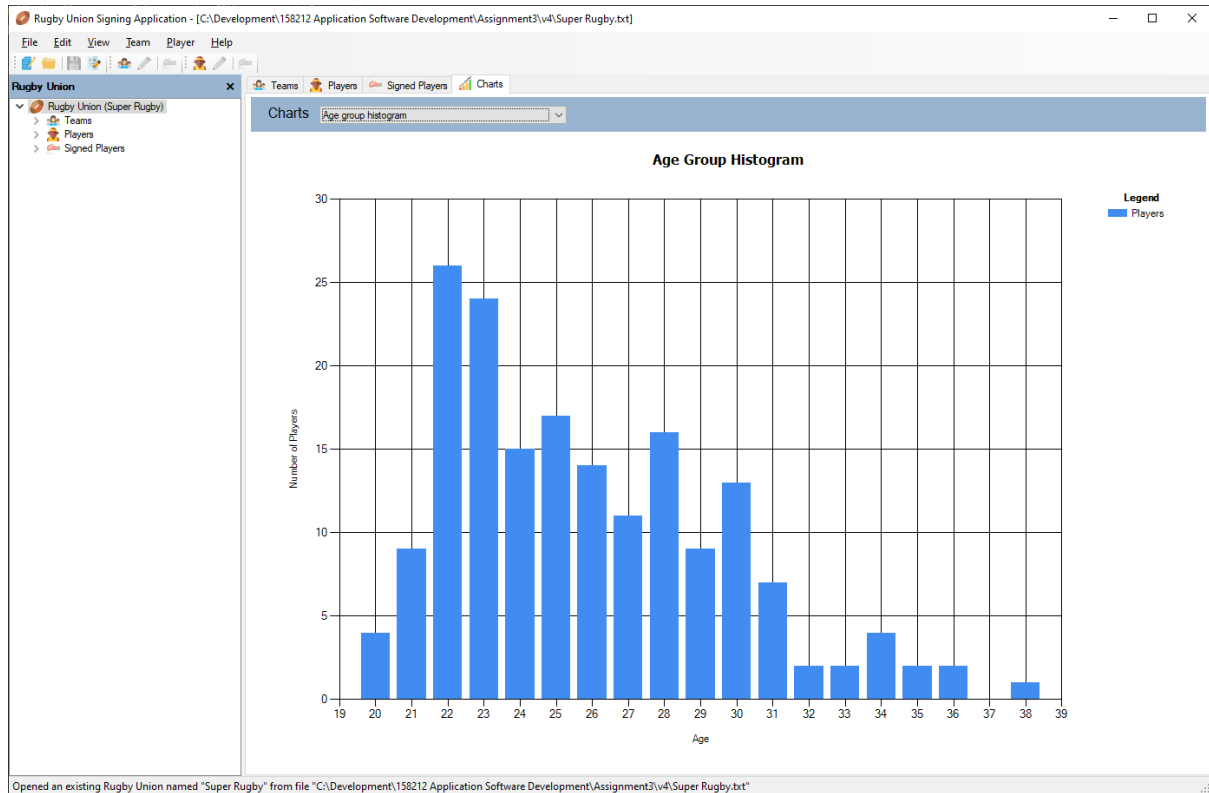
The heights and weights form the vertical axis, and the Player names form the horizontal axis.



Age Group Histogram Chart

This chart has a single series that is the age of the Players within the Rugby Union. The data are presented as a Histogram.

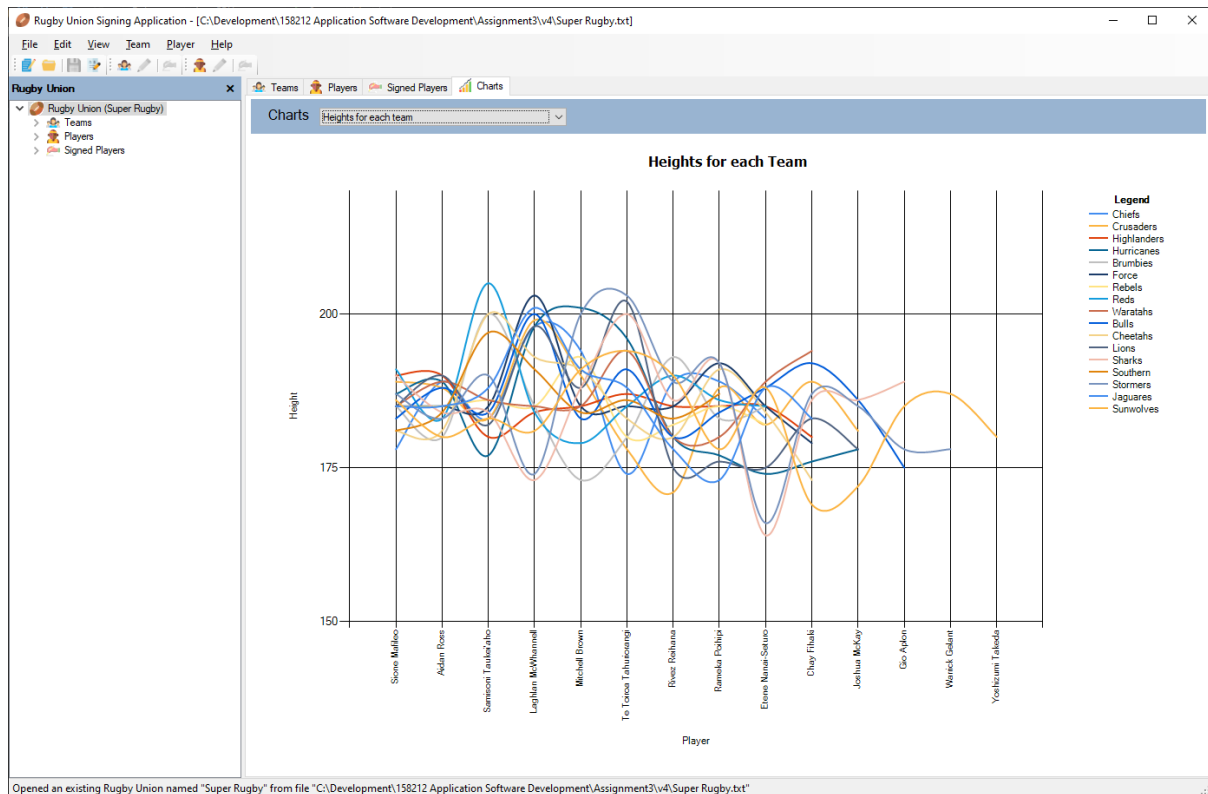
The data undergo a Group By operation before being included into the chart, therefore the chart is showing how many Players of each age there are.



Heights for each Team Chart

This chart consists of one series for each team. All series are drawn within the same chart and as such, quite a busy chart is presented.

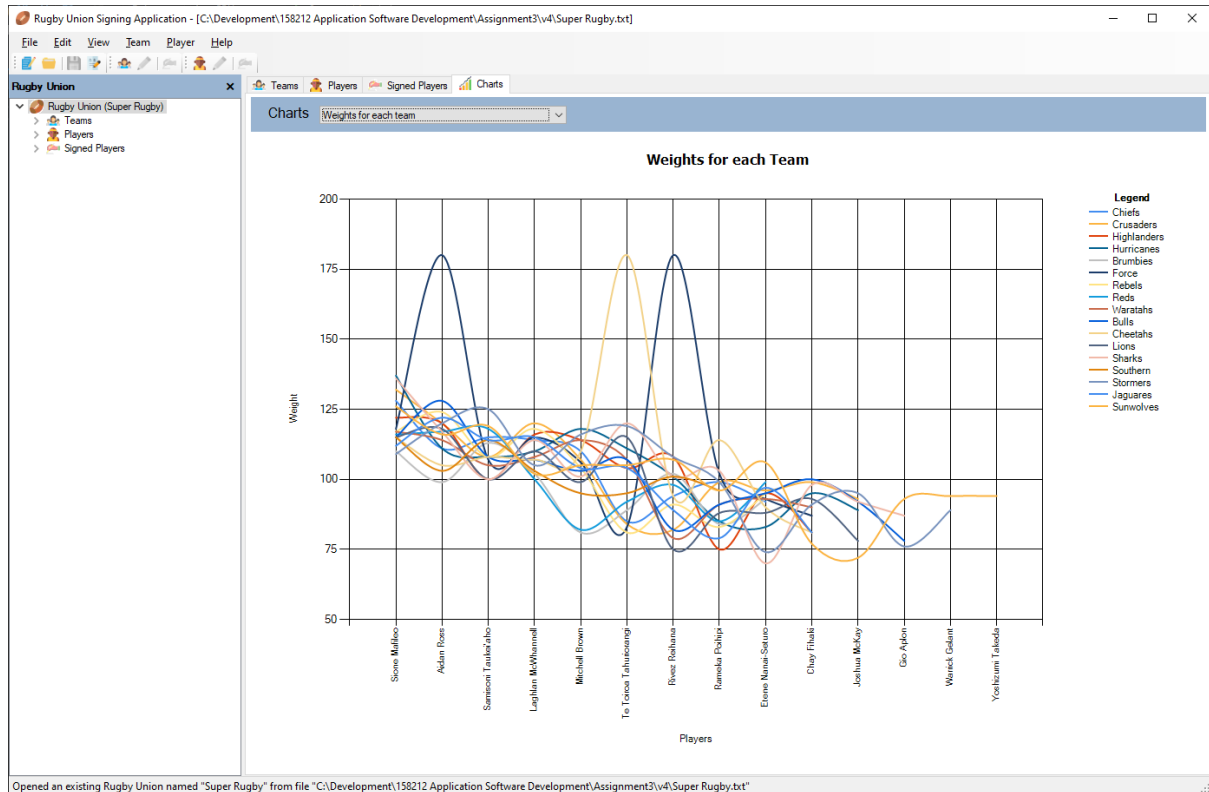
The Player height forms the vertical axis, the Player names form the horizontal axis.



Weights for each Team Chart

This chart consists of one series for each team. All series are drawn within the same chart and as such, quite a busy chart is presented.

The Player weight forms the vertical axis, the Player names form the horizontal axis.



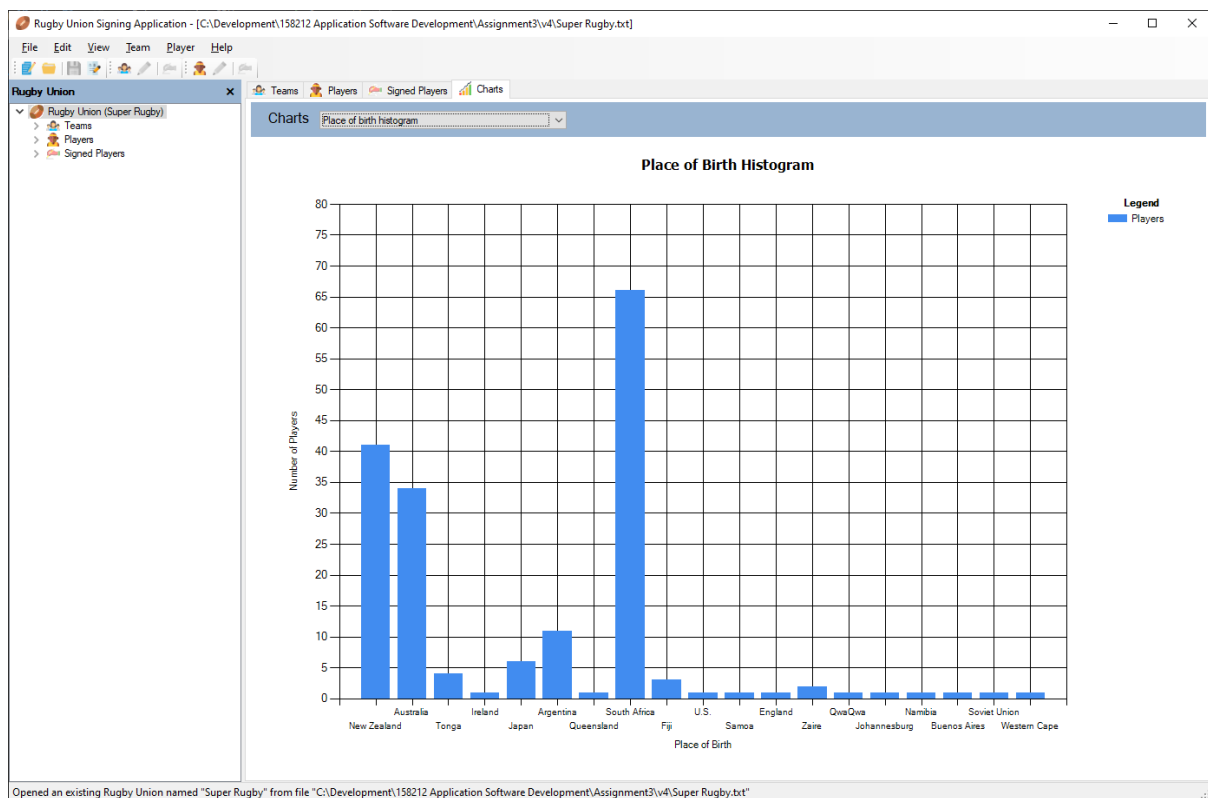
Place of Birth Histogram Chart

This chart has a single series that is the Place of Birth of the Players within the Rugby Union. The data are presented as a Histogram.

The data undergo a Group By operation before being included into the chart, therefore the chart is showing how many Players from each Place of Birth there are.

A simple data cleaning step is performed for this chart; if the Place of Birth field contains a comma (,) character, then the rightmost comma separated value is used. For example, the chart considers each of the following players to have the same Place of Birth:

- Luke Romano; Nelson, New Zealand
- Whetukamokamo Douglas; Rotorua, New Zealand
- Ereata Enari; Auckland, New Zealand
- Brett Cameron; Whanganui, New Zealand
- Dallas McLeod; Methven, New Zealand
- Rene Ranger; Whangarei, New Zealand
- Chay Fihaki; Auckland, New Zealand



Year Founded grouped by Team Chart

This chart has a single series that is the Year Founded for each Team within the Rugby Union. The data are presented as a Pie Graph.

The data undergo a Group By operation before being included into the chart, therefore the chart is showing how many Teams were founded in a given year.

