National Research University Higher School of Economics
Faculty of Computer Science
Data Science and Business Analytics

Introduction to Programming

“NBA Basketball App”

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Specification №1656
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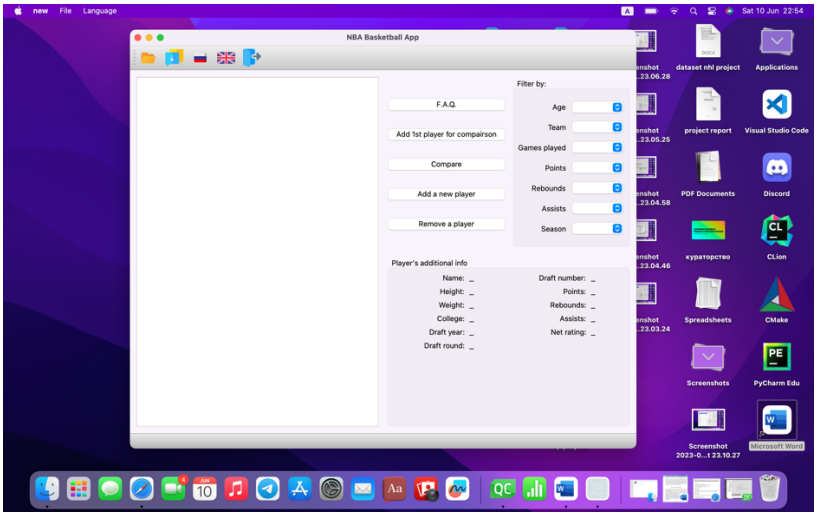
Problem statement.

The created application, based on a Kaggle dataset “NBA Players” is used for managing data related to basketball players and their statistics using certain patterns. The application allows users to study statistical information more deeply, as well as do their own comparisons and predictions based on given data.

Implementation details.

In order to solve this problem, I used basic tools of Qt Creator.

The first this that user sees, when he or she opens the application, is a main window. There is a menu bar on the top of the page with buttons *File* and *Help*. By clicking on buttons *File* and *Open*, user can open a chosen CSV-file, which will be loaded and shown on screen. For implementing this, *QTableView features* were used. A button Quit allows user to exit the application. Buttons English and Russian make it possible to change the language of the app.

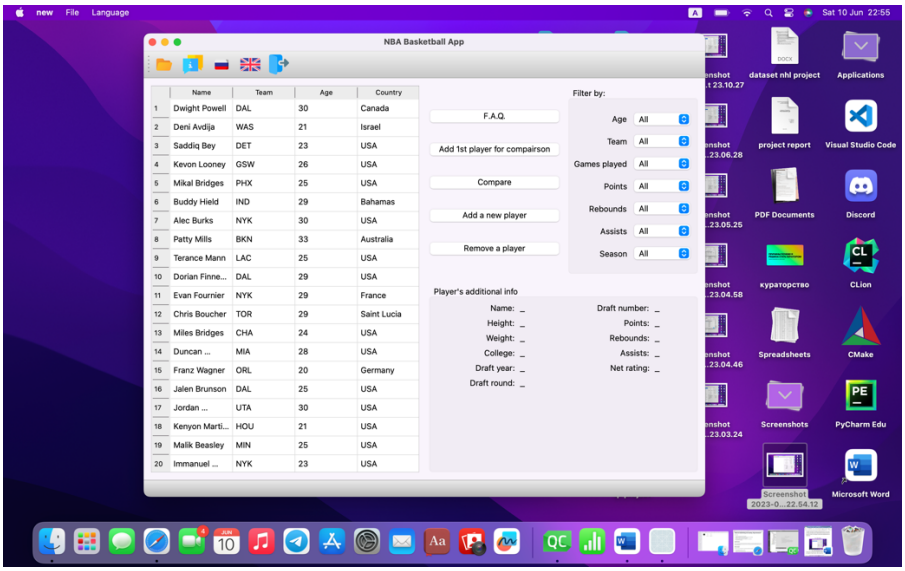


Pic. 1. Main widow before file loading

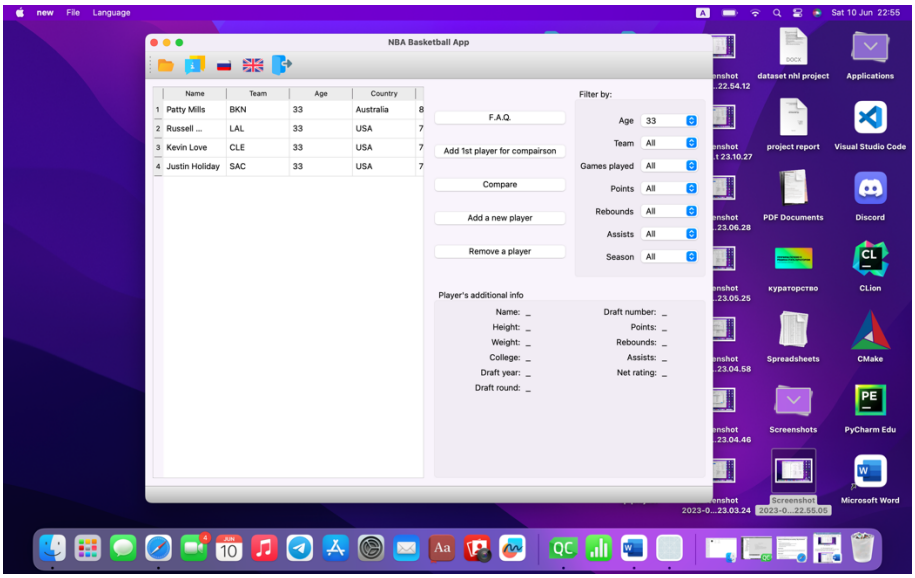
Let’s explore the table features in more details. By using of *QSortFilterProxyModel class*, it is possible to sort information in columns in lexicographical order (from A to Z, from Z to A) or in ascending or descending order. I also implemented filtering option for some columns using function *filterAcceptsRow*. Parameters for filtering can be combined, so it is possible to,

for instance, find a 23-year-old player, who plays in ATL team.

A *groupBox* with *QLabels* on the right of the page allows user to chose a player by clicking on the table item and see additional statistic information, which is not presented in the table. For this purpose a custom function *highlightDataItem* was implemented.

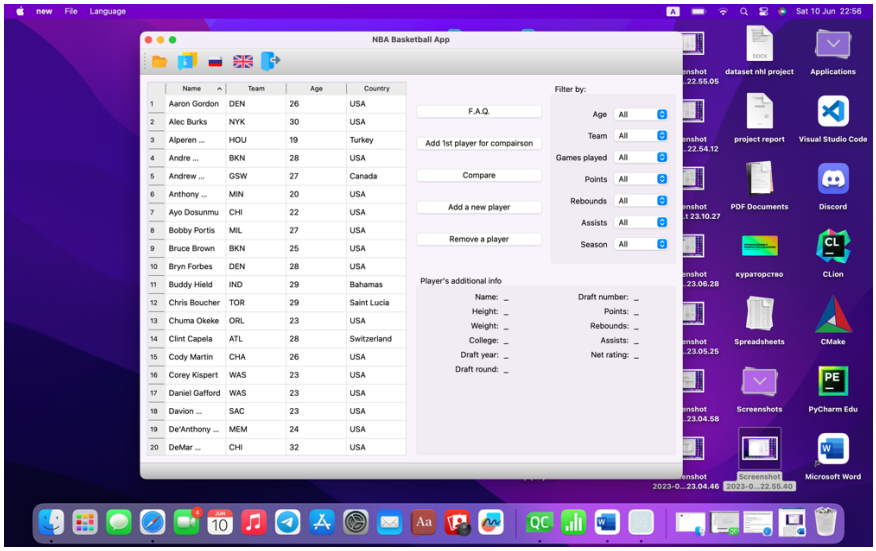


Pic. 2. Main window



Pic. 3. Table with applied filter “Age: 33”

There are also several buttons on the right side of the table: *F.A.Q, Add 1st player for compairson, Compare statistics, Add a new player* and *Remove*.

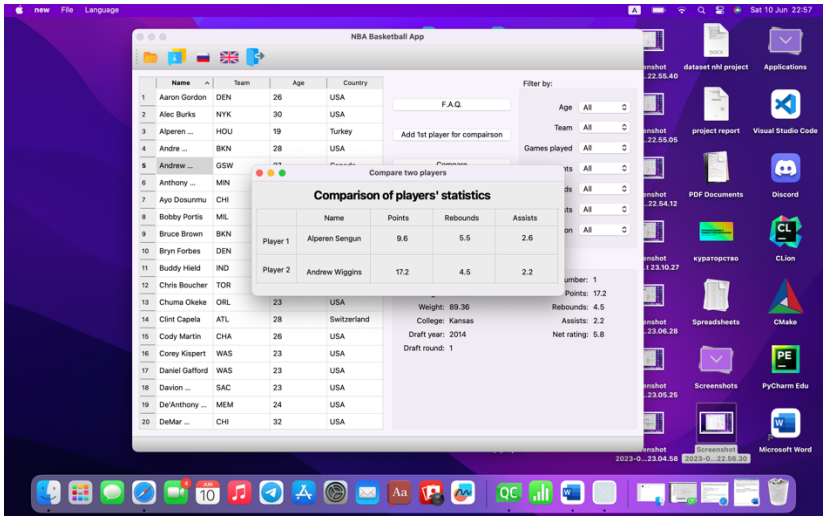


Pic. 4. Field “Name” sorted from A to Z

F.A.Q.: this button opens a dialog window, which shows some data, based on the statistics in the table. This is a realisation of subject relevant features.

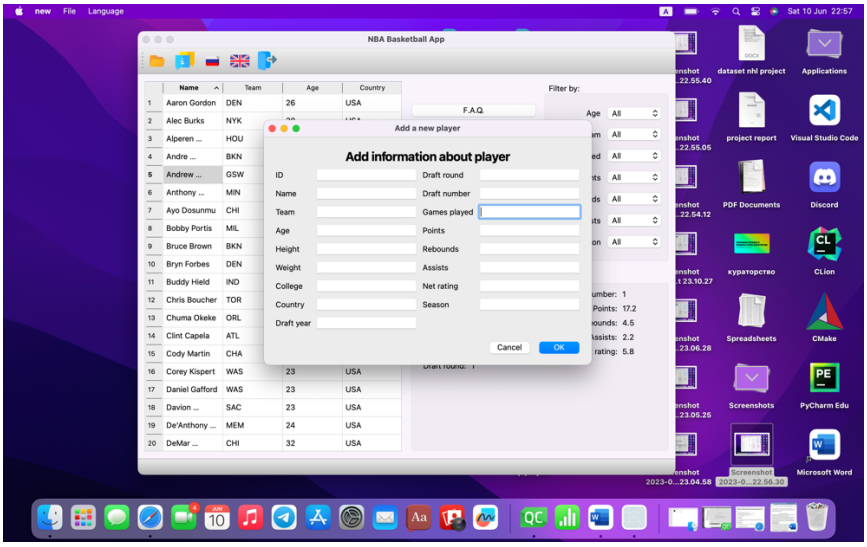
Add 1st player for comparison: this button allows user to add 1st player for comparison, which will be presented in additional dialog window. The data is being passed to the dialog from the main window by the function *setData*.

Compare: This button opens a dialog window with statistics’ comparison. The information about the 2nd player is being passed to the dialog from the main window by the function *setData*.



Pic. 5. Comparison dialog

Add a new player: this button opens another dialog with *QLineEdits*, which allows user to add a new player to the table. It is possible to add a row to the table through dialog window and save it.



Pic. 6. Adding information dialog

Remove a player: this button allows to remove a row with a player from the table by clicking on it and then pushing *Remove a player* button.

There is also a *Tool bar* on the top of the page, where pictograms are connected with actions in the *Menu bar*, so it makes usage of app more conveniently.

There is an additional dialog window “About”, which presents a custom logo and basic information about the project. A logo was made through implementing of *QWidget* and *QPaintEvent*.

Results and discussion.

I consider my application to be created successfully and thoroughly in accordance with the task and given specification. I implemented all mandatory features, as well as requested subject relevant features: filtering and sorting, comparison and others. There is also an option for a user to change a language of the app.

I also tried to add a search through the table option, but the attempt was not successful due to the lack of my skills and knowledge on the subject.

I believe that I could implemented Comparison feature better, than adding to separate buttons, but it was the best solution with which I could come up.

Conclusion.

I consider the process and outcome of this project to be quite interesting for me. It is not obvious for me yet, how can I implement the skill to work with QT in the future, but it was a good practice of my C++ skills and my ability to understand the inner structure of apps.

Some of the features of the app can be potentially improved in the future. For instance, I would like to work on the Search function, as well as on the ways to make the application more interactive and user-friendly. It would also be nice to work on the design, but, overall, I am satisfied with the results.