# Refactoring Documentation for Project “Bulls and Cows 4”

Team “Promethium”

1. Redesigned the project structure:
   * Renamed the project to **BullsAndCowsGame**.
   * Renamed class **klasirane** to **ScoreBoard.**
   * Class **bikove\_i\_kravi** split into classes **Engine, UserInterface, NumberManager, CommandParser**
2. Reorganizing the old and new classes in four namespaces:

* **GameObject** containing **GameNumber**, **Player** and **ScoreBoard** classes
* **GamePlay** with **Engine** class inside
* **Interfaces** which consists of **IPlayer** and **IScoreBoard** interfaces
* **UI** has **CommandParser**, **PlayerCommand** and **UserInterface** classes

1. Reformatted the source code:
   * Removed all unneeded empty lines, e.g. in the method **Start()** in **bikove\_i\_kravi** class.
   * Inserted empty lines between the methods.
   * Split the lines containing several statements into several simple lines, e.g.:

|  |  |  |
| --- | --- | --- |
| **if (input[i] != ' ') break;** | **🡪** | **if (input[i] != ' ')**  **{**  **break;**  **}** |

* + Formatted the curly braces **{** and **}** according to the best practices for the C# language.
  + Put **{** and **}** after all conditionals and loops (when missing).
  + Character casing: variables and fields made **camelCase**; types and methods made **PascalCase**.
  + Formatted all other elements of the source code according to the best practices introduced in the course “[High-Quality Programming Code](http://codecourse.telerik.com/)”.

1. Renamed variables:
   * Renamed variable **maxCountOfStoredData** to **maxCount** in class **ScoreBoard**.
   * Renamed constant **WelcomeMessage** to **WELCOME\_MESSAGE**
   * Renamed constant **WrongCommandMessage** to **WRONG\_COMMAND\_MESSAGE**
2. Introduced methods:
   * Method **ToString()** in class **ScoreBoard**
   * Method **ShowCheatsLimitReached** in class **UserInterface**
   * Method **ShowScoreboard** in class **UserInterface**
   * Method **ShowCheatsLimitReached** in class **UserInterface**
   * Method **ShowGuessStatistics** in class **UserInterface**
   * Method **ShowCheatersMessage** in class **UserInterface**
   * Method **ShowFairwell** in class **UserInterface**
   * Method **GetPlayerCommand** in class **UserInterface**
   * Method **GetPlayerName** in class **UserInterface**
   * Method **ExecutePlayerCommand** in class **Engine**
   * Method **CheckPlayerInput** in class **Engine**
   * Method **Reset** in class **Engine**
   * Method **Exit** in class **Engine**
3. Extracted, moved or changed methods:
   * Method **Reset()** of class **ScoreBoard** changed from public to protected.
   * Method **ShowHelp()** in class **UserInterface** class split into **ShowHelp()** and **PrintCheatsLimitReached()**
   * Method **PrintWelcomeMessage renamed to ShowWelcomeMessage** andmoved from class **bikove\_i\_kravi** to class **UserInterface**
   * Method **PrintWrongCommand renamed to ShowWrongCommand** andmoved from class **bikove\_i\_kravi** to class **UserInterface**
   * Method **PlayerInputToPlayerCommand** extracted from bikove\_i\_kravi class to new **CommandParser** class.
   * Method **PrintCongratulateMessage** renamed to **ShowCongratulations** andmoved from class **bikove\_i\_kravi** to class **UserInterface**
   * In **Engine** class **Start** method refactored to several separate methods **StartGame,** **ExecuteCommand etc.**
4. Introduced interfaces: **IPlayer** and **IScoreBoard**
5. Introduced classes:

* **GameNumber**
* **Engine**
* **CommandParser**
* **PlayerCommand**
* **UserInterface**

1. Moved declarations:
   * Declaration of enumeration **PlayerCommand** moved to separate file, changed accessibility from private to internal.
2. Added documentation and tests **class Player**.
3. Overriding **ToString()** method for **class Player**.
4. Cleared some of the **Usings** that are not used and changed :
5. In **UserInteface** – **generateHelpPattern** to **GenerateHelpPattern.**
6. In **UserInteface – PokajiHelp** to **ShowHelp** & also changed in **Engine.**
7. Refactoring **class Engine** and extracting methods to **class NumberManager**.
   * Public constant **int NUMBER\_LENGHT** (removed from Engine)
   * Public method **string GenerateNumber()** (removed from Engine)
   * Public method **void GetBullsAndCows(…)**(removed from Engine)
8. In **class ScoreBoard** – added private static int **defaultScoreBoardLenght** for the empty constructor
9. Refactoring class **Number**. Added regions
10. Added regions and documentation in **ScoreBoard** class
11. Added **bool restart** and **bool exit** in **Engine** class