

Java Programming

OOP1

Bauhaus-Universität Weimar

25 March 2019

Task 1

Implement the structure of a soccer game. Your program should include the following components:

- A class *SoccerPlayer*. A soccer player consists of:

- name
- number
- Team
- He or she can have red and yellow cards
- number of goals scored

Add a constructor to your class initializing the name of the soccer player.

Your class should consist of the following methods:

- `public void redCard()`: The player receives a red card and has to exit the game
- `public void yellowCard()`: The player receives a yellow card
- `public int getNumber()`: returns the number of the player
- `public void setNumber(int number)`: sets the number of the player
- `public String getName()`: returns the name of the player
- `public SoccerTeam getTeam()`: returns the Team
- `public void increaseGoalCount()`: increases the number of goals
- `public void setTeam(SoccerTeam newTeam)`: sets the Team
- `public String toString()`: Returns a String consisting of the following elements:
 - * name
 - * number
 - * Team
 - * number of goals scored

- A class *SoccerTeam*. A soccer team consists of:

- name
- Trainer (Think about how to represent this attribute)
- Table position (int is sufficient)
- number of goals scored

- number of goals against
- Players (Players should be scored in a SoccerPlayer array of length 11)

Add a constructor to your class initializing the name, Trainer and table position of the Team. Your class should consist of the following methods:

- `public String getName():` returns the name of the team
- `public boolean addPlayer(SoccerPlayer player):` Adds the player at the next free position of the Players array. It sets the player number to be the position in the array +1 and it sets the team of the player. It returns true if it did so. If the array is already full, the player cannot be added. In that case the method should return false.
- `public void goal(int playerNumber):` The player with the corresponding number scored a goal. In that case, you should increase the player's goal count and also the goal count of the team.
- `public void goalAgainst():` The other team scored a goal. Increase the number of goals against.
- `public String ratioString():` returns the current ratio *goals:goalsAgainst* as a String.
- `public String toString():` Returns a String consisting of the following elements:
 - * name
 - * Trainer
 - * ratioString
 - * each Player separated by a linebreak.

Now, have a look at the class *SoccerGame*. If you implemented everything correctly, it should deal as main class for your football game. The output should look as follows:

```
nana@nana-ThinkPad-T460p: ~/dev/Programming_Tutorial/Java_Programming/solutions/OOP1
Datei Bearbeiten Ansicht Suchen Terminal Hilfe
nana@nana-ThinkPad-T460p:~/dev/Programming_Tutorial/Java_Programming/solutions/OOP1$ java SoccerGame
Goal for Borussia Dortmund by Lukasz Piszczek
Goal for Borussia Dortmund by Paco Alcacer
Goal for Borussia Dortmund by Achraf Hakimi
Goal for Bayern Muenchen by Mats Hummels
Goal for Borussia Dortmund by Mario Goetze

Name: Borussia Dortmund, Trainer: Lucien Favre, Ratio: 4:1, Players:
Player: Roman Buerki, Number: 1, Team: Borussia Dortmund, Goals: 0
Player: Marco Reus, Number: 2, Team: Borussia Dortmund, Goals: 0
Player: Mario Goetze, Number: 3, Team: Borussia Dortmund, Goals: 1
Player: Christian Pulisic, Number: 4, Team: Borussia Dortmund, Goals: 0
Player: Paco Alcacer, Number: 5, Team: Borussia Dortmund, Goals: 1
Player: Axel Witsel, Number: 6, Team: Borussia Dortmund, Goals: 0
Player: Achraf Hakimi, Number: 7, Team: Borussia Dortmund, Goals: 1
Player: Julian Weigl, Number: 8, Team: Borussia Dortmund, Goals: 0
Player: Raphael Guerreiro, Number: 9, Team: Borussia Dortmund, Goals: 0
Player: Abdou Diallo, Number: 10, Team: Borussia Dortmund, Goals: 0
Player: Lukasz Piszczek, Number: 11, Team: Borussia Dortmund, Goals: 1

Name: Bayern Muenchen, Trainer: Niko Kovac, Ratio: 1:4, Players:
Player: Manuel Neuer, Number: 1, Team: Bayern Muenchen, Goals: 0
Player: James Rodriguez, Number: 2, Team: Bayern Muenchen, Goals: 0
Player: Robert Lewandowski, Number: 3, Team: Bayern Muenchen, Goals: 0
Player: Arjen Robben, Number: 4, Team: Bayern Muenchen, Goals: 0
Player: Franck Ribery, Number: 5, Team: Bayern Muenchen, Goals: 0
Player: Thomas Mueller, Number: 6, Team: Bayern Muenchen, Goals: 0
Player: Alphonso Davies, Number: 7, Team: Bayern Muenchen, Goals: 0
Player: Jerome Boateng, Number: 8, Team: Bayern Muenchen, Goals: 0
Player: Rafinha, Number: 9, Team: Bayern Muenchen, Goals: 0
Player: Mats Hummels, Number: 10, Team: Bayern Muenchen, Goals: 1
Player: Thiago Alcantara, Number: 11, Team: Bayern Muenchen, Goals: 0

nana@nana-ThinkPad-T460p:~/dev/Programming_Tutorial/Java_Programming/solutions/OOP1$
```