LAB 1: A Java scoreboard

Getting started

In this lab you will examine and modify Java classes which represent a scoreboard at a football match.

Task 1 : Examine the classes

Writing Java code:

1. Download and open the BlueJ project *lab1*. Note that there are two classes.
2. Open each class in the BlueJ editor and carefully read through the code.
3. Go to the Assignments section for this module on Blackboard. The assignment *Lab 1 Questions* consists of a set of short-answer and multiple choice questions based on the code in the *lab1* project. Start the assignment and attempt all questions. You will probably need to refer back to the code in order to answer these.

Task 2 : Test the classes

You will now test the classes in the *lab1* project.

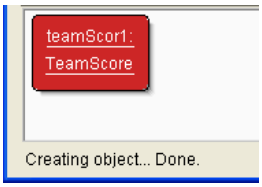
Testing the *TeamScore* class:

Test the `TeamScore` class as follows.

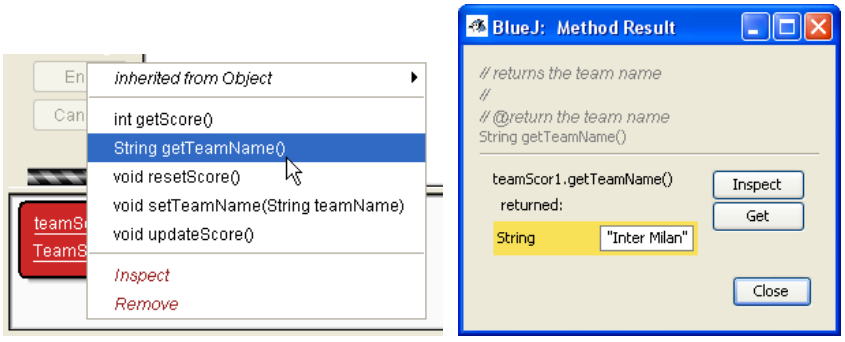
1. Right-click on the `TeamScore` class in BlueJ and select the constructor

2. Enter a value for `teamName` in the Create Object dialog (choose any team name you like)

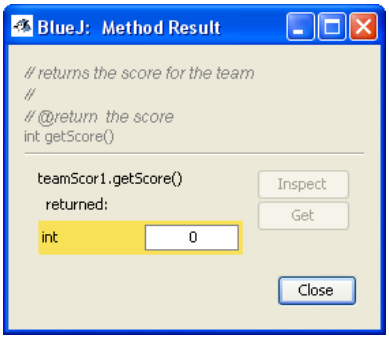
3. Check that an object is created in the Object Bench



4. Right click on the object and call `getTeamName`. Check that the team name you entered previously is returned



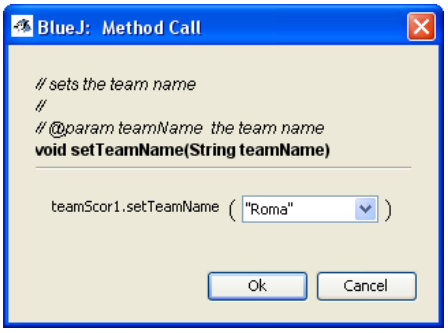
5. Similarly, call `getScore`. Check that a value of 0 is returned



6. Call `updateScore` **twice**. Now call `getScore` and check that a value of **2** is returned

7. Call `resetScore`. Now call `getScore` and check that a value of **0** is returned

8. Call `setTeam` name and enter a different team name in the Method Call dialog



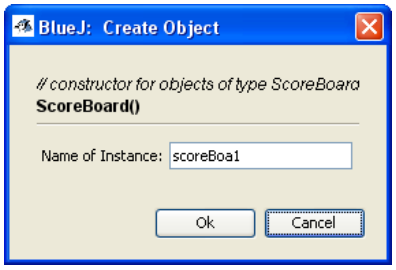
9. Call `getTeamName`. Check that the team name you entered previously is returned

Testing the *Scoreboard* class:

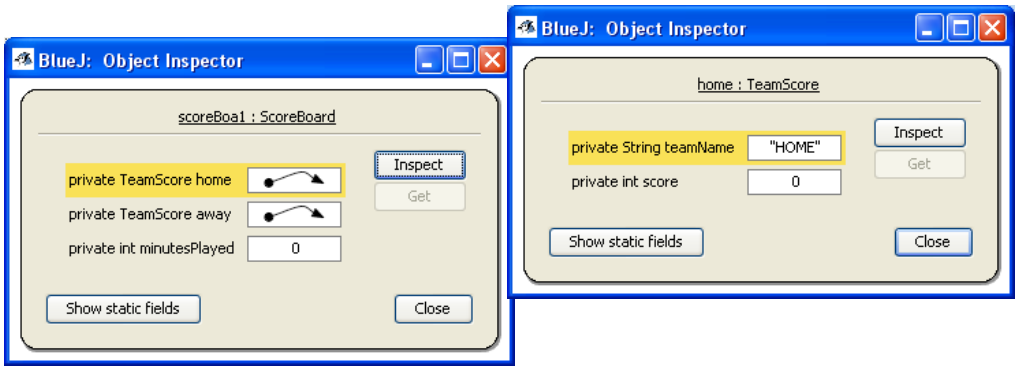
Test the `ScoreBoard` class as follows.

1. Right-click on the `ScoreBoard` class in BlueJ and select the constructor

2. The constructor takes no parameters, so you don't need to enter any values in the Create Object dialog. Just click OK and check that an object is created in the Object Bench.



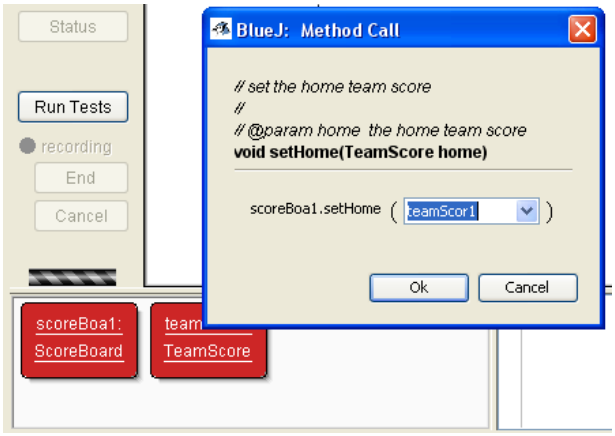
3. Right-click on the object, and choose Inspect from the menu. Check that the `ScoreBoard` object has two fields, `home` and `away`, which contain references to `TeamScore` objects, and an integer field. Select the `home` field and click Inspect – check that you then see a representation of an object of type `TeamScore`.



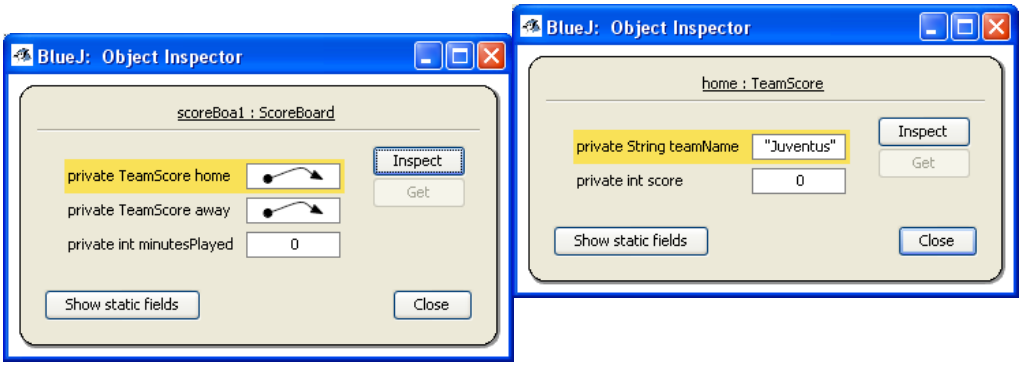
4. Right click on the object and call `setMinutesPlayed`. Enter a value of **45** in the Method Call dialog. Now call `setMinutesPlayed` and check that the value of 45 is returned.

5. Create a new `TeamScore` object in the object bench with a team name of "**Juventus"**. Note the name of the object in the Object Bench – probably *teamScor1*.

6. Right click on the object and call `setHome`. Enter the name of the `TeamScore` object in the Method Call dialog (or you can simply click in the text box and then click on the `TeamScore` object in the Object Bench).



7. Inspect the `ScoreBoard` object and in turn inspect the `home` field. Check that the team name is “Juventus”.



Task 3: Adding functionality to the ScoreBoard class

Writing Java code:

1. Open the `ScoreBoard` class in the BlueJ editor and edit the Java code so that your class has the following additional methods:

   - A method called `goalScored`, with no return value, which takes a single String parameter and does the following:

     - **if** the parameter value is “h”, calls the `updateScore` method of the `home` object

     - **else if** the parameter value is “a”, calls the `updateScore` method of the `away` object

   - A method called `display`, which displays the current score in the match, using the following code:

```
public void display()
{
    System.out.format("%d minutes played\n", minutesPlayed);
    System.out.format("%s %d:%d %s\n\n",
        home.getTeamName(),home.getScore(),
        away.getScore(),away.getTeamName());
}
```

   - A method called `setUpGame`, which takes two String parameters and has no return value, which does the following:

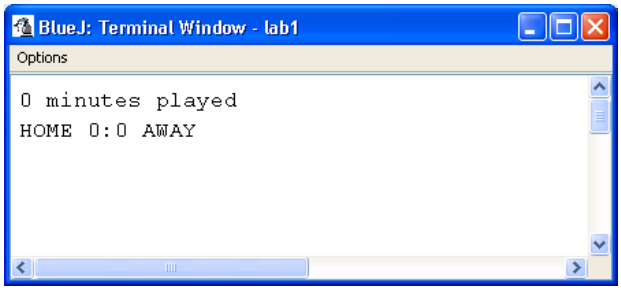
     - Sets the value of `minutesPlayed` to 0
     - Calls `home.setTeamName` to set the name of the home team to the first parameter value
     - Calls `home.resetScore` to set the home team score to 0
     - Calls `away.setTeamName` to set the name of the away team to the first parameter value
     - Calls `away.resetScore` to set the away team score to 0

Testing:

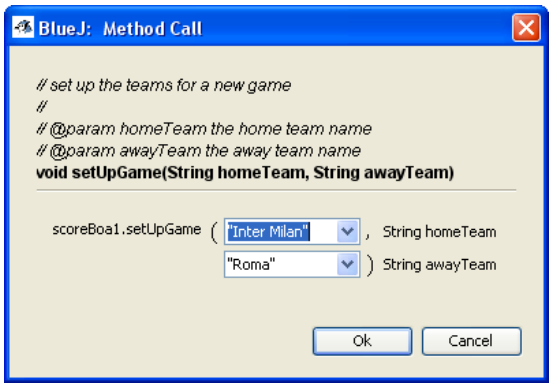
Test the `ScoreBoard` class as follows. If a test doesn’t work, go back to your code and try to identify and fix the problem.

1. Right-click on the `ScoreBoard` class in BlueJ and call the constructor. Check that an object is created in the Object bench.

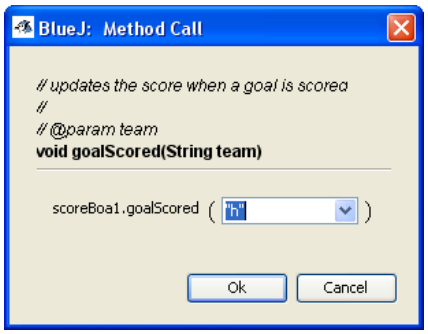
2. Right click on the object and call `display`. The Terminal Window should open and you should see the following output:



3. Right click on the object and call `setUpgame`. Enter two team names in the Method Call dialog box.



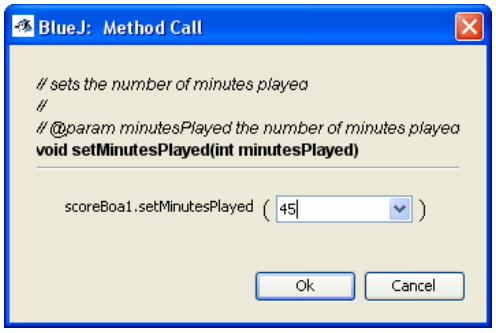
4. Right click on the object and call `goalScored`. Enter **"h"** in the Method Call dialog box.



5. Right click on the object and call the `goalScored` method again with the same parameter.

6. Right click on the object and call the `goalScored` method again and enter **"a"** in the Method Call dialog.

7. Right click on the object and call the `setMinutesPlayed` method. Enter **45** in the Method Call dialog box.



8. Right click on the object and call `display`. The Terminal Window should now show the following output: