# CS 101 Algorithms & Programming I - Fall 2021 - Section 2 Quiz 3 - **Week of November 29, 2021**

Design and implement a couple of classes for representing *players* and *teams* that the players play for. Here, a player should have a unique ID (starts with 1 and gets automatically generated and assigned upon construction), a name (specified during construction but may change over time), a jersey number (specified during construction and does not change) and a team s/he plays for, if any (through a reference to a team object). A team should have a name (e.g., "Red Stars") and a three-letter short name (e.g., "RST") both determined during construction (and not allowed to change afterwards) and a count of its currently active players. A player gets associated with a team using the `addPlayer()` method and stops being part of the team with the `removePlayer()` method. When a player is added to a team, the player's team should be set properly as well. In addition, implement a `toString()` method for the player class so that when invoked on a player who plays for Red Stars, it returns a string of the following format: "`Ali Ozturk with jersey number 99 currently plays for Red Stars (RST) which currently has 2 players`". Make sure you pay attention to the principle of information hiding but due to limited space, do not worry as much about style and checking of any invalid values being specified.

```java
public class Player {
  private static int count = 0;
  private int ID;
  private String name;
  private int jerseyNo;
  private Team team;
  public Player(String aName, int aJerseyNo) {
    this.ID = ++Player.count;
    this.name = aName;
    this.jerseyNo = aJerseyNo;
  }
  public int getID() { return this.ID; } // no set method
  public String getName() { return this.name; }
  public void setName(String aName) { this.name = aName; }
  public int getJerseyNo() { return this.jerseyNo; } // no set method
  public Team getTeam() { return this.team; }
  public void setTeam(Team aTeam) { this.team = aTeam; }
  public String toString() {
    return this.name + " with jersey number " +
      this.jerseyNo + " currently plays for " +
      this.team.getName() + " (" + this.team.getShortName() +
      ") which has " + this.team.getNoOfPlayers() +
      " players";
  }
}
```

```java
public class Team {
  private int count = 0;
  private String name;
  private String shortName;
  public Team(String aName, String aShortName) {
    this.name = aName;
    this.shortName = aShortName;
  }
  public String getName() { return this.name; } // no set method
  public String getShortName() { return this.shortName; } // no set method
  public int getNoOfPlayers() { return this.count; } // no set method
  public void addPlayer(Player player) {
    this.count++;
    player.setTeam(this);
  }
  public void removePlayer(Player player) {
    this.count--;
    player.setTeam(null);
  }
}
```

Name: _____ ID: _____ Signature: _____