Introduction to Object Oriented Programming

2023-2024 Spring

QUIZ-3

Due Date and Time: (Please load your solution to Quiz3 folder in EgeDers until 27.04.2024, 23:55)

I) Write an abstract class **Player** that has the following instance variable and methods:

* String typed variables called **name, position** and **team**. An int typed variable called **energy**. (Position corresponds to "mevki in Turkish" such as defence, midfield, forward, guard, pivot, etc.)

* Two constructor methods. The first one is the constructor method without any parameters (i.e. no-parameter constructor) and the other one is the constructor method that takes three parameters.

* toString method

* An abstract method to represent training of the player. (Note in Turkish: "Antrenman yapmak".)

>   public abstract void doTraining();

* Note: You can write get/set methods automatically using the IDE. You <u>do not</u> need to make error handling.

II) Write a class **FootballPlayer** that extends class Player. The FootballPlayer class has the following instance variables and methods:

* int typed variables called **assists** and **goals**.

* Two constructor methods. The first one is the constructor method without any parameters (i.e. no-parameter constructor) and the other one is the constructor method that takes all of the instance variable values as parameters.

* toString method

* Implement the doTraining method. In this method, subtract 50 from the current energy value of the football player.

* Note: You can write get/set methods automatically using the IDE. You <u>do not</u> need to make error handling.*

III) Write a class **BasketballPlayer** that extends class Player. The BasketballPlayer class has the following instance variables and methods:

* int typed variables called **assists, ribounds** and **points**.

* Two constructor methods. The first one is the constructor method without any parameters (i.e. no-parameter constructor) and the other one is the constructor method that takes all of the instance variable values as parameters.

* toString method

* Implement the doTraining method. In this method, subtract 30 from the current energy value of the basketball player.

Note: You can write get/set methods automatically using the IDE. You <u>do not</u> need to make error handling.

IV) Write a Demo class that includes a main method that does the following tasks:

* Define an array of type Player that will hold four elements.

* Construct two FootballPlayer objects and two BasketballPlayer objects.

* Store these objects in the array. (The order of objects in the array is not important, you can store an object in an index you prefer.)

* In a for loop print information about each object in the array.

* In a for loop call doTraining method on all objects in the array.

* In a for loop print again information about each object in the array.

Please note that all of the method calls above are polymorphic method calls.

Rules for Delivering the Quizzes

1. Upload your project to the Quiz-3 directory on EgeDers platform until **27.04.2024 Saturday 23:55**. When naming your project, use your 11 digit university student id and upload it in compressed form (such as 05110000222.rar or zip).

2. You can upload your project many times but the last uploaded version is saved.

3. The codes you write by yourself are more valuable. If a project that is prepared by plagiarizing from another student or Large Language Models is detected, then the quiz will be evaluated by zero (0) points.