Topic - Classes and Objects

1. Create a class ABC without any attributes and methods, ie. an empty class.
2. Create a class named School. Write a constructor to initialize the attributes.

School
name academic_year total_students board own_transport

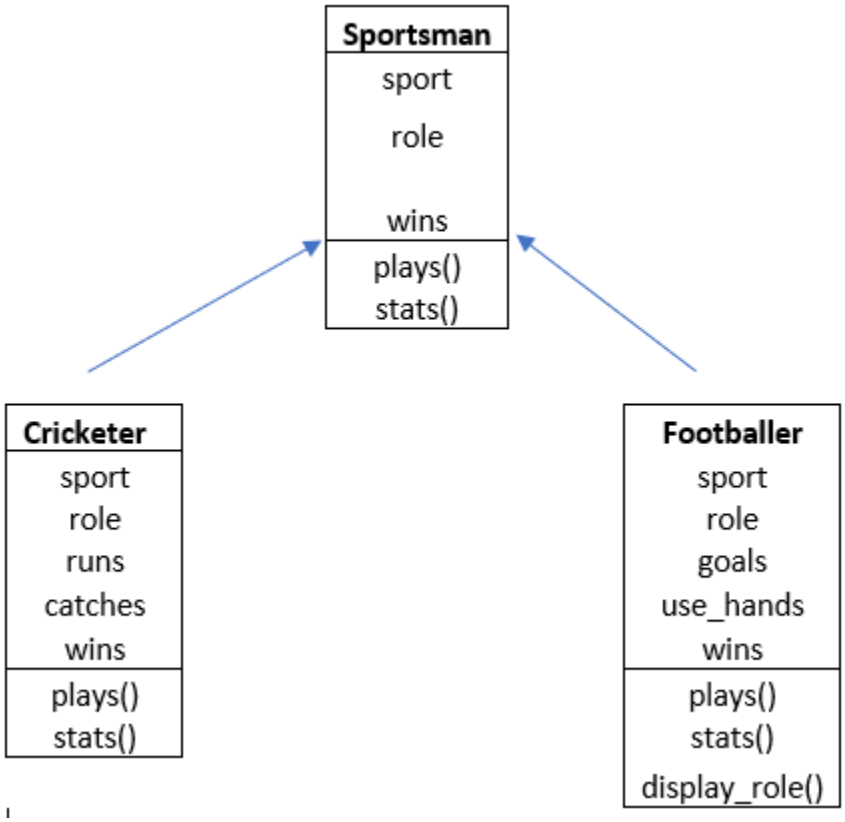
3. Create two School objects, school1 and school2:

school1
name = Oxford academic_year = 2024 total_students = 2215 board = CBSE own_transport = no

school2
name = Chaitanya academic_year = 2024 total_students = 2245 board = ICSE own_transport = yes

4. Find the name of the school that has more students.

Topics: Inheritance and Polymorphism



1. Implement the above **parent** - **Sportsman** and **child** - **Cricketer, Footballer** classes. The details of attributes and methods are as below:

   Sportsman : Attributes -

   name - stores the name of sport

   role - stores the role/position of player

   wins - stores the no. of games/matches won by player

Sportsman : Methods -

Constructor to initialize name, role and wins.

plays() - prints the name of the sport played, ie value inside ‘sport’

stats() - prints the number of wins given by wins attribute, as ‘Player has ___ wins’

Cricketer: Attributes -

sport, role, wins are automatically inherited from Sportsman.

runs - stores number of runs scored by player

catches - stores number of catches by player

Cricketer: Methods -

Constructor to initialize runs, catches and call to parent class constructor to initialize sport, role wins.

plays() - No change in method definitions. Same as Sportsman.

stats() - No change in method definition. Same as Sportsman

Footballer: **Attributes** -

sport, role, wins are automatically inherited from Sportsman.

goals- stores number of goals scored/blocked by player

use_hands - Stores ‘yes’ for ‘goalkeeper’ role and ‘no’ for all others

Footballer: Methods -

Constructor to initialize goals, use_hands and call to parent class constructor to initialize sport, role, wins.

plays() - No change in method definitions. Same as Sportsman

stats() - Change in method definition. It now prints the value in goals as follows

'The number of goals scored is : __' if role is not goalkeeper.

Otherwise prints 'The number of goals blocked is: __'

display_role() - prints the value in role

2. Execute the code and verify the output:

Player1 = Cricketer('Cricket', 'Batsman', 145, 0, 1)

Player2 = Footballer('Football', 'Goalkeeper', 5, 'yes', 2)

Player3 = Footballer('Football', 'Forward Player', 3, 'no', 1)

Player1.plays()

Player2.plays()

Player1.stats()

Player2.stats()

Player3.stats()

Player2.display_role()