Project Topic:
Designing a Parking System for Kigali Arena Sporting Events

Problem Statement:
Kigali Arena is an indoor arena in Kigali. It is the biggest indoor game arena in East Africa, located next to the Amahoro Stadium. The game arena is looking at hosting one of the most anticipated sporting events and concerts in 2021. With the plans to host the largest sporting event in East Africa at the Kigali Arena in 2021, how can the Arena properly manage its parking lot system to ensure a successful, coordinated game?

Goal: Creating an effective parking system that will park cars properly in the parking lots.

We have nine classes representing the entities of the problem.
Program Classes:
Class **ParkingLot:**
Park (Car) -- Boolean

Class **ParkingSlot:**
The role of this class is to indicate and assign the necessary locations for the station vehicle and moto.

Class **CarParkingSlot**
The role of this class is to indicate only to the car where the car is parked. The relationship it has with the first class is that it is a daughter class (heritage) that will need the data from the class parking lot.

Class **MotoParkingSlot:**
The role of this class is to indicate only to the moto where the Moto is parked. The relationship it has with the first class is that it is a daughter class (heritage) that will need the data from the class parking slot and also of the vehicle class.

Class **TruckParkingSlot:**
The role of this class is only to tell the truck where it is parked. The first class's relationship is that it is a daughter class (heritage), which will need the data of the parking slots of the class and the vehicle class.

Class **Vehicle:**

This class contains all our vehicles, verifies the time and registration number, and allows the other class to have precise information about the different vehicles to carry out their functions.

Class **Car:**

The Car class contains the necessary information that a vehicle can have and is a daughter class of the vehicle class; this class will also have relations with the class control that will be necessary to determine if the parking lot has necessary parking spaces but also in relation to the Class parking slots.

Class **Moto**:

The motorbike class will inherit specific characteristics from the car class. We know that the motorbike and the car have practically the same characteristics, so this will be a class that will allow us to have information about the motorbikes and will also be used in our program to see if the information we have about the motorbike will be able to help us when we are parked.

Class **Truck:**

The Truck class is a class that will allow us to have information on the trucks that will have to be parked, but it is also a daughter class or a heritage of the vehicle class.

Class **Controller :**

The controller class determines the type of vehicle and sends it to the correct car park.

This class will be related to all the other classes because it uses the information generated by the different classes to determine the type of vehicle and will allow indicating if it has parking spaces.