

Object Oriented Analysis

Lecture 2: Class Diagram

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We would like to develop a game with racing cars. You will model the elements of this game with a class diagram in UML first and then implement them by using Java classes.

A racing car consists of different structural components, such as an engine, four wheels and two or four doors. Each component in turn may contain its own attributes and operations. For example, the engine has its capacity, and it can be started or stopped. Before the engine can be started, all tires must have at least 32 psi. The car must be able to be started, running between 1 and 60 mph, and stopped. For each racing car, we know its actual velocity and position. We can also move forward, move backward, turn left, turn right and accelerate the car when needed.

The mesh (3D polygon model) that describes the shape of a racing car and is textured and rendered to a display can be shared by many racing cars. When a racing car is destroyed from the game, its mesh is not destroyed.

Different types of racing car exist for specific kinds of races, such as rally, formula 1 or touring. The racing car class will have an abstract method called *update()* which will be implemented later by its specialized classes.

A racing car is driven by a driver and can be associated with any number of sponsors. Each sponsor pays a sponsoring amount for a racing car.