

# *C++ Programming*

## Composition Relationship

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*Teaching, Training and Coaching since more than a decade!*

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# Composition Relationship

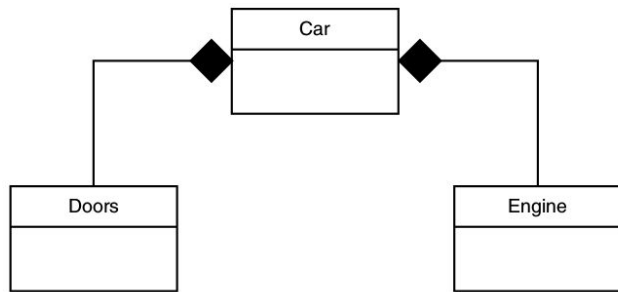
- A car **has an** engine
  - Engine has **no value to be used independently!**
    - If used, then by a car
  - Same for wheels
- A room has walls / ceiling / floor
  - If there is a used wall, it must be in a specific room



# Composition Relationship

- It is a **strong** “has a” relationship (**consists of**)
  - **Whole vs Part** relationship, but strong (**ownership**)
  - The whole **creates/destroys** the parts.
    - Car object creates engine/wheel objects
  - Part is used only by the whole
    - The engine is not shared between 2 cars
  - The part has **no life** of itself
    - If a university is closed, no departments anymore
- Composition allows **reusability**

```
4
5 class Engine {
6
7 };
8
9 class Wheel {
0
1 };
2
3 class Car {
4 private:
5     Engine engine;
6     vector<Wheel> wheels;
7 };
```



*“Acquire knowledge and impart it to the people.”*

*“Seek knowledge from the Cradle to the Grave.”*