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Algorithmic and Data Structures 2 (ADS2)
Semester 2 - 2025/2026
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Tutorial No. 6 : Records

Exercise 1:

We are interested in managing the vehicles of a car fleet. Each vehicle is characterized by a license plate, a brand, a model, a color, and a number of seats.

1. Provide the data structure that allows describing a vehicle.
2. Write sub-algorithms that allow to:
   o Store the information of a car fleet containing at most 50 vehicles using appropriate structures.
   o Display the license plate, brand, and model of vehicles of a given color.

Exercise 2:

A complex number Z is fully defined by its real part a and imaginary part b, written as $Z = a + bi$.

1. Define the data structure for a complex number.
2. Write the functions realPart(Z) and imagPart(Z) that return the real and imaginary parts of a complex number, respectively.
3. Implement the procedures addComplex, subComplex, and mulComplex to perform arithmetic on complex numbers, corresponding to addition, subtraction, and multiplication.
4. Write a function equalComplex that checks whether two complex numbers are equal.
5. Implement a procedure printComplex that displays a complex number in a readable format.

Let C be an array of N complex numbers ($N \leq 100$). Using the subroutines above, write an algorithm that:

- Displays the element of C with the largest real part.
- Computes the sum sZ and the product pZ of all non-zero elements in the array C.

printf("It is by trying again and again that one finally succeeds. ");