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**Revise the concepts and upskill programming skills focusing on** naming conventions, coding standards and code quality

• Variables and Data Types

• Operators

• Control Structures and loops

• Functions

• Arrays and Vectors

**Questions:**

**Question** **1**. Vehicle Information: Write a C++ program to store and display informationabout a vehicle. The information includes:

• Vehicle Make (e.g., Toyota, Honda, Ford)

• Vehicle Model (e.g., Camry, Civic, Mustang)

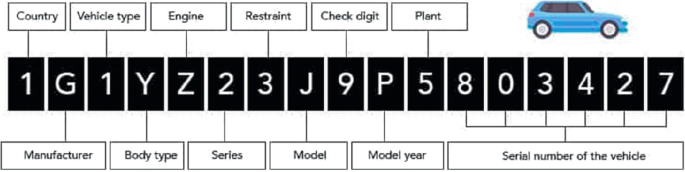
• Year (e.g., 2022, 2019, 2015)

• Engine Size (in liters, e.g., 2.5, 3.5, 1.8)

• Transmission Type (e.g., Automatic, Manual, Semi-Automatic)

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**Question 2.**Vehicle Identification Number (VIN) Validator: Write a C++ program tovalidate a Vehicle Identification Number (VIN). The program should take a VINas input and check if it is valid (i.e., 17 characters long and meets certainformatting rules). The character wise description of VAN is presented in thefigure below.



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**Question 3.** Fuel Economy Calculator: Write a C++ program to calculate the fueleconomy of a vehicle. The program should take the following inputs:

• Total Distance Travelled (in kilometers)

• Total Fuel Consumed (in liters)

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**Question 4.** Vehicle Inspection: Write a C++ program to inspect a vehicle's condition.The program should take the following inputs:

• Tire Pressure (in pounds per square inch, psi)

• Oil Level (in liters)

• Brake Pad Thickness (in millimeters)

Use logical operators to check if the vehicle's condition is satisfactory. If anyof the conditions are not met, display a warning message.

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**Question 5.** Vehicle Start-Up Sequence: Write a C++ program to simulate a vehicle'sstart-up sequence. The program should take the following inputs:

• Ignition Switch State (ON/OFF)

• Fuel Level (in liters)

• Oil Pressure (in psi)

Use if-else statements to check the ignition switch state, fuel level, and oilpressure. If all conditions are met, display a message indicating that thevehicle is ready to start.

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**Question 6.**Vehicle Drive Mode: Write a C++ program to simulate a vehicle's drivemode selection. The program should take the following input:

• Drive Mode (1-3, where 1=Eco, 2=Comfort, 3=Sport)

Use a switch case statement to display the selected drive mode and adjustthe vehicle's parameters (fuel efficiency and acceleration) accordingly.

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**Question 7.** Vehicle Speed Calculator: Write a C++ program to calculate a vehicle'sspeed over a certain distance. The program should take the following inputs:

• Distance (in kilometers)

• Time (in hours, minutes, and seconds)

Use functions and loops to calculate and return the vehicle's speed inkilometers per hour, miles per hour, and meters per second.

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• Odometer Reading (in kilometers)

• Maintenance Interval (in kilometers)

Use a loop to calculate and display the next maintenance due date andthe number of maintenance checks required over a certain distance.

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**Question 9.** Vehicle Speed Analyzer: Write a C++ program to analyze the speed of avehicle over a series of time intervals. The program should take an array oftime intervals and an array of corresponding speeds and calculate themaximum speed and average speed.

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