

CRUISE CONTROL – Overspeed Alert System (AUTOSAR Based Design)

1. System Overview

The Cruise Control Overspeed Alert System continuously monitors vehicle speed.

If the speed exceeds **70 kmph**, the system generates an **alert to the driver** (buzzer / display message).

This system is modeled using **AUTOSAR architecture**, where:

- Sensors provide speed input
 - Application Software Component (SWC) checks the limit
 - Runtime Environment (RTE) handles communication
 - Basic Software (BSW) handles IO and hardware access
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2. System Requirements

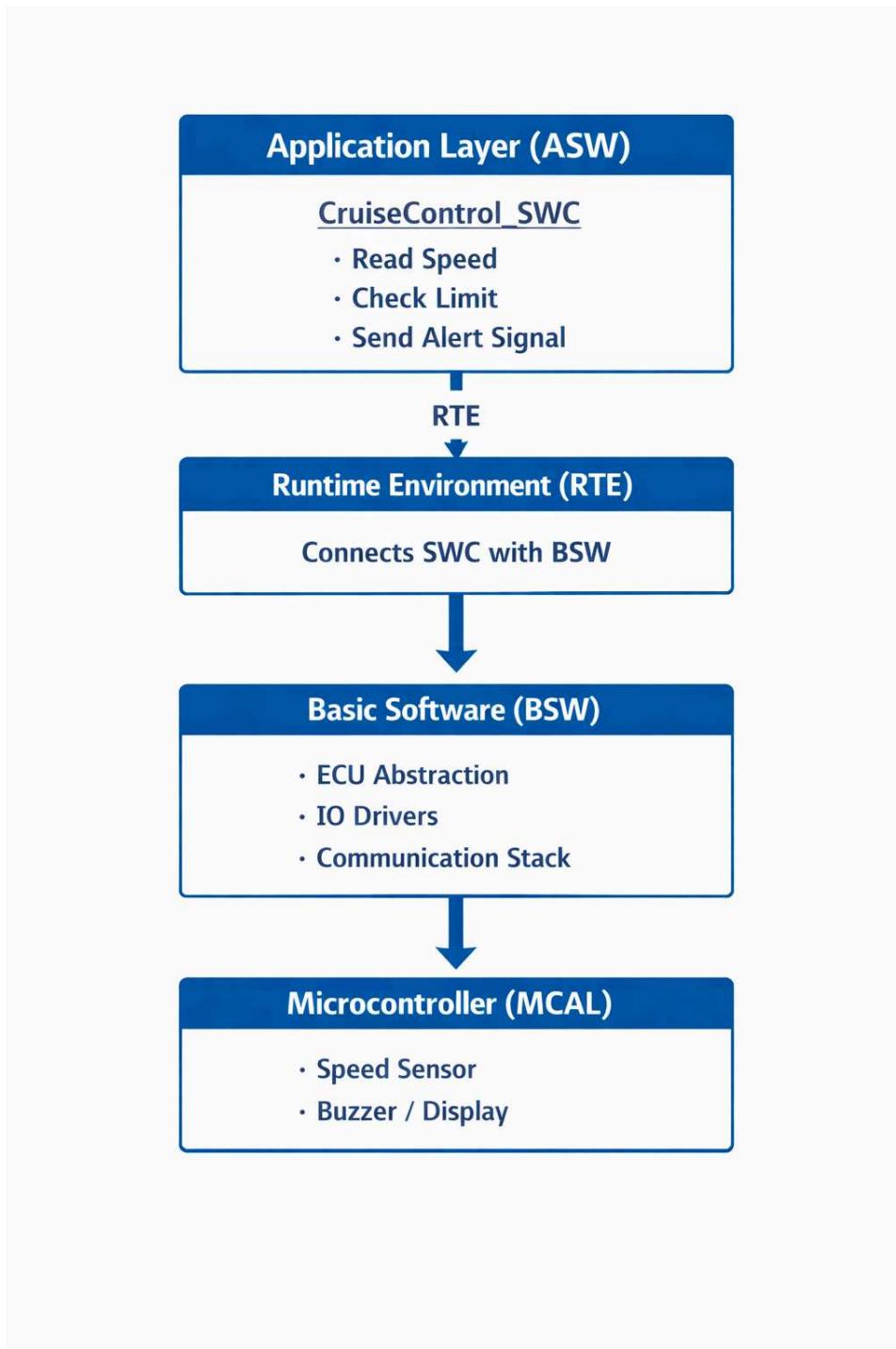
Functional Requirements

- Read vehicle speed continuously
- Compare speed with threshold (70 kmph)
- Trigger alert when speed > 70 kmph
- Alert should stop when speed \leq 70 kmph

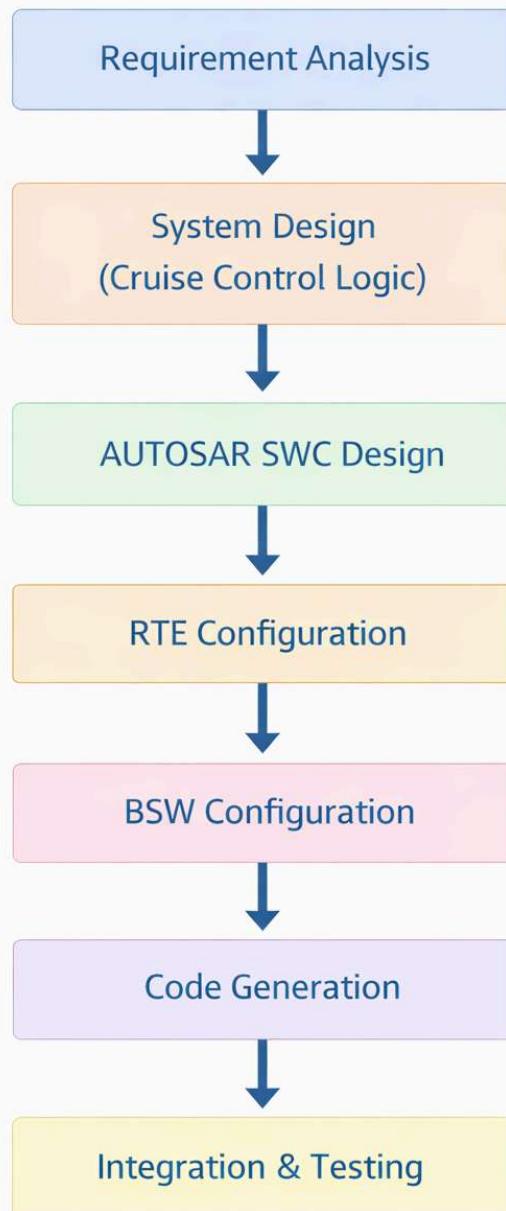
Non-Functional Requirements

- Real-time execution
- Platform independent (AUTOSAR)
- Scalable for future ADAS features

3. AUTOSAR Architecture Usage



4. Design Flow (AUTOSAR Development Flow)



5. Software Component Design (SWC)

CruiseControl_SWC

Inputs

- VehicleSpeed (kmph)

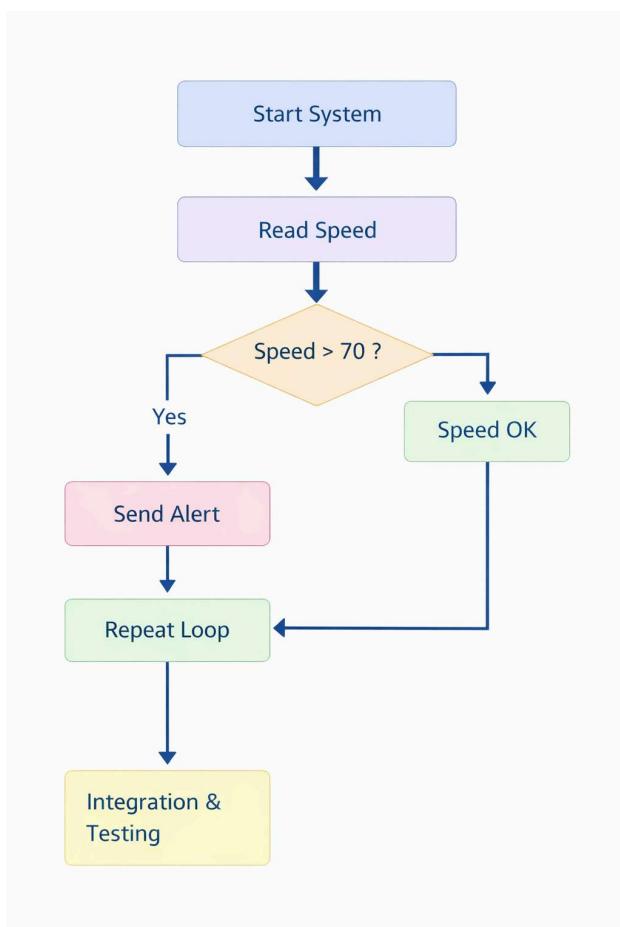
Outputs

- OverspeedAlert (ON / OFF)

Runnable

- SpeedMonitorRunnable (every 100 ms)

6. Execution Flow



7. Testing Scenarios

Input	Expected Output
Speed	
50 kmph	Speed OK
70 kmph	Speed OK
80 kmph	Overspeed Alert Triggered
100 kmph	Overspeed Alert Triggered

8. Future Enhancements

- Integrate with CAN bus
 - Automatic throttle control
 - Adaptive Cruise Control (ACC)
 - Integration with ADAS
 - Real ECU deployment (AUTOSAR Classic)
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9. Conclusion

This design demonstrates how **AUTOSAR architecture** can be applied to a **cruise control overspeed alert system**, using a Python simulation to represent the application logic.

The same flow can be implemented in **C (AUTOSAR Classic)** for real ECU deployment.

PROJECT CERTIFICATE

Certificate No.: CC–AUTOSAR–2026–001

Date of Issue: 19 January 2026

Issuing Authority: Department of Automotive Software Engineering

Institution / Training Platform: Corporate Guides – Automotive & Embedded Systems

1. Project Title

**Design and Implementation of Cruise Control Overspeed Alert System
using AUTOSAR Architecture and Python Simulation**

2. Student Information

Student Names: Group-1 students

Course / Program: Automotive Testing Training

Platform: Corporate Guides

Trainer Name: Mr. Abhishek sir

3. Project Description

This project focuses on the **design and simulation of a Cruise Control Overspeed Alert System**, which monitors vehicle speed and triggers an alert when the speed exceeds **70 kmph**.

The system is designed following **AUTOSAR (AUTomotive Open System ARchitecture)** principles and includes:

- Application Software Component (SWC) design
- RTE communication flow
- Basic Software (BSW) abstraction

- Design flow from requirement to testing
 - Python-based simulation of cruise control logic
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4. Technologies & Standards Used

- AUTOSAR Classic Architecture
 - Python (Simulation of Application Layer)
 - Automotive Software Design Flow
 - Embedded System Concepts
 - Automotive Safety Logic
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5. Project Outcome

The project successfully demonstrates:

- Real-time speed monitoring logic
 - Overspeed alert generation (>70 kmph)
 - AUTOSAR layered software design
 - Clear separation of application, RTE, and BSW
 - Readable, scalable, and automotive-compliant design
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6. Certification Statement

This is to certify that the above student has **successfully designed and implemented** the project titled:

“Cruise Control Overspeed Alert System using AUTOSAR and Python”

The project meets academic and industry-level design standards and reflects a clear understanding of **automotive embedded software architecture**.

7. Approval & Authorization

Trainer Signature: _____

Name: Mr. Abhishek

Designation: Automotive Software Trainer

Department Seal / Stamp:

Date: _____