TechnoScripts
[An ISO 9001:2008 Certified Company]

Automotive Embedded Systems Course

Basics of Automotive domain
Use of Embedded in automotive
Automotive Embedded system design
Automotive product development life cycle
Automotive Sensors and Transducers
Automotive grade microcontrollers
Microcontroller Architecture
Microcontroller programming
Introduction to Misra C
Misra C Guideines for Programming
Sensor interfacing
Hall Sensor for Speed
PWM Generation
Motor Control
Actuators, Sensors, Semiconductor Components
Integrated Circuits & SMD Components
Electric Motors & Driving Techniques
Communication Protocol: USART, I2C, SPI, CAN Bus
Use of Protocols, Communication Protocols:

- RS 232
- I2C protocol
- SPI Protocol

Introduction to Automotive Protocols:

- CAN
- J1939

CAN Protocol Training:
Introduction to CAN protocol
Use of CAN protocol in Automotive
Basic of CAN Standard and Extended
CAN communication
Implementation of CAN drivers
CAN Hardware
comparison I2C,SPI,RS232-drawbacks

Why CAN, CAN basics, OSI -reference model,
Node concept, CSMA/CD-CR
Frame contents for all types
Physical Layer, Arbitration Concept, Frame Formats
Bit-stuffing coding
Types of errors – Ack error, stuff error, form error, bit error, crc error
CAN bus arbitration
Fault Confinement
Interfacing of PIC18f458 with MCP2551 and CAN BUS
Bit timing calculations
Baud Rate calculations
Architecture of CAN engine in PIC18f458
need of filter and mask registers
modes discussion in pic18f458
Project creation
loop back mode testing
creating 2 nodes =transmitter and receiver nodes
send any data from transmitter node and receiving the same data on receiver node
Interview questions and discussion
CAB Analyzer Tool Chain
Building Simple CAN Application using CAN Training Kit

MATLAB Simulink:

- Need for Simulation, Simulation Parameters – Simulation Time and Step Size
- Solver – Types and Use, Introduction to Model Based Design, Simulink Basics
- Simulink Library Browser, Simulink Editor Window
- Creating a simple model, Connecting blocks
- Simulating the model

STATEFLOW:

- Introduction to Finite State Machines
- Need of Stateflow, Stateflow Truth Table
- Stateflow Chart Editor, Flow based logic
- State based logic, Super state vs Sub states
- Stateflow elements – functions, embedded MATLAB functions etc.