

I Year I Semester
Code: 17ES104

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EMBEDDED-C

UNIT-I: Programming Embedded Systems in C

Introduction, What is an embedded system, Which processor should you use, Which programming language should you use, Which operating system should you use, How do you develop embedded software, Conclusions

Introducing the 8051 Microcontroller Family

Introduction, what's in a name, The external interface of the Standard 8051, Reset requirements,
Clock frequency and performance, Memory issues, I/O pins, Timers, Interrupts, Serialinter face, Power consumption, Conclusions

UNIT-II: Reading Switches

Introduction, Basic techniques for reading from port pins, Example: Reading and writing bytes, Example: Reading and writing bits (simple version), Example: Reading and writing bits (generic version), The need for pull-up resistors, Dealing with switch bounce, Example: Reading switch inputs (basic code), Example: Counting goats, Conclusions

UNIT-III: Adding Structure to the Code

Introduction, Object-oriented programming with C, The Project Header (MAIN.H), The Port Header (PORT.H), Example: Restructuring the "Hello Embedded World" example, Example: Restructuring the goat-counting example, Further examples, Conclusions

UNIT-IV: Meeting Real-Time Constraints

Introduction, Creating „hardware delays“ using Timer 0 and Timer 1, Example: Generating a precise 50ms delay, Example: Creating a portable hardware delay, Why not use Timer 2? .The need for "timeout" mechanisms, Creating loop timeouts, Example: Testing loop timeouts, Example: A more reliable switch interface, Creating hardware timeouts, Example: Testing a hardware timeout, Conclusions

UNIT-V:Case Study-Intruder Alarm System Introduction, The software architecture, Key software components used in this example, running the program, the software, Conclusions

TEXT BOOKS:

1. Embedded C - Michael J. Pont, 2nd Ed., Pearson Education,2008.

REFERENCE BOOKS:

1. PICMCU C-An introduction to programming, The Microchip PIC in CCS C - Nigel Gardner.