

# Chapter 10

# Programming in C

# Lesson 01

## Basics of Programming in C

# High Level Language (HLL)

1. Compact coding in high level language keeping full application in view
2. Software abstraction
3. Modular programming
4. Top to bottom program design approach

# HLL when

5. Development of long program divided into functions (routines)

6. Development of long program with inclusion of modules and library functions

7. Use of Data type declaration and data type checking

8. Use of control structures - decision blocks and loops

# HLL Features

- Software re-usability
- MCU independent when the in-line assembly codes are not used and appropriate compiler for the MCU used
- The program developed for one MCU can be ported for other applications also, when the compiler supports multiple MCUs

# C Features

1. High level language with in-line assembly codes
2. Inclusion of modules and library functions
3. Development of a program by the macros, functions (routines), Control structures - decision blocks and loops
4. Data type, array and string declarations and data type checking

# C Features

**5. struct for the data sets and records**

6. Codes can be reused in objected oriented programming with C++

7. A compiler checks the logical errors and converts the program to object code for a specific processor

# C Program Lines

1. Brief description
2. Programmer name, version and date
3. include source files and header files
4. Preprocessor directives, declarations and Macros



# Program Lines

5. Main Function

6. Program functions

# Preprocessor Lines

1. Define global variables
2. typedef to define new data types
3. Declare global variables
4. Declare global functions
5. Macros

# Main Function

Program source file execution starting  
function

# Summary

# High level language

- Enables development of a lengthy and complex program in short time
- When the appropriate compiler and development tools available, writing more than 100 or 1000 lines of code is much less time consuming

# We learnt

- Uses Pointers, data structure, functions, Macros, structures and decision control blocks for, while, repeat until
- Also facilitates the data-type declarations
- Enables the type checking.
- C— a High level Language
- Library functions use
- include and preprocessor directives
- Inline codes permitted

# We learnt

- Top to bottom design approach
- Microcontroller independent program development
- C program consists of a source file having the preprocessor directives having include, define and typedef commands, global declarations and macros, main and other functions

End of Lesson 01 on

Basics

of Programming in C