Chapter 1

Introducing C

Origins of C

- C was developed at Bell Laboratories as a by-product of Unix
- In 1970, Ken Thompson designed a small high level language named B, to facilitate developing Unix
- Dennis Ritchie soon joined the Unix project and began to use B
- By 1971, Ritchie began to develop an *extended* version of B
- He called his language NB ("New B") at first
- As the language began to diverge more from B, he changed its name to C
- The language was stable enough by 1973 that Unix could be rewritten in C

Standardization of C

- *K&R C*
  - Described in Kernighan and Ritchie book, *The C Programming Language* (1978) (Kernighan is ***a Canadian CS***)
  - De facto standard
- *C89/C90*
  - ANSI standard X3.159-1989 (completed in 1988; formally approved in December 1989)
  - International standard ISO/IEC 9899:1990
- *C99*
  - International standard ISO/IEC 9899:1999
  - Incorporates changes from Amendment 1 (1995)

C-Based Languages

- ***C++*** includes all the features of C, but adds classes and other features to support object-oriented programming
- ***Java*** is based on C++ and therefore inherits many C features
- ***C#*** is a more recent language derived from C++ and Java
- ***Perl*** has adopted many of the features of C

Learning C can give you greater insight into the features of C-based languages

C is still widely used for developing new software

What Will We Cover in This Course?

- **In this course, we will follow**
  - the bottom-up approach, not the top down approach, i.e.,
    - Focusing of the details of each piece
    - Putting pieces together till seeing the full picture
- **The text book consists of three parts:**
  - Basic Features of C
  - Advanced Features of C
  - The Standard C Library

What Will We Cover in This Course?

- **Basic Features of C**
  - Chapter 1: Introducing C
  - Chapter 2: C Fundamentals
  - Chapter 3: Formatted Input/Output
  - Chapter 4: Expressions
  - Chapter 5: Selection Statements
  - Chapter 6: Loops
  - Chapter 7: Basic Types
  - Chapter 8: Arrays
  - Chapter 9: Functions
  - Chapter 10: Program Organization

What Will We Cover in This Course?

- **Advanced Features of C**
  - Chapter 11: Pointers
  - Chapter 12: Pointers and Arrays
  - Chapter 13: Strings
  - Chapter 14: The Preprocessor
  - Chapter 16: Structures, Unions, and Enumerations
  - Chapter 17: Advanced Uses of Pointers
  - Chapter 20: Low-Level Programming
- **The Standard C Library**
  - Chapter 22: Input/Output

What Will We Cover in This Course?

- **Likely will not be able to cover the following chapters:**
  - Chapter 15: Writing Large Programs
  - Chapter 18: Declarations
  - Chapter 19: Program Design
  - Chapter 21: The Standard Library