Introducing C

- C was originally developed by Dennis Ritchie between 1969 and 1973 at Bell Labs. It has since become one of the most widely used programming languages of all time.

- C is a procedural language which provides low-level access to memory, and language constructs that map efficiently to machine instructions. C is useful for many applications that had formerly been coded in assembly language. C is *fast* as it's close to assembly language.

- An assembly (or assembler) language, is a low-level programming language for a computer, or other programmable device, in which there is a very strong (generally one-to-one) correspondence between the language and the architecture's machine code instructions. Assembly is all zero's and 1's, with "Eight bits to a byte." 10110000 01100001 is B0 61 in hexadecimal (base 16, or hex). Assembler is very fast but very hard to write in.

- The C programming language originally wasn't standardized, which caused all sorts of headache. It became standardized with ANSI C also known as Standard C in 1989. see the Kernighan & Ritchie "ANSI C" book. American National Standards Institute (ANSI).

- A standards-compliant "ANSI" and portably written C program can be compiled for a very wide variety of computer platforms and operating systems with few changes to its source code. Despite its low-level capabilities, the language was designed to encourage cross-platform programming.

- The origin of C is closely tied to the development of the UNIX operating system, originally implemented in assembly language on a PDP-7 by Dennis Ritchie and Ken Thompson. Eventually, they decided to port the operating system to a PDP-11. The original PDP-11 version of UNIX was developed in assembly language. The developers were considering rewriting the system using the B language, Thompson's simplified version of BCPL. However B's inability to take advantage of some of the PDP-11's features led to C.

- A large part of UNIX was rewritten in C. With the addition of struct types (you will discover them later), the C language become powerful enough that most of the UNIX's kernel was was written in C. UNIX was one of the first operating system kernels implemented in a language other than assembly.

- C Strengths: Efficient, Portable, Power, Flexibility (C allows a character to be added to an integer).

- C Weaknesses: Flexibility makes it Error-prone. Difficult to Understand. Difficult to Modify.

- C++ is written in C. C++ was designed by Bjarne Stroustrup of Bell Labs. In particular, C++ adds features to support object-oriented programming. C++ is modular and easier to modify large projects in than C.