

# CS100 Lecture 1

Warmup for C

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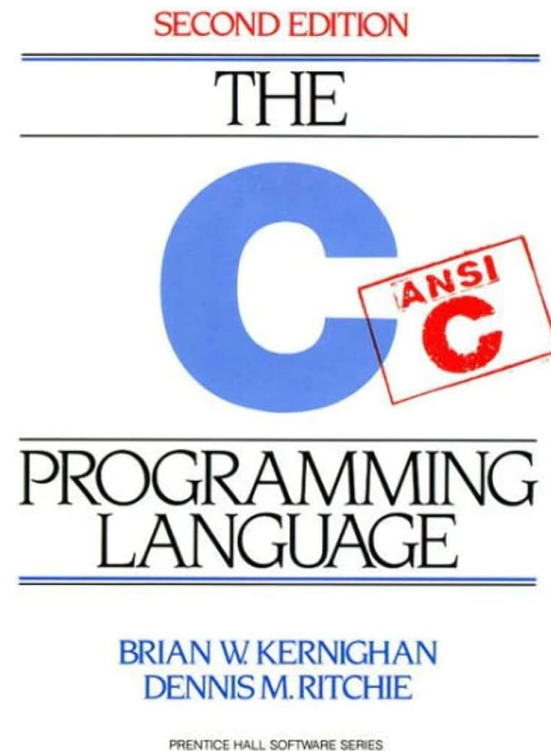
- Brief history of C
- The first C program
  - Functions (basic) and the `main` function
  - Data types
  - `scanf` and `printf`

# Brief history of C

# The UNIX operating system and C

- In 1969, a small group of AT&T Bell Labs led by **Ken Thompson** and **Dennis Ritchie** began to develop UNIX.
- In 1973, UNIX kernel was rewritten in C.
- From 1969 to 1973, Dennis Ritchie developed C in Bell Labs.
- In 1978, Kernighan and Ritchie published **the K&R book**: *The C Programming Language*.

# Dennis Ritchie and the K&R book



- Dennis M. Ritchie (1941 - 2011)
  - The inventor of C
  - Co-inventor of UNIX
  - ACM Turing Award (1983) with Ken Thompson for UNIX

# Standardization of C

- "K&R C": Informal specification (the K&R book)
- ANSI C: Known as "C89"
  - American National Standards Institute
  - Came out in 1989
- ISO C standard: ISO/IEC 9899
  - International Organization for Standardization
  - First version: "C90" in 1990, the same standard as C89 with only formatting changes
  - C99 (1999), C11 (2011), C17 (2017/2018), C23 (2023)

# The first C program

# Hello World

```
#include <stdio.h>

int main(void) {
    printf("hello world\n");
    return 0;
}
```

- Save the code as `hello.c` .
- `gcc hello.c -o hello.exe`  $\Rightarrow$  generates `hello.exe`
- `.\hello.exe`  $\Rightarrow$  prints `hello world` , with a newline at the end.



## The `main` function

Every C program coded to run in a hosted execution environment contains the definition of a **function** named `main`, which is the designated start of the program.

```
int main(void) {  
    // The program starts here.  
    statement_1;  
    statement_2;  
    // ...  
    statement_n;  
}
```

**A function in C**