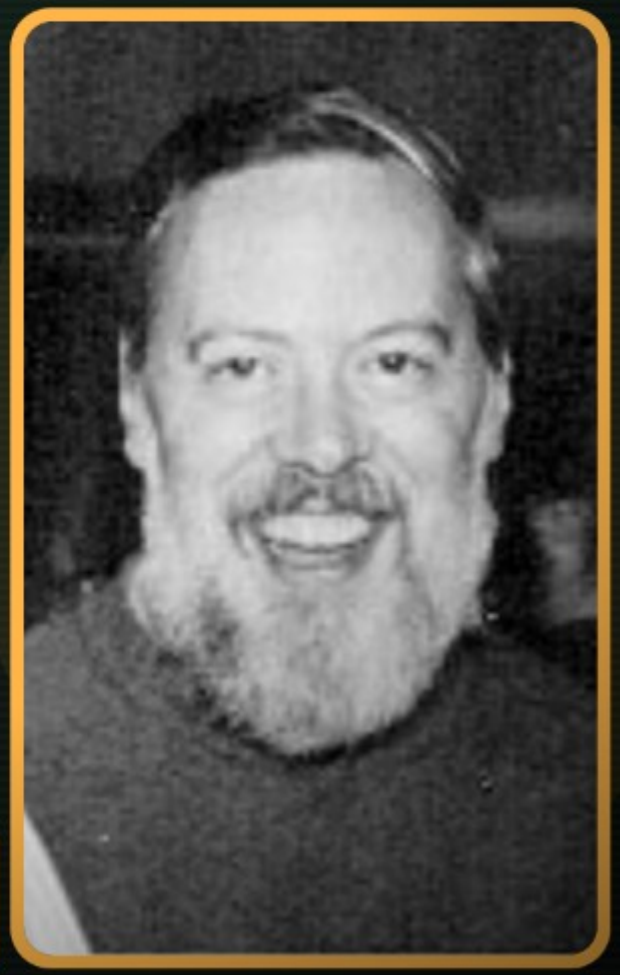
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# UNIX

## The 2 Programmers Behind Every Computer Today





**THOMPSON & RITCHIE · 1969**

A MYWEBUNIVERSITY STORY

# UNIX

## The Two Programmers Who Built the Digital World

*The Story of Ken Thompson and Dennis Ritchie*



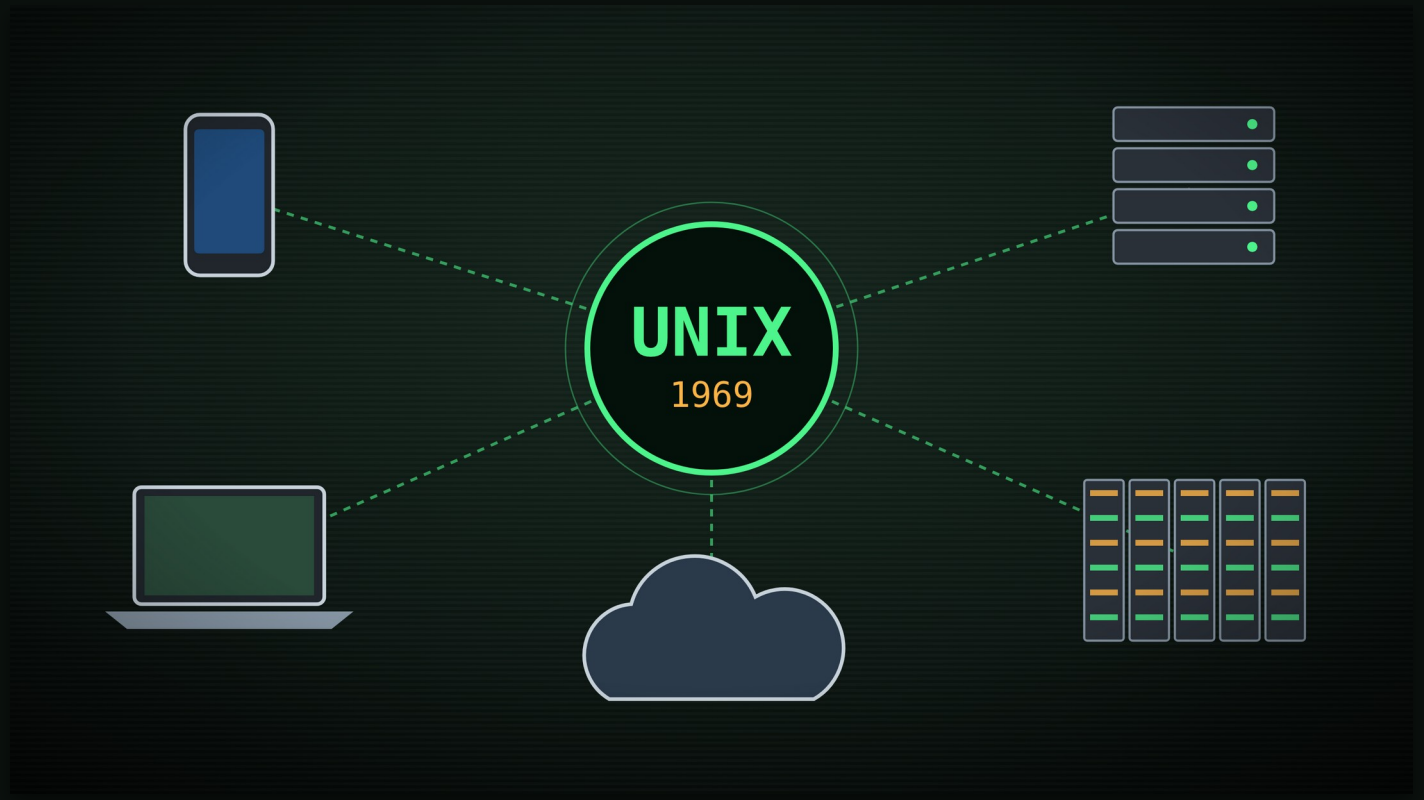
Ken Thompson



Dennis Ritchie

Photo: public domain, via Wikimedia Commons (The Jargon File)

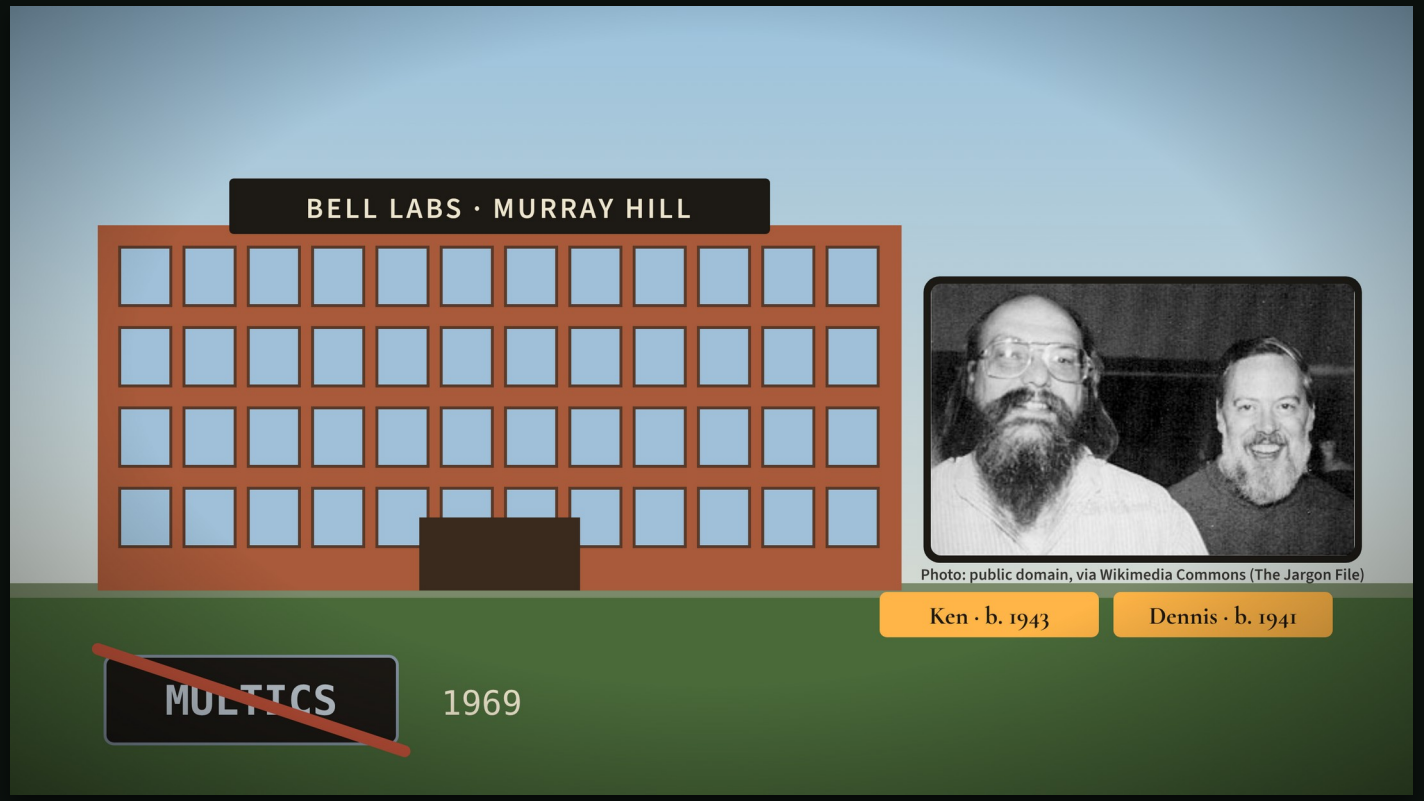
# Hidden in Plain Sight




- Smartphones, websites and supercomputers share one ancestor
- UNIX: born in 1969 at Bell Labs, New Jersey
- Created by Ken Thompson and Dennis Ritchie

01

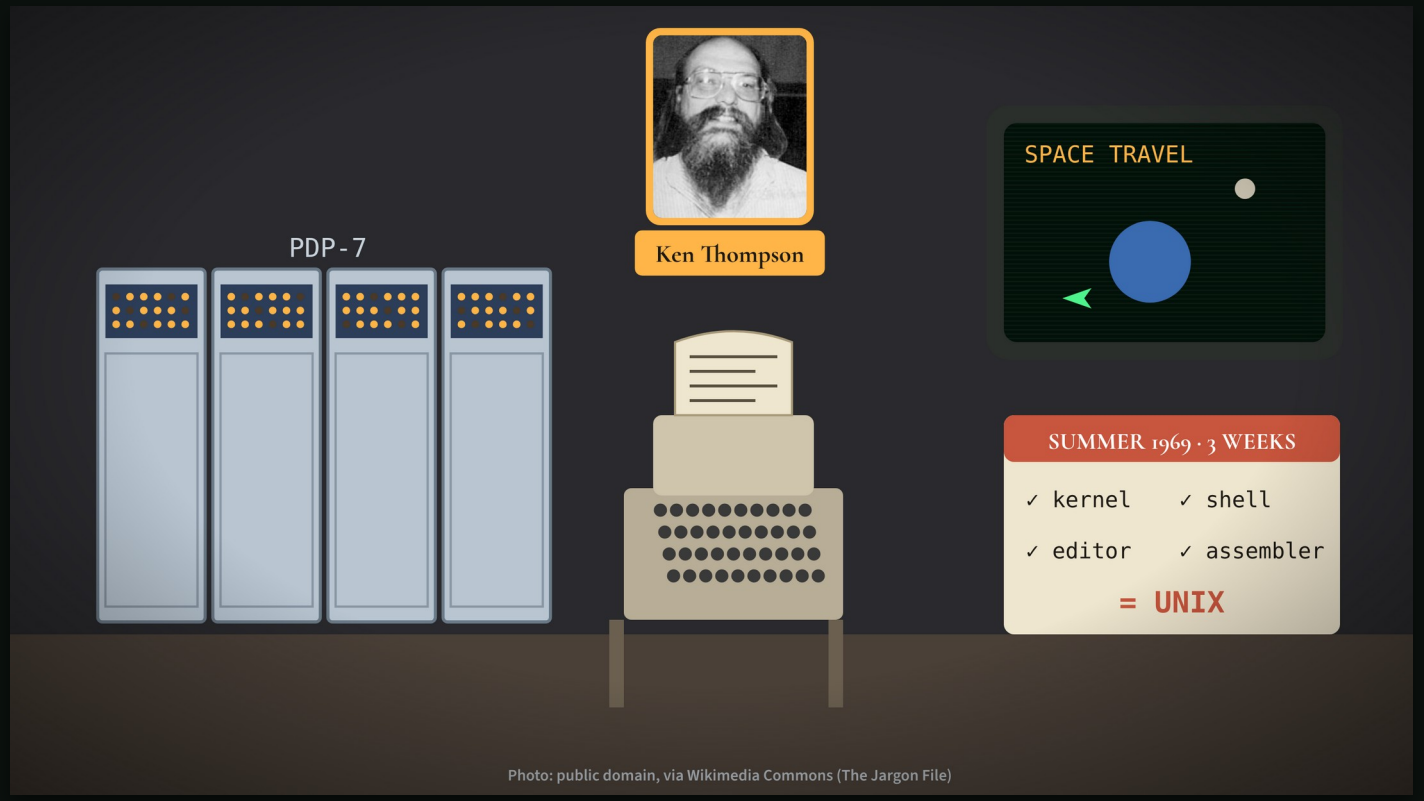
# Bell Labs, 1969




- Ken Thompson: born 1943, New Orleans
- Dennis Ritchie: born 1941, Bronxville, New York
- 1969: Bell Labs leaves the huge Multics project

02

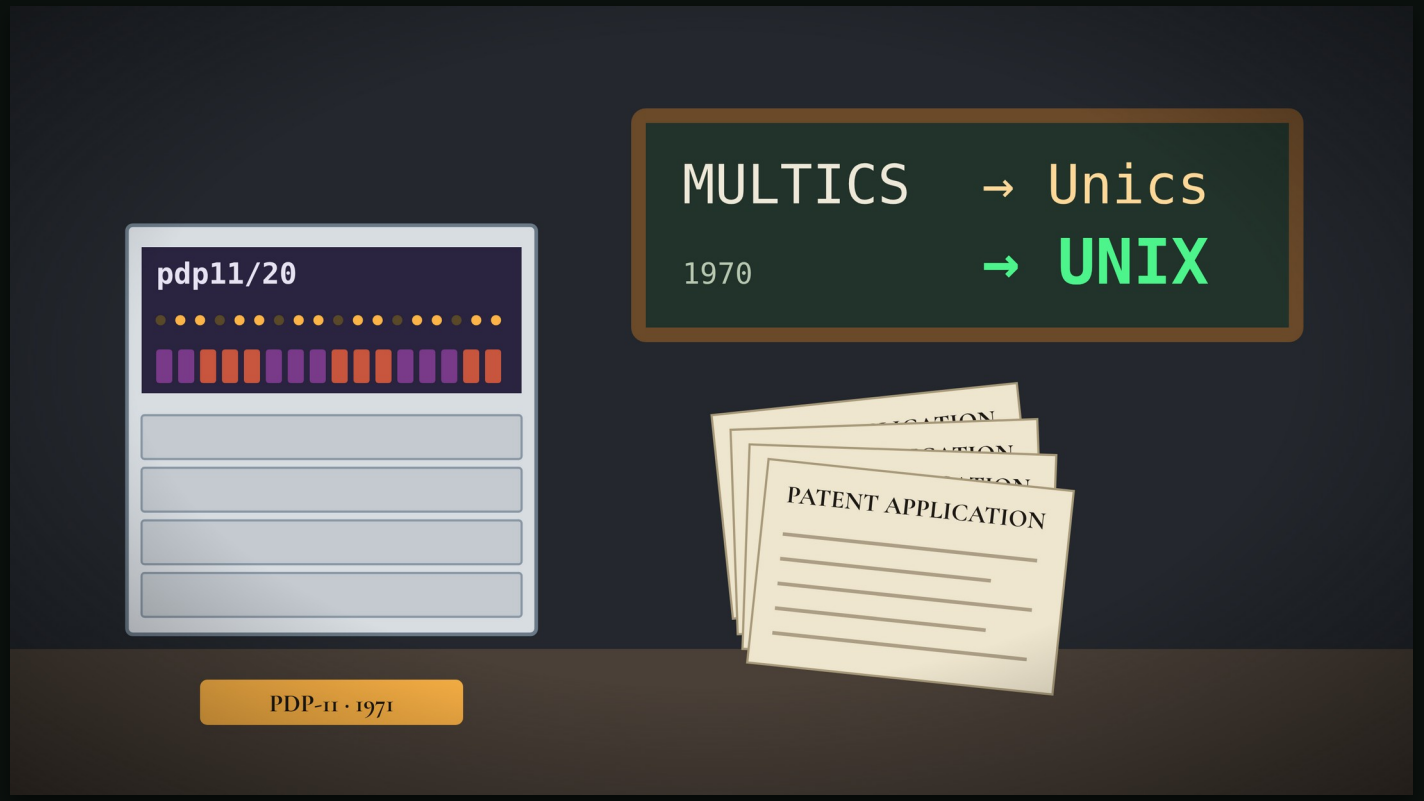
# A Forgotten PDP-7




- An unused PDP-7, first used for Ken's game Space Travel
- Summer 1969: about three weeks for the kernel, shell, editor and assembler
- UNIX is born

03

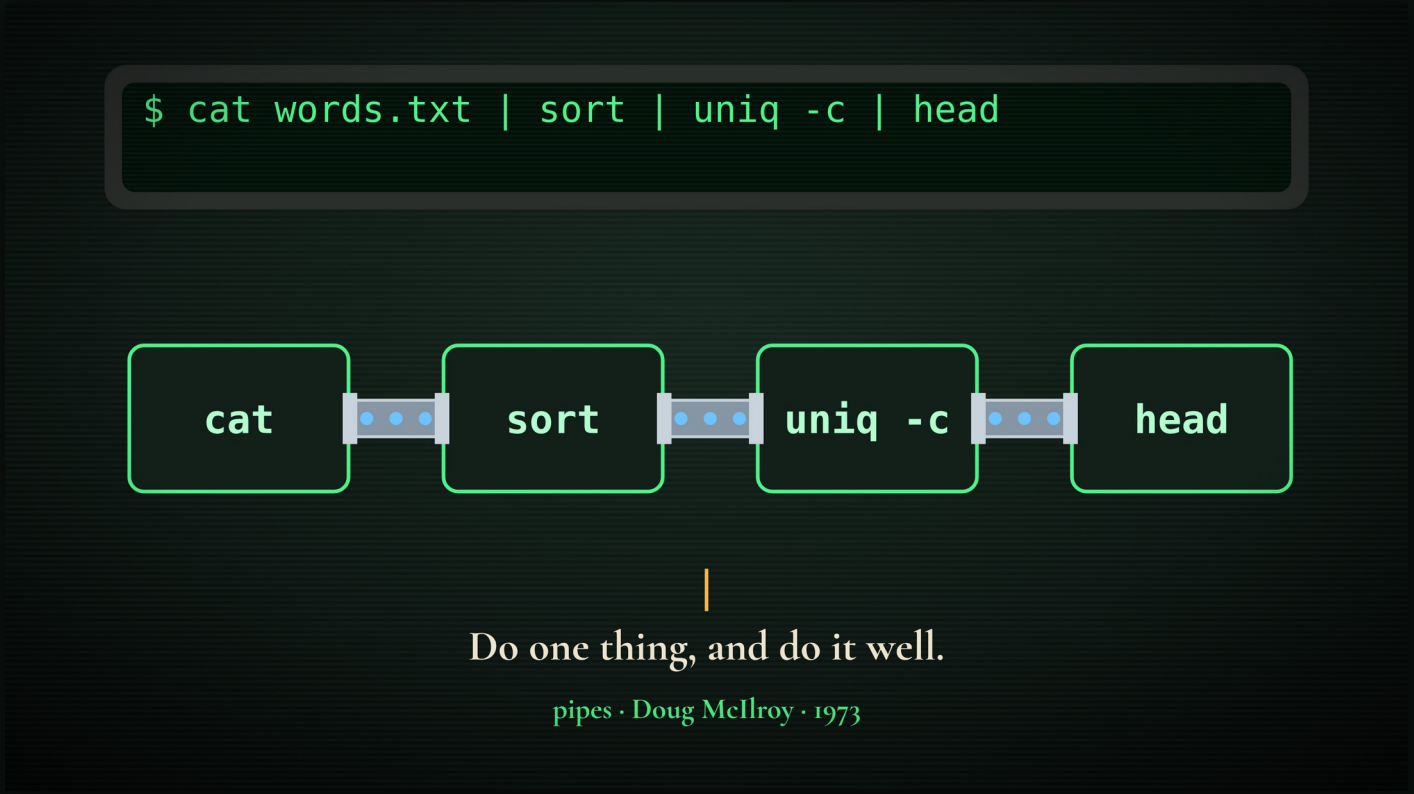
# From Unics to UNIX




- “Unics”: Brian Kernighan’s pun on Multics, soon UNIX
- 1971: UNIX moves to the PDP-11
- First real users: the Bell Labs patent department

04

# Small Tools, Joined by Pipes




- Philosophy: small programs that do one thing well
- 1973: pipes, from Doug McIlroy's idea
- cat words.txt | sort | uniq -c | head

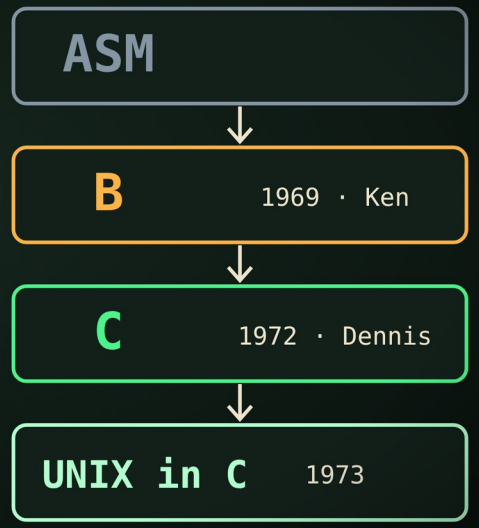
05

# Dennis Ritchie Creates C

```
main()
{
    printf("hello, world\n");
}

$ cc hello.c
$ ./a.out
hello, world
```

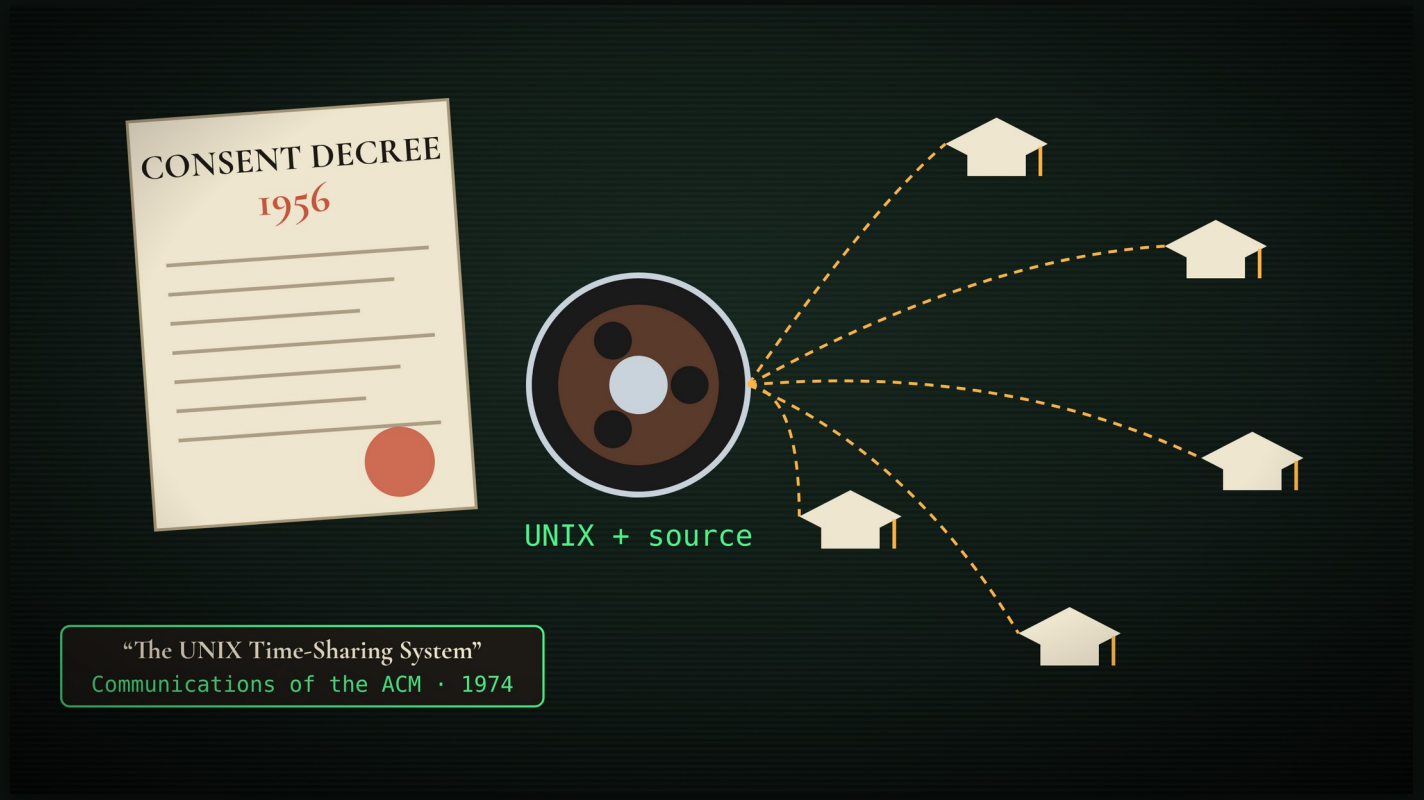



- Ken's B (1969) became Dennis's C (1972)
- 1973: UNIX rewritten in C, portable for the first time
- 1978: The C Programming Language, Kernighan & Ritchie

06

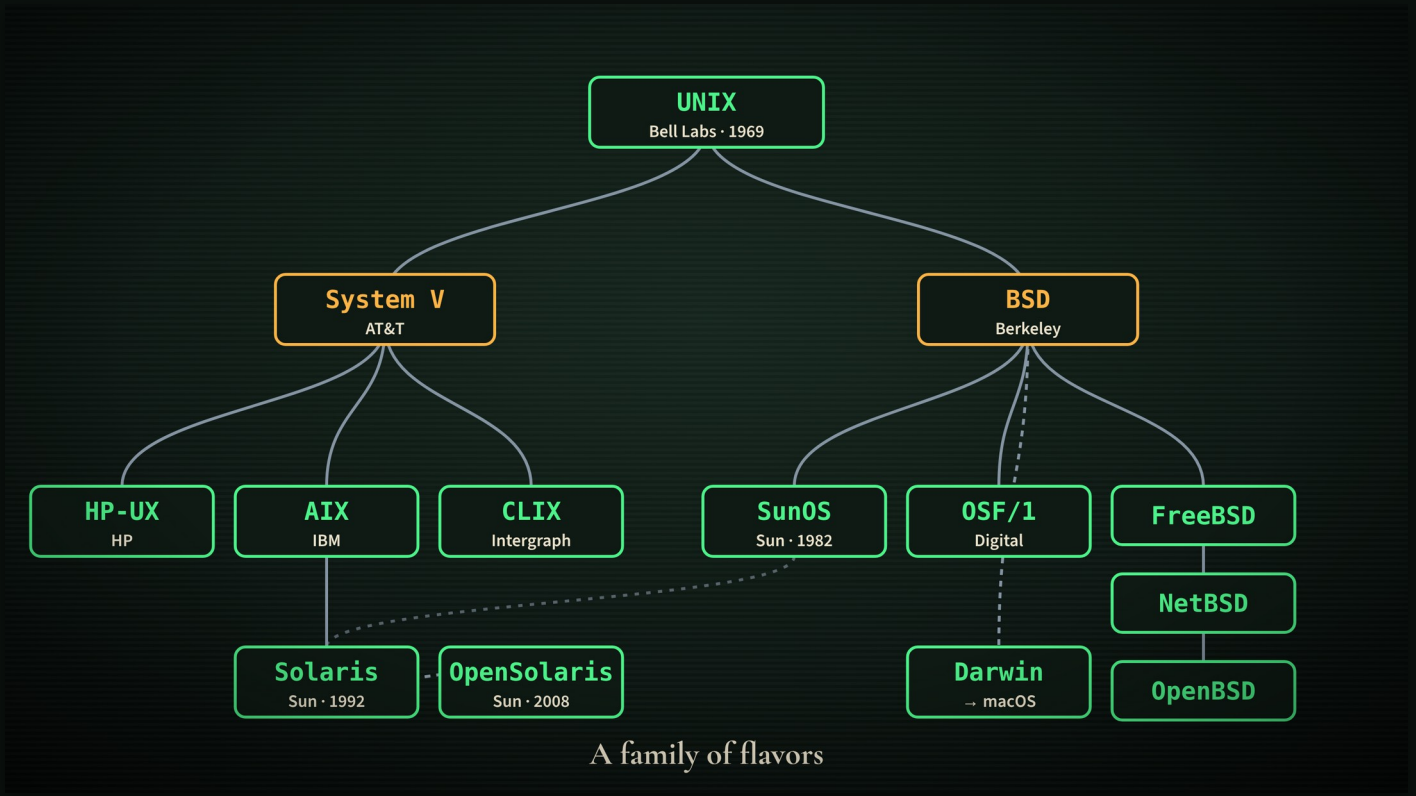
# Shared With the World




- A 1956 consent decree kept AT&T out of the computer business
- UNIX licensed to universities for a small fee, with source code
- 1974: "The UNIX Time-Sharing System," Communications of the ACM

07

# A Family of Flavors




- Two roots: AT&T System V and Berkeley BSD (Bill Joy)
- SunOS, Solaris, OpenSolaris, FreeBSD, NetBSD, OpenBSD
- HP-UX, AIX, OSF/1 (Digital), CLIX (Intergraph), macOS (Darwin)

08

# The UNIX Way, Everywhere




- 1991: Linus Torvalds starts Linux, inspired by UNIX
- UNIX-like systems run most web servers and nearly all supercomputers
- Android and iPhone carry UNIX ideas to billions of people

09

# Honored at Last




- 1983: Turing Award, "the Nobel Prize of computing"
- April 1999: National Medal of Technology, presented by President Bill Clinton
- 2011: Japan Prize

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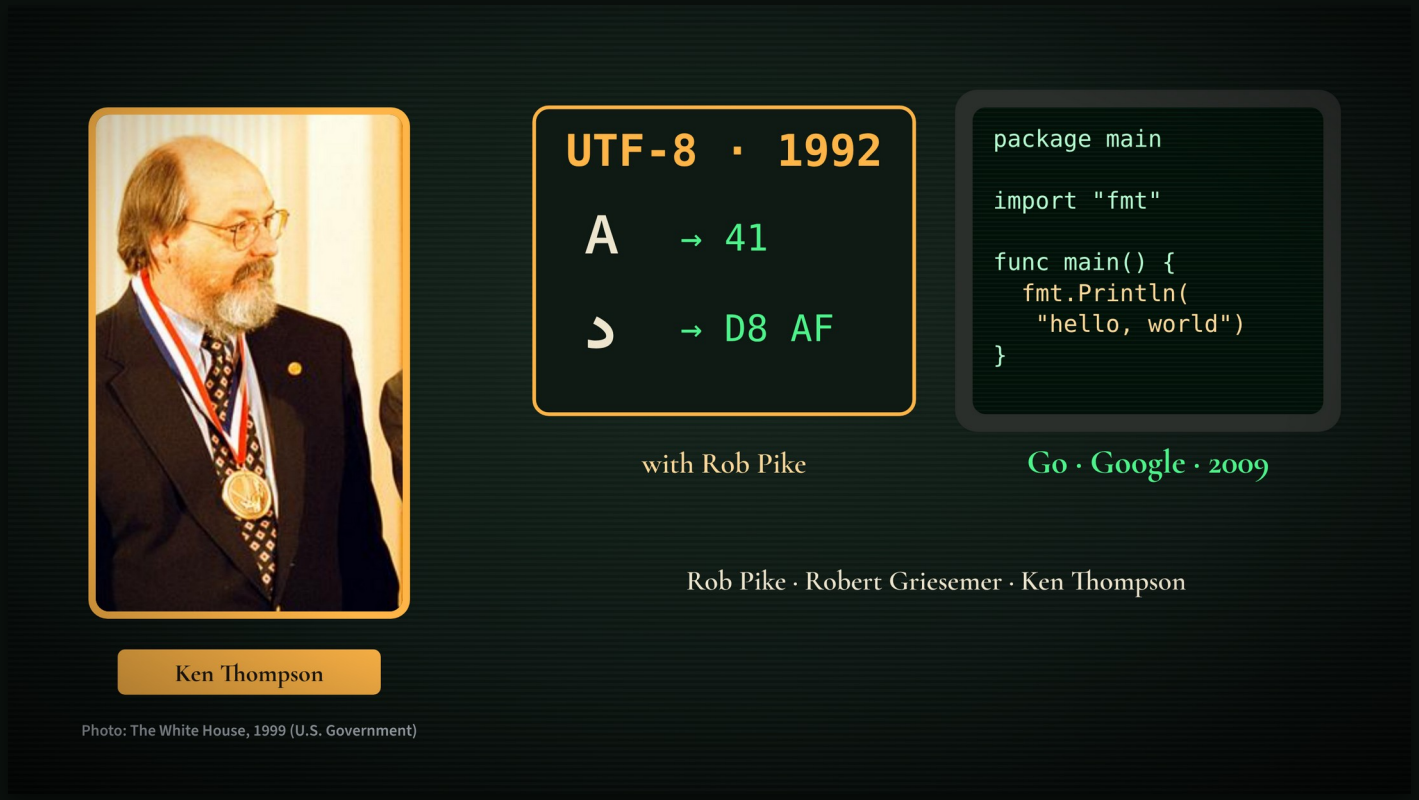
# Farewell, Dennis




- Dennis MacAlistair Ritchie, 1941–2011
- Died at home in New Jersey in October 2011, days after Steve Jobs
- "The tools that Dennis built … run pretty much everything today." — Brian Kernighan

11

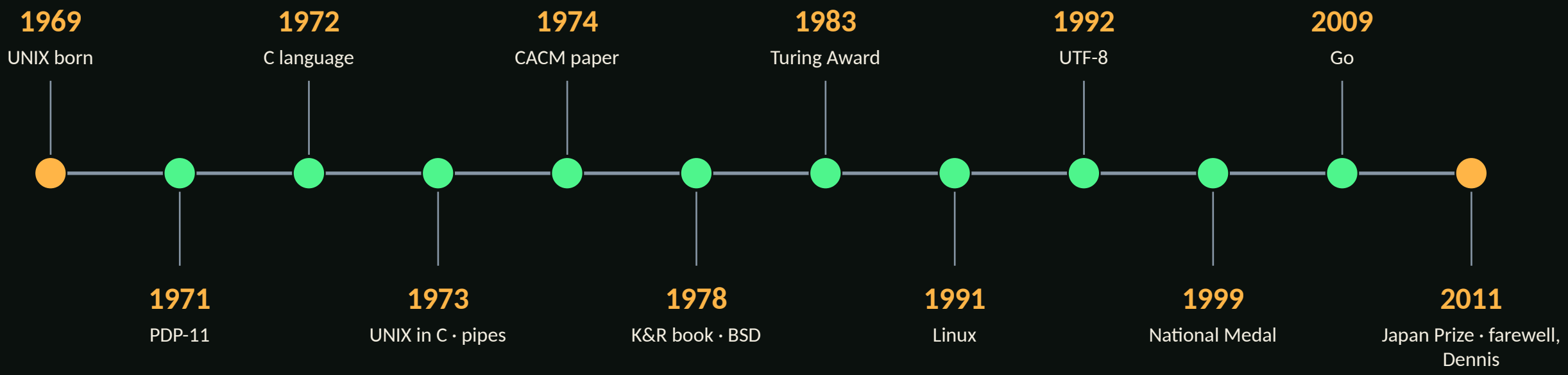
# Ken's Next Chapters




- 1992: UTF-8 with Rob Pike, so the web can show every language, including Dari
- At Google: the Go language, with Rob Pike and Robert Griesemer
- Go released in 2009; powers cloud systems worldwide

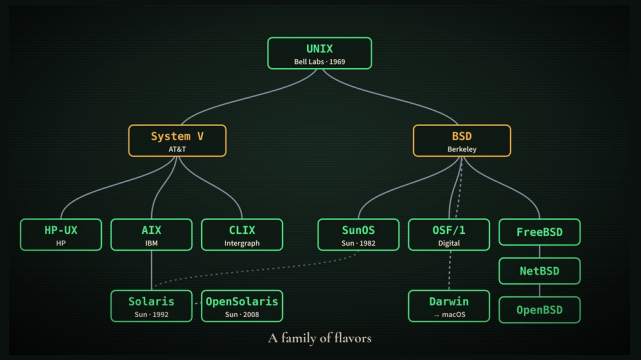
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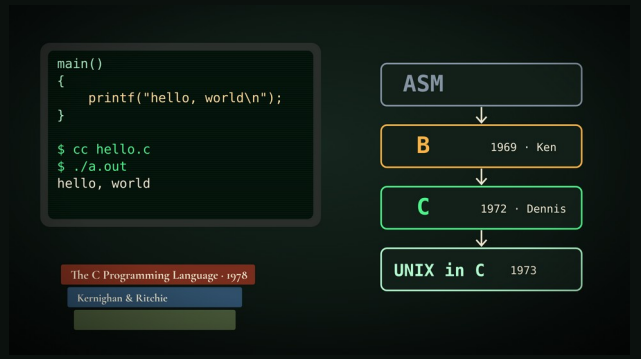
# Timeline: 1969 to 2011



# Sources and Further Reading


1. Bell Labs, “Ken Thompson and Dennis Ritchie receive National Medal of Technology,” April 1999 — bell-labs.com/unix-history
2. D. M. Ritchie & K. Thompson, “The UNIX Time-Sharing System,” Communications of the ACM, 1974
3. B. W. Kernighan & D. M. Ritchie, The C Programming Language, Prentice Hall, 1978
4. Brian Kernighan, UNIX: A History and a Memoir, 2019
5. Wikipedia: “Dennis Ritchie” and “Ken Thompson”
6. Photos: Ken Thompson and Dennis Ritchie — public domain, via Wikimedia Commons (The Jargon File); 1999 National Medal of Technology ceremony — The White House (U.S. Government), via nationalmedals.org

Thank you for watching

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