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AWK

1 Line Beats a Page of C

Aho · Weinberger · Kernighan

WHY IS IT CALLED AWK?





Alfred Aho

Peter Weinberger

Brian Kernighan

A MYWEBUNIVERSITY STORY

AWK

Three Initials, One Powerful Line

```
awk '{ s += $3 } END { print s }'
```

Drowning in Text



- 1970s UNIX: logs, reports, columns of numbers
- grep finds lines · sed edits lines
- Reports still needed a whole C program

01

Aho, Weinberger, Kernighan



- Alfred Aho: compilers, pattern matching, egrep
- Peter Weinberger: mathematics, databases
- Brian Kernighan: writer, K&R · 1977: A + W + K = AWK

02

Awkward? Or an Auk?

AWKward?

`$1 $NF { } ' " ~ /re/`



the book cover: an auk, a seabird

`1977 AWK + sed + sh` → `1987 Perl (Larry Wall)`

cousins: terse and cryptic next to C and Python

- Sounds like “awkward”: terse $, { } and quotes
- Book cover: an auk, the seabird
- 1987: Perl (Larry Wall) borrowed from AWK, sed and sh

03

Pattern and Action



- Reads one line at a time; fields $1, $2, … $NF
- Program = pattern { action }
- awk -F: '$3 >= 1000 {print $1}' /etc/passwd

04

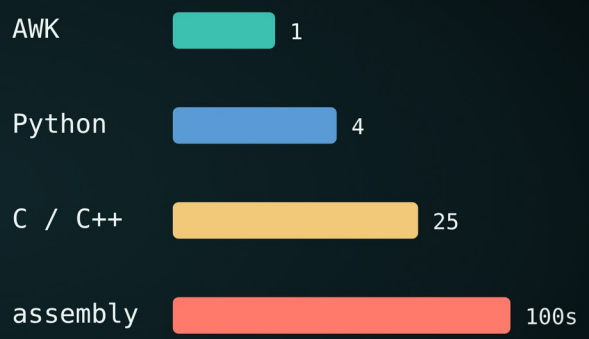
One Line vs a Full Page

AWK · 1 line

```
awk '{s+=$3} END{print s}' sales.txt
```

```
#include <stdio.h>
#include <stdlib.h>
int main(void) {
  FILE *f = fopen("sales.txt","r");
  if (!f) { perror("open"); return 1; }
  char line[1024]; double s = 0;
  while (fgets(line, sizeof line, f)) {
    char *t = strtok(line, " \t");
    for (int i = 1; t && i < 3; i++)
      t = strtok(NULL, " \t");
    if (t) s += atof(t);
  } ...
```

C: 20–30 lines

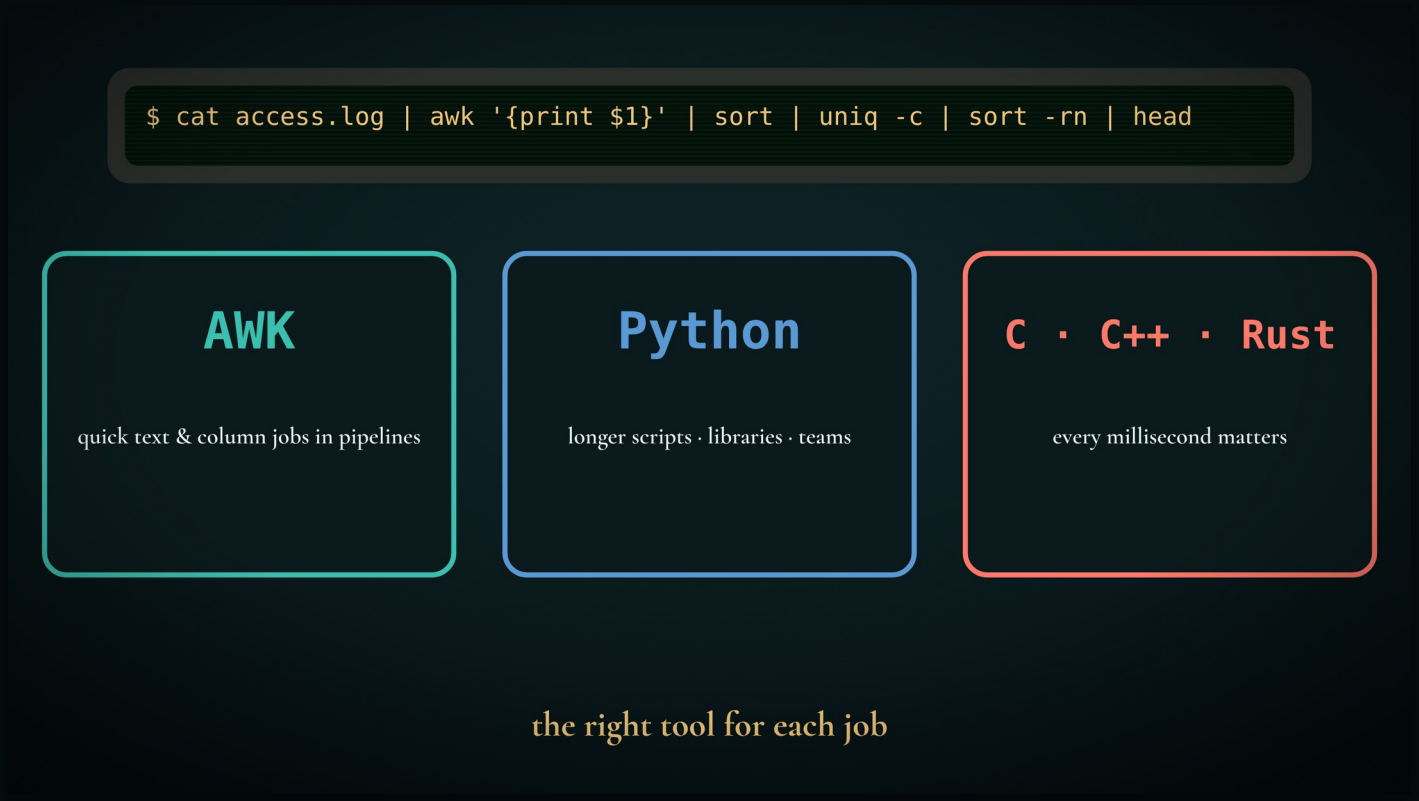


your time is the most valuable resource

- AWK: awk '{s += $3} END {print s}' sales.txt
- C / C++: 20–30 lines · assembly: hundreds
- C may run faster; AWK is written in seconds

05

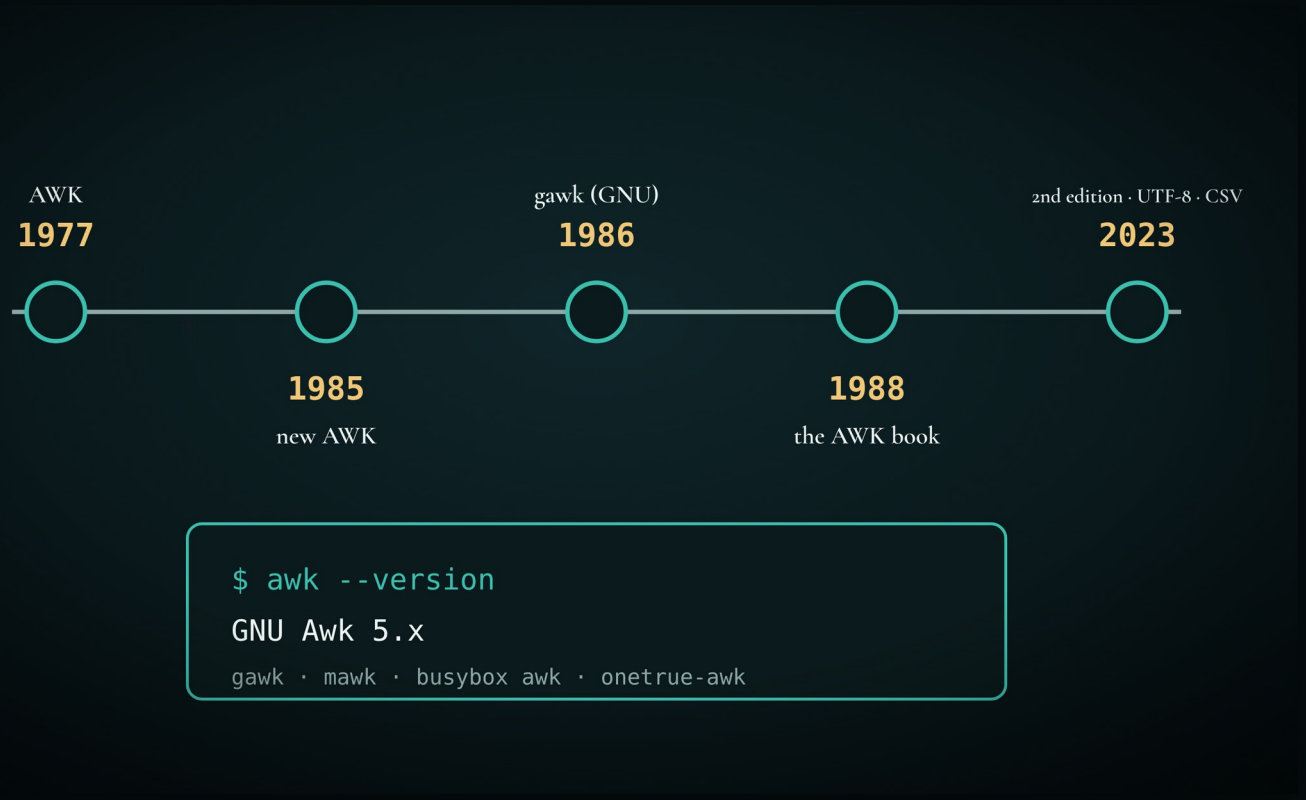
When to Choose AWK



- AWK: quick column/text jobs in pipelines
- Python: longer scripts, libraries, teams
- C / C++ / Rust: every millisecond matters

06

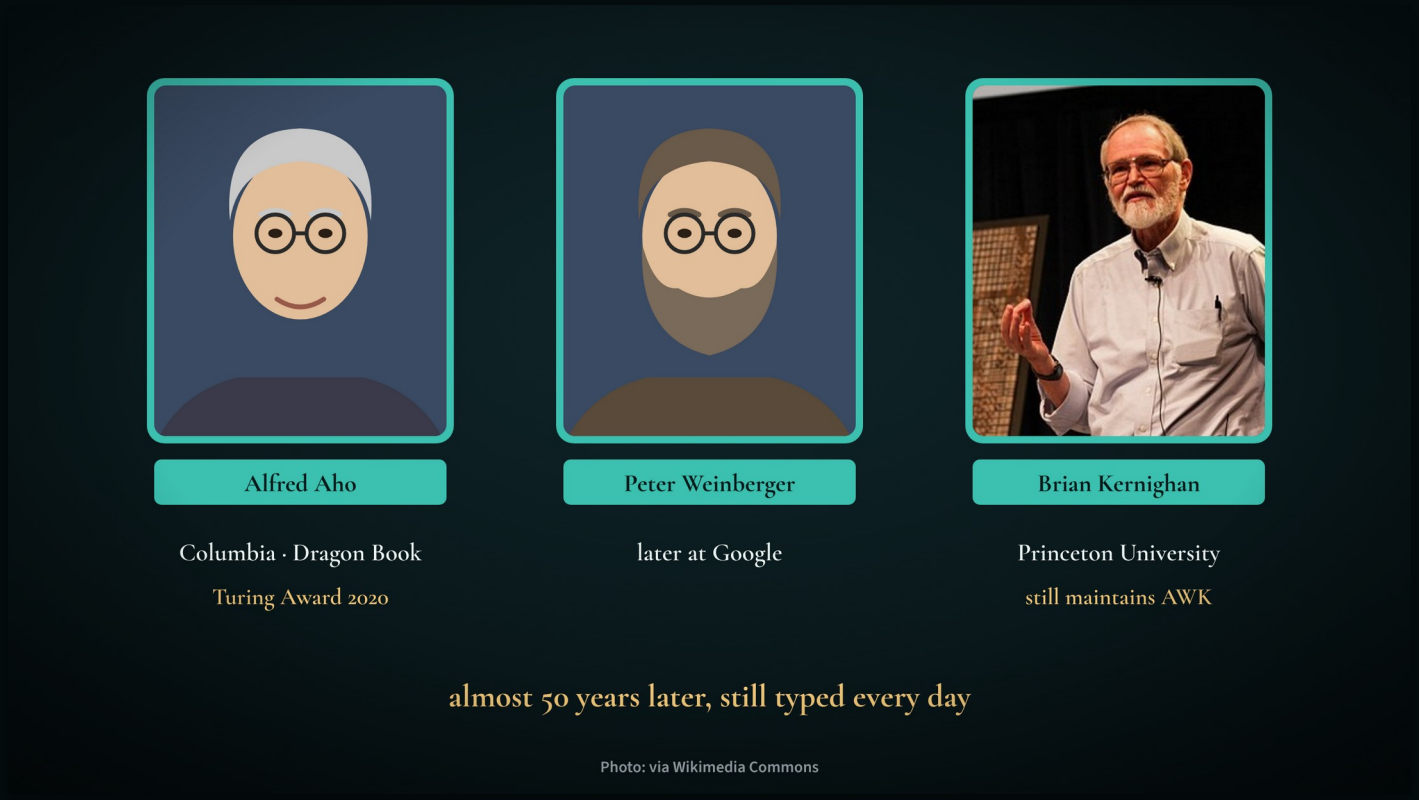
AWK Lives On



- 1985: new AWK · 1988: The AWK Programming Language
- gawk (GNU) · mawk · BusyBox awk
- 2023: 2nd edition · UTF-8 and CSV support

07

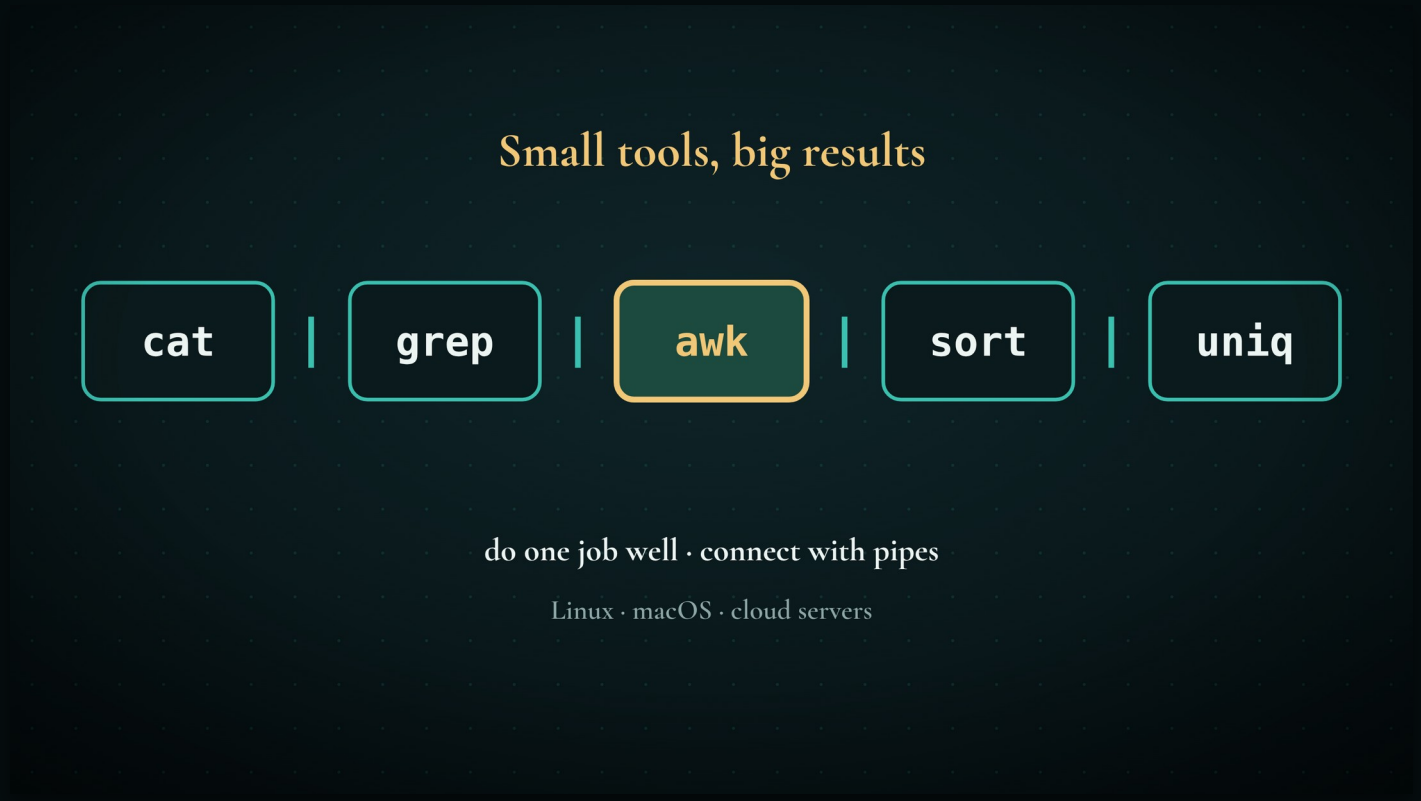
The Three Authors Today



- Aho: Columbia, “Dragon Book”, Turing Award 2020 (with Ullman)
- Weinberger: later at Google
- Kernighan: Princeton professor

08

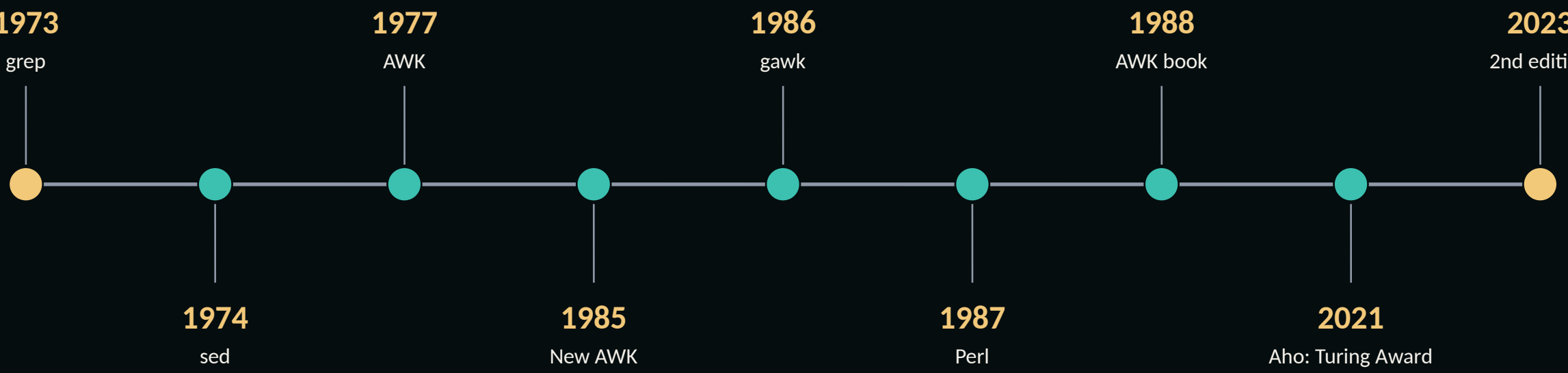
Small Tools, Big Results



- Small tools that do one job well
- Connect them with pipes
- A few one-liners save hours every week

09

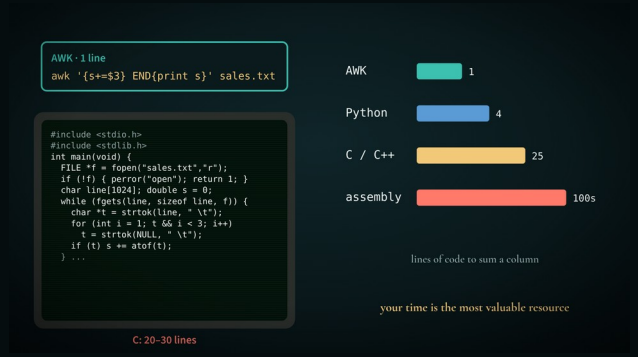
Timeline: 1973 to 2023



Sources and Further Reading

1. Aho, Kernighan & Weinberger, The AWK Programming Language (Addison-Wesley, 1988; 2nd ed. 2023)
2. GNU Awk User's Guide — gnu.org/software/gawk/manual
3. The One True Awk (Kernighan's original AWK) — github.com/onetrue-awk/awk
4. ACM A.M. Turing Award 2020: Alfred Aho and Jeffrey Ullman — amturing.acm.org
5. Photo: Brian Kernighan — via Wikimedia Commons (original author and license listed there).





Thank you for watching

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