



Haute école d'ingénierie et d'architecture Fribourg  
Hochschule für Technik und Architektur Freiburg

## Systèmes d'exploitation Computer Science Grandmasters



# Edsger Wybe Dijkstra

## Structured programming



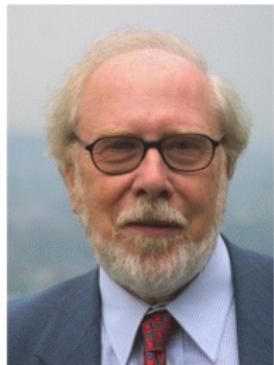
- May 11, 1930 - August 6, 2002
- Turing Award in 1972 for fundamental contributions to developing programming languages
- Shortest path algorithm
- Reverse Polish Notation
- Semaphore construct

*“Program testing can be used to show the presence of bugs, but never to show their absence!” “Elegance is not a dispensable luxury but a quality that decides between success and failure.” “Simplicity is a prerequisite for reliability.” “Computer Science is no more about computers than astronomy is about telescopes.”*



# Niklaus Emil Wirth

Pascal, Modula-2, Lilith and Oberon



- Born February 15, 1934
- Turing Award in 1984 for developing a sequence of innovative computer languages, EULER, ALGOL-W, MODULA and PASCAL
- Author of “Algorithms + Data Structures = Programs”

**Reiser's law:** “Software is getting slower more rapidly than hardware becomes faster.” –Martin Reiser   “Make it as simple as possible, but not simpler.” –Albert Einstein   “Il semble que la perfection soit atteinte non quand il n'y a plus rien à ajouter, mais quand il n'y a plus rien à retrancher.” –Antoine de Saint Exupéry



## Quicksort



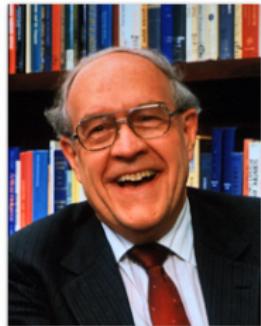
- Born January 11 1934
- Turing Award in 1980 for his fundamental contributions to the definition and design of programming languages.
- Inventor of the Quicksort algorithm.
- Co-inventor of the “monitor” concept (concurrent programming).

*“There are two ways of constructing a software design: One way is to make it so simple that there are obviously no deficiencies, and the other way is to make it so complicated that there are no obvious deficiencies. The first method is far more difficult.”*



# Frederick Phillips Brooks, Jr.

Manager of development of IBM's System/360 and OS/360



- Born April 19, 1931
- Turing Award in 1999 for landmark contributions to computer architecture, operating systems, and software engineering.
- Author of “The Mythical Man-Month”

**Brook's Law:** *“Adding manpower to a late software project makes it later.” “Plan to throw one away, you will anyhow.”*



# Vinton Gray "Vint" Cerf

The Father of Internet



- Born June 23, 1943
- Turing Award in 2004 (with Robert E. Kahn) for pioneering work on internetworking, including the design and implementation of the Internet's basic communication protocols, TCP/IP, and for inspired leadership in networking.
- Chief Internet Evangelist at Google



# Gordon Earle Moore

Intel



- Born January 3, 1929
- Co-founder of Intel Corporation

**Moore's law:** *"The number of transistors that can be placed inexpensively on an integrated circuit doubles approximately every two years."*



# Robert Norton Noyce

Integrated Circuit, Intel



- December 12, 1927 - June 3 1990
- Inventor of the Integrated Circuit (microchip)
- Co-founder of Fairchild Semiconductor
- Co-founder of Intel Corporation



# Andrew Grove

Intel

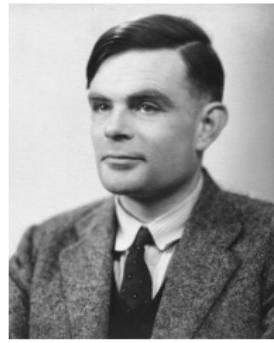


- September 2, 1936 - March 21, 2016
- Co-founder of Intel Corporation
- Man of the Year 1997
- Author of “Only the Paranoid Survive”



# Alan Mathison Turing

## Turing Machine



- June 23, 1912 - June 7 1954
- Father of theoretical computer science and artificial intelligence
- Turing Machine
- Turing Test
- Turing Awards



# John von Neumann

## von Neumann architecture



- December 28, 1903 - February 8, 1957
- Inventor of the merge sort algorithm
- von Neumann architecture (data and the program in the same address space)



# Konrad Zuse

Z3



- June 22 1910 - December 18 1995
- Inventor of the Z3, the world's first programmable computing machine (Berlin 1941).



# Robert (Bob) Elliot Kahn

TCP/IP



- Born December 23, 1938
- Turing Award in 2004 (with Vint Cerf) for pioneering work on internetworking, including the design and implementation of the Internet's basic communication protocols, TCP/IP, and for inspired leadership in networking.

*"New capabilities emerge just by virtue of having smart people with access to state-of-the-art technology."*



# Donald Ervin Knuth

The Art of Computer Programming, TeX



- Born January 10, 1938
- Turing Award in 1974 for his major contributions to the analysis of algorithms and the design of programming languages.
- Author of “The Art of Computer Programming”
- Co-Inventor of the KMP algorithm (string searching).
- Author of the TeX typesetting system.

*“Premature optimization is the root of all evil.”*



# Kenneth (Ken) Lane Thompson

Unix, UTF-8



- Born February 14, 1943
- Turing Award in 1983 (with Dennis M. Ritchie) for their development of generic operating systems theory and specifically for the implementation of the UNIX operating system.
- Co-inventor of UTF8



# Dennis MacAlistair Ritchie

Unix, C



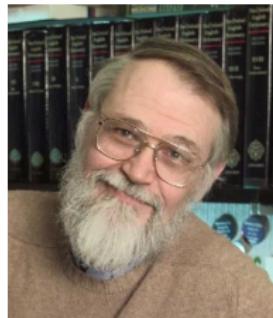
- September 9, 1941 - October 12, 2011
- Turing Award in 1983 (with Ken Thompson) for their development of generic operating systems theory and specifically for the implementation of the UNIX operating system.
- Creator of the C programming language

*“UNIX is very simple, it just needs a genius to understand its simplicity.”*



# Brian Kernighan

Unix, C



- Born January 1942
- Major contributor in the development of Unix
- Co-author of the first book on the C programming language.
- Co-author of the AWK scripting language.
- Author of the first “Hello World” program.

*“First make it run, then make it run fast.” “If you haven’t used grep, you’ve missed one of the simple pleasures of life.”*



# Bjarne Stroustrup

C++



- Born December 30 1950
- Inventor of C++

*“There are only two kinds of languages: the ones people complain about and the ones nobody uses” “I have always wished for my computer to be as easy to use as my telephone; my wish has come true because I can no longer figure out how to use my telephone”*



- Born March 16, 1953
- Founder of the Free Software Foundation.
- Founder of the GNU Project.
- Author of the GNU General Public License.
- Author of Emacs.

*“ ‘Free software’ is a matter of liberty, not price. To understand the concept, you should think of ‘free’ as in ‘free speech’, not as in ‘free beer’ ”*



# Linus Benedict Torvalds

Linux Kernel



- Born December 28, 1969
- Named as one of the revolutionary heroes of the past 60 years by the Times Magazine (2006 / Europe edition)

*“Software is like sex: it's better when it's free.”*



# Alan Cox

Linux kernel



- Born July 22, 1968
- Free Software Foundation's 2003 Award for the Advancement of Free Software
- GNOME and X.Org
- Employed by Red Hat and Intel



# William “Bill” Nelson Joy

BSD, Solaris, Sun Microsystems



- Born November 8, 1954
- Co-founder of Sun Microsystems
- Author of BSD
- Author of vi



# James Gosling

Java



- Born May 11 1955
- Lead designer of Java
- Fellow of the Association for Computing Machinery

*“Java is C++ without the guns, clubs and knives” “An API that isn’t comprehensible isn’t usable”*



# Guido van Rossum

Python



- Born January 31, 1956
- Author of the Python programming language
- Award for the Advancement of Free Software

*"Python has been an important part of Google since the beginning, and remains so as the system grows and evolves. Today dozens of Google engineers use Python, and we're looking for more people with skills in this language."* –Peter Norvig, director of search quality at Google, Inc.



# Alan Kay

## Object-Oriented Programming



- Born May 17, 1940
- Turing Award in 2003 for pioneering many of the ideas at the root of contemporary object-oriented programming languages.
- Inventor of modern GUI (at Xerox PARC)

*“The best way to predict the future is to invent it.”     “If you don’t fail at least 90 percent of the time, you’re not aiming high enough.”  
“Simple things should be simple, complex things should be possible.”*



# Sir Timothy John “Tim” Berners-Lee

## The World Wide Web



- Born June 8, 1955
- Inventor of the World Wide Web.



# Steven Paul “Steve” Jobs

Apple Inc.



- February 24, 1955 - October 5, 2011
- Founder of Apple Inc. (with Steve Wozniak and Ronald Wayne)
- Founder of Pixar (with Ed Catmull and Alvy Ray Smit)
- Person of the year for 2010 by the Financial Times



# William Henry “Bill” Gates III

Founder of Microsoft



- Born October 28, 1955
- BASIC Port to Altair 8800
- MS-DOS

*“If you can’t make it good, at least make it look good.”*