

# COMPUTER SCIENCE PUBLIC LECTURE 2015

## DATE

23 January 2015  
Friday

## TIME

4:30 - 5:30 pm

(Reception to be served at 4pm)

## VENUE

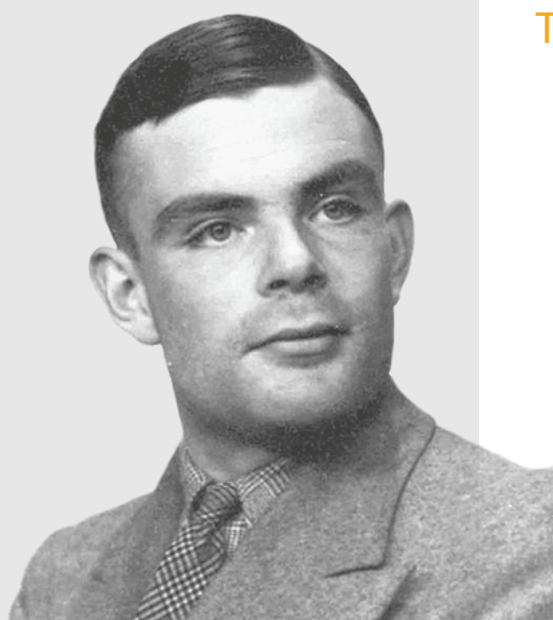
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## Enquiry

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## REGISTRATION



# Computers and Computing in the Early Years

## Abstract

We recall the world of computers and computing as it presented itself in the early years, starting in 1960. It was the time of stand-alone, main frame, large, bulky computers. They were programmed in assembler code, in Fortran or Cobol, the first programming languages for numerical applications and for accounting. A milestone was set by the IBM 360, introducing the concepts of computer family and of computer architecture. Also, it merged the two segregated worlds of scientific and commercial computing. The language PL/1 was supposed to merge Fortran and Cobol. Input was a batch of punched cards, output endless line paper. No interaction was possible.

Then followed the era of minicomputers, first conceived for laboratory application. They were still built around discrete components (transistors), but were used by single persons - not through batch processing. They were operated from terminals, first teletypes, later displays with 25 lines of 80 characters.

After a period in which time-sharing systems became prominent (having given rise to the concept of operating system), it followed the era of microcomputers. They used 8-bit single chip processors, made possible by integrated components (chips, TTL technology). They brought computing into homes and schools, but largely remained toys. They also made the language Pascal popular.

The real breakthrough - and in my view the beginning of the computer age - was instigated around 1980 by microcomputers sufficiently powerful for genuine computing tasks. The desktops were later followed by laptops, fostered by continuing miniaturization of circuits. They are now as complex with millions of transistors as supercomputers were only 25 years ago.

This explosion of computing capability, together with the advent of the Internet, brought an expansion of applications and growth of demands, which challenge the programming engineers beyond limits. We hesitatingly speculate about the developments in the near future.

## Biography

Niklaus Wirth was born in Winterthur, Switzerland, in 1934. He studied electrical engineering at ETH (Federal Institute of Technology) in Zürich, graduated in 1959, received an M.Sc. degree from Laval University in Quebec, and a Ph.D. from the University of California at Berkeley in 1963.

Wirth has been an Assistant Professor of Computer Science at Stanford University (1963-67) and, after his return to Switzerland, a Professor of Informatics at ETH from 1968 - 1999. His principal areas of contribution were programming languages and methodology, software engineering, and design of personal workstations. He has designed the programming languages Algol W (1965), Pascal (1970), Modula-2 (1979), and Oberon (1988), was involved in the methodologies of Structured Programming and Stepwise Refinement, and designed and built the workstations Lilith, with high-resolution display, mouse, and high-level language compiler in 1980, and Ceres in 1986.

He has published several text books for courses on programming, algorithms and data structures, and logical design of digital circuits. He has received many prizes and honorary doctorates, including the Turing Award (1984), the IEEE Computer Pioneer (1988), the Award for outstanding contributions to Computer Science Education (acm 1987), and the IBM Europe Science and Technology Award in 1989. ([www.inf.ethz.ch/personal/wirth](http://www.inf.ethz.ch/personal/wirth))



Prof. Niklaus Wirth  
Turing Award Laureate

**The A.M. Turing Award**, sometimes referred as the "Nobel Prize" of Computing, was named in honor of Alan Mathison Turing (1912-1954) who made fundamental advances in computer architecture, algorithms, formalization of computing, and artificial intelligence. It is the annual prestigious technical award, given by the Association for Computing Machinery, for major contributions of lasting importance to computing.

Organizer:



Co-organizer:



Sponsor:

Dr Chiu Chun Bong, DBA (Hon), MBE, JP