SOCIAL SCIENCE

The History of Computers

I. EARLY INFORMATION PROCESSING 20%
   A. Early Information Processing in Great Britain
      1. The Influence of Adam Smith
      2. The Work of Charles Babbage
         a. Babbage's Difference Engine
         b. Babbage's Analytical Engine
         c. The Work of Ada Lovelace
         d. Babbage and the British Banking Industry
      3. Railway Communications and the Invention of Telegraphy
      4. Church, Turing, and Hilbert's *Entscheidungsproblem*
      5. Turing's Work on Codebreaking
   B. Early Information Processing in the United States
      1. Herman Hollerith's Work with the Census
      2. Early Office Automation Devices
         a. The Development of the Typewriter
         b. Filing Cabinets
         c. Adding Machines
         d. The Cash Register
      3. Thomas Watson, Sr., and IBM
      4. The Electrification of Office Equipment
      5. Vannevar Bush and the Differential Analyzer
      6. Howard Aiken, IBM, and the Mark I
      7. The Atanasoff-Berry Computer (ABC)
   C. Early Information Processing in Germany and the Work of Konrad Zuse

II. GENERAL PURPOSE ELECTRONIC COMPUTERS 25%
   A. The ENIAC
      1. Firing Tables: A Problem in Need of a Solution
      2. The Role of Dr. Herman Goldstine
      3. The Work of John Mauchly
      4. Goldstine, Mauchly, and Eckert's Proposal
      5. The Design of the ENIAC
      6. The ENIAC's Programmers
      7. John von Neumann and the EDVAC
      8. The Completion of the ENIAC
   B. Progress in England
      1. Max Newman, Frederic Williams, and the Manchester Baby
      2. Maurice Wilkes and the EDSAC
   C. The Completion of the EDVAC
   D. The Eckert-Mauchly Computer Corporation (EMCC)
      1. The UNIVAC

2. The BINAC
3. Acquisition by Remington Rand
4. The Completion of the UNIVAC

E. The Growth of IBM
F. Other Players in the Mid-Twentieth-Century Computer Industry
G. Advances in Hardware
   1. The Processor
      a. Vacuum Tubes
      b. Transistors
      c. Microchips
   2. Memory
      a. Delay Lines
      b. Williams Tubes
      c. Magnetic Drums
      d. Core Memory
      e. Microchips
   3. Storage
      a. Punched Cards
      b. Magnetic Tape Drives
      c. Disk Storage
H. Software
   1. Machine Code
   2. Assembly
   3. Grace Hopper, Compilers, and High-Level Languages
      a. FORTRAN
   4. Business-Oriented Programming Languages
      a. COBOL
      b. LISP
I. IBM System/360
   1. Microprogramming
   2. The Challenges of OS/360
   3. Brooks's Law
   4. The Legacy of the IBM System/360
J. The ENIAC Patent Case

III. TOWARD "PERSONAL" COMPUTING 30%

A. Project Whirlwind
B. SAGE
C. SABRE
D. Timesharing
   1. CTSS
   2. BASIC
   3. Multics
E. DEC and the Rise of Minicomputers
   1. The PDP-1

2. The PDP-8
3. The PDP-11

F. UNIX
1. C Programming Language

G. Networking
1. Store and Forward Packet Switching
2. ARPANET
3. Usenet
4. Other Early Networks
5. The Minitel Network
6. ALOHAnet 50

H. XEROX PARC
1. The Alto
2. Bravo
3. Smalltalk and Object-Oriented Programming
4. The Xerox Star

I. The Microprocessor

J. Personal Computers
1. The Altair 8800
2. The Commodore PET, TRS-80, and Apple II
3. The TRS-80
4. The Commodore PET
5. The Apple II

K. Video Games

L. VisiCalc

M. The IBM PC

N. The Apple Macintosh

O. PC Clones

P. The Graphical User Interface Goes Mainstream
1. OS/2 and Windows

IV. THE INTERNET, SOCIAL MEDIA, AND MOBILE COMPUTING 25%

A. The GNU Project and the Open Source Movement
1. Linux

B. Hypertext
1. Tim Berners Lee and the World Wide Web

C. Browser Wars
1. Mosaic
2. Netscape
3. Internet Explorer

E. Search Engines
1. Yahoo
2. Google

F. The Dot-com Bubble

G. Java

H. NeXT

I. The iMac
J. Microsoft's Gradual Decline
    1. Lawsuits in the U.S. and Europe
    2. Competition from Apple and Mobile Devices
K. Mobile Computing
    1. PDAs
    2. Portable GPS Devices
    3. Portable Music Players
    4. Cellular Phones
L. Smartphones
        1. BlackBerry
        2. The iPhone
        3. Android
        4. App Stores
M. Web 2.0
    1. Social Media
        a. Facebook
        b. Instagram
    2. New Business Models
N. Tablets
O. Oracle vs. Google
P. Moore's Law and Multi-Core Processors
Q. Cloud Computing
    1. Hosting
    2. Software as a Service
R. The Impact of COVID-19
S. Blockchain
    1. Bitcoin
    2. NFTs
T. Artificial Intelligence
    1. Machine Learning
    2. Robotics
U. Quantum Computing