

Timeline of Computing

by Mariam Khan

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SKILLS FOR ACADEMIC SUCCESS

ASSIGNMENT 1: TIMELINE OF COMPUTING

MARIAM KHAN
2325068

1

Table of Contents

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Introduction

The timeline of computing

This report is going to discuss the timeline of computing.

Computers have been around for over 200 years and although they are the most used electronic device now in the 21st century, most people don't know the history or the timeline of computers and how they were developed overtime to become what we now know them to be.

In this report the timeline of computers and how they came around will be discussed in further detail alongside all the different types of computer that have been invented along the years.

Early Computing Devices (Pre-20th Century):

Blaise pascal

In 1642, the renowned French mathematician and inventor Blaise Pascal devised the Pascaline, a groundbreaking mechanical calculator. The Pascaline represented a significant advancement in computational technology during its time, offering users a sophisticated tool for performing arithmetic operations with ease and precision. This innovative device enabled individuals to streamline mathematical calculations, replacing manual methods and reducing the likelihood of errors. Pascal's invention heralded a new era in computation, laying the foundation for subsequent developments in computing machinery and contributing to the evolution of modern computational devices.

Birth of Modern Computing (19th Century):

The Jacquard Loom

Some may wonder how computers came around in the first place and why they were invented.

In 1801 the Jacquard mechanism was invented and demonstrated. This mechanism was invented for the purpose of simplifying the way in which complex textiles were woven. This invention was created by a French merchant called Joseph Marie Jacquard. (1)

The mechanism worked by using ²thousands of punch cards that were all laced together. Every row of holes had a corresponding row of textiles. This system ²influenced the future development of computing technology alongside changing the entire process of weaving making it labour-saving, time-saving and efficient. This invention was extremely useful as it inspired Charles Babbage; the inventor of the first mechanical computer; to use punch cards to programme his analytical engine. (2)

The difference Engine

In 1821, the British government funds a project named the "difference engine". The concept of the Difference Engine emerged as a groundbreaking innovation in the field of computing, conceived by English mathematician and inventor, Charles Babbage. The Difference Engine was designed to automate complex mathematical calculations, aiming to revolutionize computation. Babbage's initial prototype, known as the Difference Engine No. 1, utilized a series of gears and mechanical components to perform repetitive arithmetic operations, such as addition and multiplication, with remarkable precision and efficiency. This device laid the foundation for future advancements in computing machinery. Despite facing numerous technical challenges and funding constraints, Babbage's conceptualization of the Difference Engine in 1821 sparked a transformative journey towards the development of modern



computing devices, establishing him as a pioneer in the history of computer science.

Ada Lovelace

In 1848, Ada Lovelace, an English mathematician and daughter of the poet Lord Byron, made a significant contribution to computing history while translating a paper on Charles Babbage's Analytical Engine from French to English. Alongside her translation, Lovelace added extensive annotations, which surpassed the length of the original text. In these annotations, she not only elucidated the workings of the Analytical Engine but also devised a method for it to perform calculations, specifically detailing the computation of Bernoulli numbers. This pioneering work effectively

established Lovelace as the world's first computer programmer, laying the groundwork for modern computer programming and demonstrating the potential of machines to execute logical instructions. Lovelace's groundbreaking achievements continue to resonate in the field of computing, securing her a prominent place in history as a visionary trailblazer.

Georg Scheutz

⁴ In 1853, Per Georg Scheutz and his son Edvard created ¹ the world's first printing calculator, a groundbreaking invention documented in Uta C. Merzbach's "Georg Scheutz and the First Printing Calculator." This device revolutionized computation by automating calculations and promptly printing results, streamlining tasks like accounting and data analysis. Their innovation laid the foundation for modern calculators and computers, marking a significant advancement in technology that continues to shape our lives today.

Herman Hollerith

In 1890, Herman Hollerith made a special system using punch cards to help count the people in the U.S. Census. This new machine was much faster than doing it all by hand, saving the government a lot of time. It also saved taxpayers around \$5 million, which is a huge amount of money. This invention was a big deal because it made counting people easier and cheaper. After this success, Hollerith started a company that later became IBM, a very famous technology company. This invention changed how we handle data and helped shape the future of technology.

The Differential Analyzer

The Differential Analyzer was created by a team led by the American engineer Vannevar Bush in 1931. It was a special machine designed to help solve tough math problems called differential equations. This machine didn't rely on electricity like today's computers do; instead, it used gears, shafts, and other mechanical parts to do its calculations. Scientists and engineers used the Differential Analyzer to predict how things like machines and circuits would behave in different situations. While it's not used much anymore, it played a crucial role in advancing science and engineering back then.

Alan Turing

In 1936, British scientist Alan Turing proposed ¹the Turing machine in his paper "On Computable Numbers..." This abstract computing concept, capable of solving diverse mathematical problems, forms the basis of modern computing. Turing's contributions extended beyond theory; during World War II, he played a pivotal role in developing the Turing-Welchman Bombe, aiding in the decryption of Nazi messages. Turing's enduring legacy continues to shape technology, paving the way for significant advancements in computing and its widespread impact on society.

The first electronic digital computer

In 1946, ENIAC, the first electronic computer, was completed, heralding a new era in computing technology. This massive machine, filled with vacuum tubes, revolutionized computation by automating complex calculations that were previously done manually. ENIAC's completion ³marked a significant milestone in the history of

technology, laying the groundwork for the development of modern computers and shaping the digital age we live in today.

The IBM PC

In 1981, IBM's release of the IBM PC was a game-changer in computing. This new product made personal computers more accessible to everyone, thanks to its user-friendly design and affordability. The IBM PC's standardized hardware and open system encouraged many people and businesses to buy it, setting a standard for personal computers. Its success led to the widespread use of personal computing devices, driving technological progress and changing how people use and interact with technology in their daily lives.

Tim Berners-Lee

In 1989-1990, ¹Tim Berners-Lee's creation of the World Wide Web (WWW) marked a monumental milestone in the history of technology. With the development of the WWW, Berners-Lee pioneered a revolutionary system of interconnected hypertext documents accessible via the internet. This breakthrough allowed users to easily navigate and share information across different computer systems, laying ⁷the foundation for the modern internet as we know it today. The WWW democratized access to information, catalysing the rapid expansion of digital communication, commerce, and collaboration on a global scale. Berners-Lee's visionary creation transformed the way people interact with information and each other, shaping the digital landscape of the 21st century.

21st Century Advancements

In 2007, Apple's introduction of the iPhone revolutionized the landscape of smartphones, marking a pivotal moment in the history of mobile technology. With its sleek design, intuitive touchscreen interface, and powerful capabilities, the iPhone redefined what a smartphone could be. Offering features such as internet browsing, email access, multimedia playback, and third-party app support, the iPhone transformed the way people communicate, work, and entertain themselves on the go. Its innovative design and user-friendly experience set a new standard for smartphones, sparking fierce competition and driving rapid advancements in mobile technology. The iPhone's impact reverberated across industries, shaping consumer behaviour, influencing product design, and fuelling the rise of the mobile app economy.

The iPad

In 2010, Apple's launch of the iPad³ marked a significant milestone in the evolution of personal computing, popularizing the concept of tablets and reshaping the way people consume digital content. Combining the portability of a smartphone with the functionality of a laptop, the iPad offered users a versatile device for browsing the web, reading e-books, watching videos, and running a wide range of applications. Its sleek design, large touchscreen display, and intuitive user interface made it a compelling choice for consumers seeking a more immersive and interactive computing experience. The iPad's success sparked a wave of innovation in the tablet market, leading to the development of a diverse array of devices from various manufacturers and cementing tablets as a mainstream computing platform.

Top of Form

Recent years

In recent years, cloud computing services have revolutionized the landscape of data storage and computing, fundamentally altering the way businesses and individuals

manage and access their digital assets. By leveraging remote servers hosted on the internet, cloud computing offers unparalleled ⁹ scalability, flexibility, and cost-effectiveness compared to traditional on-premises infrastructure. Organizations can now store vast amounts of data, run complex applications, and deploy computing resources on-demand, without the need for expensive hardware investments or maintenance. Additionally, cloud services enable seamless collaboration, remote access, and disaster recovery capabilities, empowering businesses to adapt to evolving technological demands and maximize efficiency in a rapidly evolving digital landscape.

Top of Form

AI

⁶ Advancements in artificial intelligence (AI) have had a profound impact across various industries, reshaping the way businesses operate and innovate. ⁸ AI technologies, such as machine learning and natural language processing, enable automation, optimization, and predictive analytics, driving efficiency gains and cost savings in sectors ranging from healthcare and finance to manufacturing and retail. AI-powered solutions empower organizations to extract valuable insights from large datasets, personalize customer experiences, and enhance decision-making processes. As AI continues to evolve, its transformative potential holds promise for addressing complex challenges and driving sustainable growth in the global economy.

Conclusion

In summary, the journey of computing, spanning from ancient tools like the abacus to contemporary advancements in artificial intelligence, represents an extraordinary trajectory of human ingenuity and technological innovation. From Blaise Pascal's invention of the Pascaline to ⁵ Tim Berners-Lee's creation of the World Wide Web and

the subsequent rise of personal computing with the introduction of the IBM PC, each milestone has played a pivotal role in shaping the way we interact with technology. The completion of ENIAC in 1946 marked the dawn of the electronic digital age, while the advent of smartphones and tablets by Apple in the 21st century revolutionized how we access and consume information. Recent years have seen the transformative impact of cloud computing services on data storage and processing, paving the way for enhanced collaboration and efficiency across various industries. As artificial intelligence continues to advance, its implications for automation, decision-making, and problem-solving are poised to redefine the future landscape of computing and human-machine interaction. Thus, the journey of computing serves as a testament to human innovation, promising continued evolution and unprecedented possibilities in the digital era.

References

- 1) (Timothy Williamson, n.d.)
- 2) (National Museums Scotland, n.d.)
- (3) (University of Minnesota, n.d.)
- (4) (Britannica, n.d.)

Appendix

Timeline of Computing

ORIGINALITY REPORT

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GRADEMARK REPORT

FINAL GRADE

41 / 100

GENERAL COMMENTS

For this assignment you were required to produce a report that met the following requirements.

Requirement list

Title page: yes

A table of contents : a title for it is present but it wasnt populated.

using words navigation headers: no

A table of figures : no

An introduction: yes

The main body: yes

A conclusion: yes

References using words referencing system: no

Footer on every page except the title page: Name was included in the footer

Appendix if required: n/a

Any pictures used captioned appropriately: no

Breakdown

Engagement with literature 4/40

Knowledge and understanding 4/5

Comment

limited evidence of engagement with credible literature, incorrect referencing style was the biggest let down on this report. If you have any questions about referencing please let me know and we will get it cleared up for future assignments!

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14
