

HW3: Git Computer History

How "Calculator" Changed Meaning Throughout Time

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1 Introduction

We have chosen Calculators as our topic. We chose this topic because we believe it is the most fundamental part of the computer science field. The earliest commonly known calculator was the infamous Abacus. It was so powerfully simplistic that it remained in use in Asia and Europe for centuries [1]. There is also the lesser known Antikythera Mechanism, the first scientific calculator. Dug up in 1901, this device expanded our understanding of the ancient Greek's mathematical and engineering capabilities [1].

2 Time Period

Calculators have been around since humans had the need to count. The abacus is believed to have been around since 2,400 BCE [2]. The rediscovered Antikythera Mechanism is estimated to have been built shortly before the common era [3]. And before these, people were using their own fingers as calculators. Long story short, there is a vast history of calculators, the technology that built them, and the technology that they built. That is to say the time period is from approximately 2,400 BCE to modern day. Luckily, like most human history, this timeline accelerates as we get closer to present day. The industrial revolution and the invention of modern day computers will be pivotal moments in the history for the humble calculator.

3 Hardware

The hardware of the calculator started all the way back with the abacus. However in the 1940's, Sung Jin Pai, who was a Korean mathematician, created a way to replicate the abacus to human hands and was used to represent numbers from 1 to 99. The abacus was such an important piece of technology that it also ended up becoming the first pocket calculator.

The next piece of hardware seen in history for the calculator was the Antikythera mechanism. It is the oldest known scientific calculator. With an arrangement of over 30 gears it could determine the position of the sun, moon and planets, predict eclipses and even track the Olympic games' dates. This device has improved our understanding of the greeks' knowledge and technology.

This next piece of hardware could do a wide range of approximate calculations; such as basic arithmetic to even calculating volume and area. These piece of hardware was known as the Sector. Overall, there is a surplus of different hardware throughout history, even including items like The Pascaline.

4 Software

Only once digital computers started being introduced did calculators move from mechanical to electronic. Through this transition, the line between hardware and software greys as we move to smaller and smaller mechanisms. The first publicly available electronic calculator was ANITA,

debuting in 1961. But with the use of vacuum tubes during a time when transistors were becoming the standard meant this calculator was doomed for a short shelf life.

This marked the downfall of mechanical calculators, and as competition rose, more and more companies dove in to make a profit. The distinction between calculator and computer became increasingly vague as calculators grew more and more sophisticated. The Mathatronics Marathon was the first programmable desktop calculator, lending an argument for simply buying a large calculator instead of a computer.

Shortly after, calculators got small. The first handheld four-function calculator was designed as early as 1967. The first handheld available to the general market sold for \$245 in 1971 and sold for \$10 within a decade. A year later in 1972, Hewlett-Packard released the HP-35 Pocket Calculator, sporting all the features of a fully scientific calculator in handheld form.

5 Conclusion

Calculators are a very important part to the history of computer science and even computers in general. By looking all the way back to 2,400 B.C. we can see the invention of the abacus which was the earliest known calculator. After some time has passed, the Antikythera mechanism emerged, which was an invention of the Greeks. Among other hardware inventions included items like the sector among other inventions. Calculators moved from mechanical to electrical when digital computers first started being introduced, and that is when software aspects started to be introduced to calculators. Overall, calculators were an important part of history to computers that we should never forget.

References

- [1] Computer History Museum. Calculators.
- [2] The Investopedia Team. Abacus: Definition, how it's used, and modern applications.

- [3] Wikipedia. Antikythera mechanism.