

Forgetting the Past, Accepting the Present & Planning for the Future

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Summary

Before there were scientific calculators and computers, engineers used a slide rule for their computations. For many reasons, the slide rule became a distant memory and the world slowly became dependent of advanced technology. Even though it is the era of computers, there are still many questions and concerns, specifically from engineers regarding computers and their calculations.

The Slide Rule

- A slide rule is a ruler that includes a sliding strip and it is marked with logarithmic scales.
- It was used in the 1950's and it's purpose is to perform calculations such as division and multiplication.
- Slide Rules were commonly used by engineers for their computations.

The Slide Rule (con't)

Pros

- Users learned to have a strong understanding of significant digits because of these small divisions.
- Users learned how to estimate the order of magnitude because of the lack of decimal points.

Cons

- Users were unable to obtain exact results as decimals because of how small the divisions on the ruler are.
- The Slide Rule could not supply decimal points to certain multiplication problems.

The Electronic Digital Slide Rule

- A prototype described in 1968 by two engineers of General Electric.
- It would be the new and improved version of the slide rule.

The Electronic Digital Slide Rule (con't)

Pros

- Easier to use
- Could give 4 digit answers to any 4 digit multiplicands
- Divide and calculate square roots, exponentials and logarithms

Cons

- It has no decimals so the user would have to figure out their own decimal points just like they did with the original slide rule
- Expensive

The Calculator

- Texas Instruments began to manufacture handheld, pocket-sized calculators in 1972.
- It became the realistic version of the electronic digital slide rule.
- By the mid 1970s, calculators were being manufactured in great amounts.
- These calculators did everything the best slide rule can do and more.

The Calculator (con't)

Pros

- Faster
- More accurate
- The calculator could handle a larger amount of significant digits
- Decimals are accurate

Cons

- Expensive
- Caused problems in the classroom because of some students using this advanced technology for their tests and others (who cannot afford it) still using the basic slide rule

The Computer

- Computers are specifically programmed to attack advanced concepts and computations such as structural analysis and at a fast speed.
- It is more advanced than the slide rule and the calculator.
- The computer obtains many different software packages which enables it to basically calculate anything.

The Computer (con't)

Pros

- Quicker and more advanced calculations
- The computer can optimize
- Allows calculations to be solved that were considered too complex before the creation of the computer.

Cons

- Engineering students do not understand concepts as well as they use to because they are so dependent of the computer
- It is hard to detect an error in its calculations
- Some advanced computations take long

The Computer (con't)

Pros

- It can answer questions relating to problems and concerns but only if it is asked

Cons

- It calculates based off of values given by a human so if there is a human error, there will be a calculation error in the computer
- Causes overconfidence

Conclusion

Although technology has resulted in the form of a computer, there has still been issues that should be addressed in order for engineers and other users to feel comfortable with relying on a computer for results. The computer can be a blessing if used properly but a nightmare if it is misused. Whether the solution to its problems is regulating who uses a computer for certain computations or making the software on a computer more advanced, users should take advantage of this advancement but continue to be cautious and ask the right questions.