WHAT IS A SUCCESSIVE APPROXIMATION ADC?

• Analog-to-digital signal converter
  • Requires a sampling rate under $10 \times 10^6$ samples per second or 10MSPS

• Great for 8-16 bits: higher possible but limited by resolution of DAC
HOW DOES IT WORK?

• Uses a counter circuit, called a SAR (Successive Approximation Register).

• Instead of counting in a binary manner, tries all values of bits
  • Starts from most-significant bit and goes to least-significant bit.

• SAR looks at the comparator’s output to check if the binary count is less-than or greater-than the analog signal input.
  • “trial by fit”
WHY USE A SUCCESSIVE APPROXIMATION ADC?

• offers one distinct advantage
  • Converges much faster to an analog signal than a 0 to full counter.
    • Stepping every clock cycle
DIAGRAM OF ADC
REFERENCES

- https://www.allaboutcircuits.com/textbook/digital/chpt-13/successive-approximation-adc/ (used for all figures as well as information).