VHDL Compile Time Calculations

Last updated 8/20/24

VHDL Compile Time Calculations

- Compile time calculations
  - Executed during compilation – not effected by signal values
  - Are not synthesized – allow for more flexibility
  - Common functions and type conversions
    - May require ieee.math_real.all
    - real – convert an integer value to a real value
    - integer – convert a real value to an integer value
    - log2 – provide the $\log_2$(real value)
    - ceil – round up to the next whole real value
    - ** – x**y → x^y
    - sqrt – returns the sqrt of a real value
    - …

VHDL Compile Time Calculations

- Examples
  - Calculate the maximum value of an N bit number
    (2**N – 1)
  - Calculate how many bits required to hold an integer value
    integer(ceil(log2(real(int_val))))