Conclusions

- For humans, Binary numbers are the most difficult to work with
- For example the binary number 111111111111 is equivalent to decimal 4095
- Digital computers work in Binary numbers
- A better way of representing is by using octal and hexadecimal
- Hexadecimal can represent a byte in two digits

Range of Signed Integer numbers

- With 1 Byte (eight bits) we can represent 256 (2^8)
- With two Bytes we can represent 65,536 different numbers
- With four Bytes, 4.295×10^9
- Total combinations = 2^n
- For 2's complement signed numbers, the range of values for n-bit numbers is

  Range = $+(2^{n-1} - 1)$ to $-(2^{n-1})$

  Example:

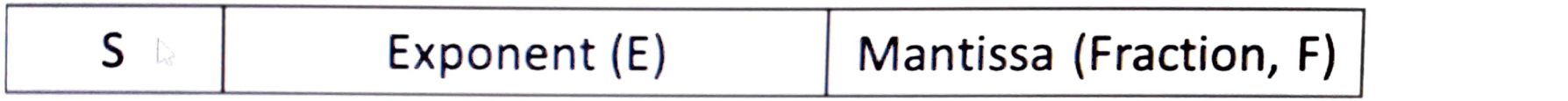
  with four bits we can represent +7 to -8

  with eight bits we can represent from +127 to -128

Floating point number

- Real number
- For representing very large integer numbers
- 0.241544×10^9
- Single precision floating point numbers require 32 bits
- Double precision floating point numbers require 64 bits

Single-precision floating point number



- Real number
- For representing very large integer numbers
- 0.241544 × 109
- Single precision floating point numbers require 32 bits
- Double precision floating point numbers require 64 bits