Introduction to Computer Science
Note on Floating Point Representation

The textbook’s interpretation of the mantissa in floating-point representa-
tions is not the same as the IEEE-standard and hence somewhat outdated:
The book says that the mantissa 1010 means 0.1010 and that the first bit
is always 1 in normalized numbers. IEEE-standard says that 1010 means
1.1010, meaning that the fixed normalization bit is a “hidden bit” or “im-
plicit bit” before the radix point. In calculating the value represented by the
mantissa, an extra 1 is added. This way the first bit in the mantissa may be 0.
Notes about the IEEE standard (which is included in the current standard)
can be found at http://steve.hollasch.net/cgindex/coding/ieeefloat.html.
For problems in this course, we will use the format described in the textbook,
using the same number of bits, but the mantissa will have this IEEE-standard
form, with the implicit bit.