

Solution 1

Number Conversion

Fill in the table below

Binary	Octal	Decimal	Hexadecimal
101 0101 0110	2526	1366	0x556
1 1111 1111	777	511	0x1FF
1 1100 0101	705	453	0x1C5
111 1110 0001	3741	2017	0x7E1
100 0000 1111	2017	1039	0x40F

Operations

Note: You need to read the Chapter 2.1.9 of the book CSAPP before doing the below homework.

- Given A and B with hexadecimal expression 0x7F and 0xBA respectively. Calculate the values of the following expressions. a)
A & B 0x3A
b) A | B 0xFF
c) A ^ B 0xC5
d) ~A | ~B 0xC5
e) A && B 1
f) A || B 1
- Design C expressions using bitwise (& | ~ ^) and logical (&& || !) operators, which return 1 under the specific conditions described below, otherwise return 0.
a) all bits of x are 1. !(~x)
b) all bits of x are 0. !x
c) bits of x's least significant byte are 1. !(~x & 0xFF)
d) bits of x's least significant byte are 0. !(x & 0xFF)

- 3) Design a C expression, which generates a word (32-bit) consisting of the lower 16 bits of x and the remaining bits of y. (Both x and y have 32 bits)
For example, x = 0x89ABCDEF and y = 0x76543210, it will generate 0x7654CDEF

`(x & 0xFFFF) | (y & ~0xFFFF)`