

ALGORITHM: DECIMAL $D \rightarrow$ 8-BIT BINARY B

1. Make a table with columns labeled:
(1) Decimal numeral being considered
(2) How many of these in col. (1)'s number?
(3) Resulting bit
2.
 - a) Write D in column (1);
 - b) Write 128 (= 8th bit's place) in column (2);
 - c) Do $D \div 128$;
 - d) Get quotient Q & remainder R ;
 - e) Write Q in column (3)
3. Repeat (until column 2 = "1")
(i.e., until all bits are computed):
 - a) Write the current R in column (1);
 - b) Write bit-place number in column (2);
(find it by halving column 2)
 - c) Call it N ;
 - d) Do $R \div N$;
 - e) Get quotient Q & remainder R ;
 - f) Write Q in column (3)
4. Let b_8, b_7, \dots, b_1 be the numerals in column (3),
from top to bottom

Then $B = b_8 b_7 \dots b_1$.