→ $n \& (n-1)$: clears last bit.

$n = n \& (n-1)$ until $n == 0$ gives no. of 1 in n.

power of 2 $\quad n > 0 \;\&\& \; (n \& (n-1) == 0)$

→ $(\;\;)'' = (\;\;)' + 0001 \qquad$ 2'comp = 1'comp + 1

→ $x = \underline{110101}0111 \qquad x >> 3 = 111\underline{1101010}$

→ on $\quad$ | or $\qquad$ off $\quad$ & and $\qquad$ toggle $\quad$ ^ xor $\qquad$ check $\quad$ & and

$x = 1011\ (11)$ $\qquad$ $x = 1011\ (11)$

$x \& (\sim(1<<1))$ $\qquad$ $x \wedge (1<<1)$

$= 1001\ (9)$ $\qquad$ $= 1001\ (9)$

$x | (0001000)$ $\qquad$ $x \& (1110111)$ $\qquad$ $x \wedge (0001000)$ $\qquad$ $x \& (0001000)$

→ $x = 12987$ $\qquad$ To get nearest power of 2 smaller than x;

digits = log2(x);

nearestPower = (1 << digits)

→ Right most set bit $\qquad x = 10\ (001010)$

$x \& x'' \Rightarrow 001010$

$x' = 110101 \rightarrow 110110$

000010 ✓✓

$(x \& x'')$ ✓ or else

$(x \& -x)$ $\qquad -x$ is x''.

→ Kerninghan's Algo count Total no. of set bits.

$x = 0100110101$ $\qquad$ generate RMSB rightmost set bit

RMSB marks $\qquad$ $x - $ RMSB, count ++ ;

Total set bit 5