233. Number of Digit One

$b = \overline{a_n a_{n-1} ... a_1 a_0}$, n+1 bits number in decimal system

$\sum(DigitOne) = \sum_{i=0}^{n}(10^i * \lfloor b/10^{i+1} \rfloor + F(i))$

$= (n+1) * \lfloor b/10 \rfloor + \sum F(i)$

$$F(i) = \begin{cases} 0 & \text{if } a_i < 1 \\ 1 + \overline{a_{i-1} ... a_0} & \text{if } a_i = 1 \\ 10^i & \text{if } a_i > 1 \end{cases}$$

```
int countDigitOne(int n) {
   if(n <= 0)
        return 0 ;
    int one = 1;
    long digit = 1;
    int result = 0;
    while(n/digit != 0){
        result += digit * (n/(digit*10));

        int F = n%(digit*10);
        if(F >= one * digit){
            if(F >= one * digit + digit)
                F = digit;
            else
                F = F - one * digit + 1;
        }else
            m = 0;
        result += F;
        digit *= 10;
    }
    return result;

}
```