Problem B
Checksums
Time limit: 2 seconds

Lucas has been studying the following interesting summation: for any positive integer n, let

$$f(n) = \sum_{i=1}^{n} \left\lfloor \frac{n}{i} \right\rfloor = \left\lfloor \frac{n}{1} \right\rfloor + \left\lfloor \frac{n}{2} \right\rfloor + \left\lfloor \frac{n}{3} \right\rfloor + \cdots + \left\lfloor \frac{n}{n} \right\rfloor$$

where $\lfloor\ \rfloor$ denotes the floor function, which rounds down to the nearest integer. After selecting positive integers $m_1 < m_2$, Lucas has computed the values $f(m_1), f(m_1+1), f(m_1+2), \ldots, f(m_2)$ and stored them in a file named **`data`**. He feels very pleased with himself, but one night, as he is lying in bed, he starts worrying that the **`data`** file could somehow get corrupted. The solution, he realizes, is to put checksum information in a second file, so that if one or more values in **`data`** are modified, he may be able to use this auxiliary information to detect the change. The next day, he computes the remainder mod 2 for each value in **`data`**, and records the resulting string of $m = m_2 - m_1 + 1$ bits in a file named **`data.chk`**. As before, he is very pleased with himself, but that night his thoughts are again disturbed, this time by the possibility that **`data.chk`** could get corrupted! Undaunted, he devises a second scheme, and then drifts into a peaceful slumber. When he wakes up, he partitions the binary string in **`data.chk`** into blocks of b bits each, where b is a divisor of m, computes the bitwise exclusive or (XOR) of these blocks, and puts the resulting binary string (of length b) in a third file named **`data.chk.chk`**. From then on, he sleeps like a baby, his mind successfully suppressing even the smallest doubt about the integrity of **`data.chk.chk`**.

As an example, suppose $m_1 = 3$, $m_2 = 11$, and $b = 3$. Then **`data`** contains the values

$$5,\ 8,\ 10,\ 14,\ 16,\ 20,\ 23,\ 27,\ 29$$

which means that **`data.chk`** contains the binary string 100000111, and **`data.chk.chk`** contains the binary string 011 (since $100 \oplus 000 \oplus 111 = 011$, where $\oplus$ denotes XOR).

Given m_1, m_2, and b, help Lucas determine the contents of **`data.chk.chk`**.

Input

The first line of input contains an integer t ($1 \le t \le 100$), the number of test cases. Each of the next t lines contains a test case given as three positive integers, $m_1\ m_2\ b$ ($m_1 < m_2 \le 10^{18}, b \le m_2 - m_1$), where b is a divisor of $m_2 - m_1 + 1$. The sum of the b values over all test cases is at most 200 000.

Output

For each test case, output a line containing the binary string of length b stored in **`data.chk.chk`**.

Sample Input 1	Sample Output 1
2 3 11 3 1234320 1234321 1	011 1

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